ATTACHMENT 1

Applying the EMS Process Roadmap to DOT Activities/Locations

PLEASE NOTE: These templates are provided as examples to help DOT personnel apply the EMS Process Roadmap to their own organizations and activities. Some information, such as the assigned responsibilities and details on expected benefits and targets, is therefore presented as an example only – DOT personnel would be responsible for developing specific details that reflect their own situations.

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EMS Process Roadmap Templates

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TEMPLATE NO. 1

EMS Template for NEPA and Permitting Processes

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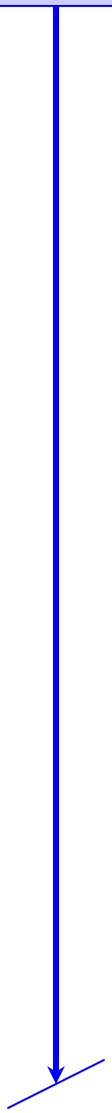
Template No. 1
EMS Template for NEPA and Permitting Processes

	Relevant Information
1. Identify environmental issue(s) and/or opportunity(ies) to be addressed by EMS.	***PLEASE NOTE:*** For the purpose of this exercise, the NEPA and Permitting Processes include several topics that support and facilitate these processes. These topics include, but are not limited to, *Context Sensitive Design, Commitments and Requirements Identification and Implementation, and Project Development.* ***The Plan – Do – Check – Act process described in the EMS Process Roadmap and in this template can be used to address each Planning and Design process and each topic separately, however, this template is presented to illustrate the supporting relationships among various processes and topics.*** • Issues include: 1) lengthy project review and approval cycles, 2) increasing resource and schedule burden associated with regulatory and stakeholder oversight, 3) regulatory agency and public skepticism regarding a DOT's ability to protect the environment, and 4) inconsistent transfer/communication and implementation of environmental commitments from preliminary engineering to design and construction. • Opportunities include: 1) meeting public demands for improved transportation facilities and systems, 2) proving that the DOT plans for and practices environmental protection (thereby helping with issues 1 and 2), and 3) maximizing environmental protection with limited and diminishing resources. • Evaluation of the above reveals the following: 1) the DOT cannot control stakeholder responses and perceptions but it can take actions (e.g., ensuring that mitigation commitments are documented in the EIS/EA and that these commitments are fulfilled) that could improve stakeholder responses and perceptions, and 2) the DOT's actions to improve responses and perceptions have a particular focus on planning to consistently identify and respond to stakeholder issues in a timely manner, and then instituting the procedures, processes, and tools (i.e., an EMS) to implement commitments. • Activities related to the above include: preliminary engineering, public outreach, identification of and response to stakeholder issues, identification of planning best practices, and identification and communication of requirements and commitments to all DOT units and employees involved in their implementation.
2. Identify desired environmental and business results and benefits.	Desired or expected benefits/results include: • Reduce the average time for an EIS review and approval by 5 to 10% (using experience of the last 5 to 7 years) based on project complexity – complexity can be defined in terms of project $, project duration, extent of area affected, population in the area affected, and/or presence of sensitive environments or species. • Staff (and contractor) and time savings, and the associated $ savings, as a result of the review and approval enhancements. As with the preceding bullet, these savings can be based on project averages over the last 5 to 7 years and may reflect project complexity as defined by the DOT. ***PLEASE NOTE:*** These benefits/results can be expected, to varying extents, from the processes and topics noted above in the beginning of the Step 1 discussion.

Relevant Information

3. Establish objectives, quantifiable measures and targets, and associated milestones.



- Actions include: 1) identify and implement processes to identify and, in turn, resolve stakeholder issues and concerns as early as possible in the planning cycle (keys include consistency in approach and communication of information to and from the stakeholders), 2) develop and implement consistent processes that promote concurrent project activities and resolution of "critical path" issues and concerns, 3) develop and implement procedures to ensure that mitigation commitments are documented in the EIS/EA, 4) develop procedures and processes to ensure that the requirements and commitments are implemented in all subsequent phases of the project (i.e., use a Permt Tracking Program to maintain permit conformance throughout the life of project), 5) develop processes to obtain MPO buy-in ahead of a project (e.g., encouraging MPOs to identify local needs and develop support as early as possible), and 6) communicate the DOT's actions in 3 and 4 to the public during public meetings.
  PLEASE NOTE: Using lessons learned in one project and searching for best practices in other DOTs can help to identify what approach or combination of approaches works best in identifying and responding to stakeholder issues and concerns. The key is then to establish the processes (as part of an EMS) to ensure that these approaches are used consistently (i.e., repeatable, and available to and understood by all DOT personnel involved in project planning.
- Objectives include: A) shorten project review and approval schedules, and B) reduce project planning staff time (and the associated cost) for project planning activities (shortened review and approval schedules can translate to less time involved in repeated and/or protracted responses to requests for additional information or discussions).
- Measures include: A) months (based on recent history and the complexity of the project – see Step 2), and B) labor hours or Full Time Equivalents (FTEs) plus associated labor costs (again, based on recent history and the complexity of the project – see Step 2).
- Targets and milestones (refer to the measures): A) reduce the average time for an EIS review and approval by 5 to 10% (within 2 years), and B) reduce staff time (and associated labor dollars) committed to project planning activities by 5% (within 3 years).
- Responsibilities: Environmental Manager to lead development efforts. Support for development to be provided by project planning, design, and community coordination/public outreach staff. Implementation to be led by Project Planning Manager.

Template No. 1 (cont'd)
EMS Template for NEPA and Permitting Processes

Relevant Information

4. Obtain management commitment to EMS, characterize EMS resource needs, and identify EMS leaders.

EMS Business Case.

- 12-16 person weeks (each) of environmental, planning, design, and community coordination/public outreach staff to identify and develop processes related to stakeholder issues/concerns and consistent/optimum project planning. More time may be required if IT systems developed. ***PLEASE NOTE:*** Timeframes for resource commitments are identified in Step 6.
- 8-12 person weeks (each) of environmental, planning, and design staff to develop processes for requirements identification, coordination, distribution, and implementation.
- 2-4 person weeks of environmental planning, design, and community coordination staff to develop and communicate relevant DOT EMS implementation information to influence stakeholder responses and perceptions.
- EIS review and approval schedule improvements – 3 to 4 months on a 3 year project cycle.
- Associated labor savings – 0.5 to 1 FTE ($30 to 60,000).
- Director of Preliminary Engineering will coordinate development efforts. Responsibility for implementation thereafter will be with environmental, planning, design, and community coordination/public outreach units.
- Manager of Preliminary Engineering is expected to serve as "champion."

5. Identify existing initiatives, programs, procedures, processes, and tools relevant to the EMS.

Existing initiatives, etc..

- NEPA review and approval procedures are well-established. However, these procedures tend to call for sequential reviews and, at times, are based primarily on responding to issues that are raised. An EMS looks to integrate new ideas and practices into the existing NEPA processes (without changing regulatory requirements) to improve project planning. These ideas and initiatives include:
  - o develop mechanisms (for example, *Context Sensitive Design and MPO buy-in*) to identify and address stakeholder issues beforehand,
  - o consistently communicate project plans and gather feedback by all means available (for example, internet services, GIS systems that highlight all planned activities, and best practice reviews in other states), and
  - o use new or improved techniques to manage and use existing and previously generated data that can speed the development and review process (for example, GIS data integrated with project data/findings).
- There are already routine communications of project needs between preliminary engineering and design. The EMS builds on the existing communication mechanisms to ensure that all relevant environmental requirements and commitments are consistently communicated between the two units and to the personnel who can ensure implementation. ***PLEASE NOTE:*** These requirements and commitments should, in turn, be communicated to DOT personnel who would maintain environmental controls during construction and subsequent operation.
- Existing public communications mechanisms can be used to let stakeholders know of the DOT's EMS actions.

Template No. 1 (cont'd)
EMS Template for NEPA and Permitting Processes

	Relevant Information
6. Identify improvements to achieve EMS objectives	Specific improvements. 1)Identify specific actions related to identification and resolution of stakeholder issues and concerns (e.g., Context Sensitive Design, obtaining MPO buy-in and early input, or outreach mechanisms) that could improve project review and approval schedules. This would entail review of lessons learned within the DOT as well as looking for best practices in other DOTs. It may be found that different types of projects (e.g., population characteristics or environmental setting) require different actions. (Within 4-6 months). 2)Identify other specific actions (e.g., planning for concurrent submittals and reviews) that could improve project review and approval schedules. This would entail review of lessons learned within the DOT as well as looking for best practices in other DOTs. (Within 4-6 months – concurrently with Item 1 above). 3)Develop and implement processes and procedures (e.g., process flow diagrams, instructions, information packets for employees) that will help DOT personnel to CONSISTENTLY use the actions identified in Items 1 and 2. (Within 8-10 months of start; follows Items 1 and 2). 4)Review recent and current preliminary engineering efforts to identify the types of environmental commitments and requirements. Use this information to develop a requirements structure (e.g., matrix). (Within 2 months). 5)Using the structure developed from Item 4, develop and implement processes and tools (e.g., permit tracking program) to routinely identify specific requirements for each project, communicate these requirements to all who would be involved in their implementation, and track conformance with these requirements. (Within 8 months of project start; follows Item 4). 6)Identify public information topics related to the above items that could be used to influence stakeholder and regulator perceptions of DOT preliminary planning activities. Develop specific information on these topics and routinely (following a suggested schedule) information on DOT successes. (Topics and schedule within 6 months of start and then ongoing).
7. Assign responsibility for developing enhanced or new procedures, processes, and tools.	Responsibilities (the numbers below refer to those noted in Step 6). 1)Director of Preliminary Engineering, coordination with Department design and environmental management and staff. 2)Director of Preliminary Engineering, coordination with Department design and environmental management and staff. 3)Director of Preliminary Engineering, coordination with Department design and environmental management and staff. 4)Environmental Director, coordination with Department preliminary engineering and design management and staff. 5)Environmental Director, coordination with Department preliminary engineering and design management and staff. 1)Director of Preliminary Engineering, coordination with Department design, environmental, and public outreach/community coordination management and staff.

Template No. 1 (cont'd)
EMS Template for NEPA and Permitting Processes

	Relevant Information
8. Identify personnel (by title) affected by EMS, define responsibilities, and communicate responsibilities.	Personnel involved and responsibilities. • Implementation of activities, processes, and tools identified in items 1 through 5 will require the participation of Department and District preliminary engineering, design, and environmental staff. • Implementation of activities and processes identified in item 6 will require the participation of all Department and District preliminary engineering, design, environmental, and public outreach/community coordination staff.
9. Identify EMS-related training needs, responsibilities and schedule. Conduct the training.	• Processes to Improve Schedules (refer to Items 1 through 3 and Step 6 in Step 6) – Training on the use of the various actions and processes will be developed by Preliminary Engineering manager and staff with design, environmental, and public outreach staff support. Attendees will be all preliminary engineering, design, environmental, and public outreach staff, at the HQ or District offices, who may be involved. Training (at least as a refresher) will be presented annually. • Actions to Identify and Implement Commitments and Requirements (see Items 4 and 5 in Step 6) – Training on the use of the various actions and processes will be developed by Environmental Director and staff with design and preliminary engineering staff support. Attendees will be all preliminary engineering, design, and environmental staff, at the HQ or District offices, who may be involved. Training (at least as a refresher) will be presented annually.
10A and B. Assess EMS progress and performance. Brief management on status in meeting objectives and targets.	Tracking performance (refer to the objectives and targets identified in Step 3). • Preliminary Engineering Director will be responsible for tracking performance results. • Preliminary Engineering Director and Department Design and Environmental Managers will meet semi-annually to review success in meeting objectives and targets and make adjustments to actions, processes, and tools that would enhance ability to meet objectives and targets. • Preliminary Engineering Director will summarize performance status (on a semi-annual basis) for presentation/review by senior management and presentation to public.
11. Report on EMS progress and performance to managers/senior management.	Management Review. • Senior Management review performance summary presented by Preliminary Engineering Director. • Senior Management identifies adjustments or enhancements, if needed. Adjustments may include modification of objectives or targets. • Senior Management authorizes additional or continued resources, as needed, to maintain or enhance EMS efforts. • Senior Management authorizes release of performance information to the public.

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TEMPLATE NO. 2

EMS Template for Construction Inspection

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Template No. 2
EMS Template for Construction Inspection

Relevant Information

1. Identify environmental issue(s) and/or opportunity(ies) to be addressed by EMS.

PLEASE NOTE: It is recognized that the sizeable majority of DOT construction work is performed by contractors and that contractors are responsible (as stated generally in contract documents) for environmental compliance. However, there are a variety of issues that arise when a contractor fails to comply with requirements. These include:

- The first complaints from citizens or regulators are made to the DOT – these individuals do not want to hear an explanation from a DOT that the contractor, not the DOT, is responsible.
- Failure to comply with commitments made during preliminary engineering and design negatively affect any actions to improve relationships and schedules in preliminary engineering (see Template No. 1).
- Inability to ensure that contractors comply with commitments and requirements.

For the purpose of this exercise, construction inspection will focus on erosion and sedimentation control as an example of an EMS that can ensure compliance with other types of environmental commitments and requirements.

- Issues, in relative order, include: 1) recent incidents of sediment deposition or erosion (e.g., washouts) that required corrective actions in response to regulatory notification or stakeholder complaints, 2) contractor activities leave conditions which could lead to erosion or sedimentation problems, 3) and construction inspectors have commented that their training and their measurement of success is on the delivery of a quality transportation facility (e.g., highway or bridge).
- Opportunities include: 1) avoiding fines and project delays that, while they may be the responsibility of the contractor, reflect poorly on the DOT's planning, design, and maintenance activities, and 2) construction inspectors that are called to address and ensure correction of an environmental issue are drawn away from oversight and inspection activities that would ensure a quality transportation facility.
- Evaluation of the above shows that: 1) inspectors are generally unfamiliar with specific E&S control commitments and requirements, and 2) inspectors did not have any readily available checklist of requirements or procedure for E&S control assessments.

2. Identify desired environmental and business results and benefits.

Expected benefits/results include:

- Eliminate contractor fines and their impact on perception of the DOT. Contractors have received an average of 25 fines or other notifications of E&S control noncompliance over the last three years across the state – these notifications typically have begun with calls to the DOT.
- Reduce DOT personnel time needed to address the fines. Each of these fines/notifications typically requires 3 ½ to 4 days of inspector time to respond to the complaint, notify the contractor, oversee contractor identification and implementation of corrective actions, prepare contract notice documents and records, and close out the corrective actions.
- Give DOT preliminary engineering staff information to improve the image of and public and regulatory responses to the DOT. It seems that every time the DOT is ready to highlight its improved processes and performances a contractor's mistake during construction leads to a management decision to "hold off" right now (see Template 1).

Template No. 2 (cont'd)
EMS Template for Construction Inspection

	Relevant Information

3. Establish objectives, quantifiable measures and targets, and associated milestones.	• Actions include:
	  - Develop simple, easily understood summary of relevant **E&S commitments and requirements** (see Template 1, Item 5 in Step 6) for use by construction inspectors.
	  - Prepare E&S control assessment checklist that construction inspectors could use as a daily check on contractor compliance,
	  - Develop process to report (to contractor and DOT management) on contractor E&S control performance, and
	  - Develop and present training to ensure that inspectors understand and ensure that contractors follow E&S control commitments and requirements.
	• Objectives include: A) provide E&S commitments and requirements summary to inspectors, B) inspectors and managers attend E&S training, C) assess contractor E&S control performance, and D) improve contractor compliance with E&S control commitments and requirements.
	• Measures include: A) % of inspectors who have commitments and requirements summary, B) % of inspectors trained in E&S control requirements, C) contractor assessment "scores" (e.g., # of YESes or NOs, or summary of 1-4 ratings), and D) number of fines, Notices of Violation, or other notifications.
	• Targets and milestones (refer to the measures): A) >95%, B) >95%, C) value equivalent to 75% or greater, D) zero for incidents that could have been prevented or, if accidental, without corrective/preventive action follow up.
	• Responsibilities: environmental manager to lead efforts, Department construction manager and selected District construction staff to support developmental and training efforts, Department and District construction managers to lead implementation efforts.

4. Obtain management commitment to EMS, characterize EMS resource needs, and identify EMS leaders.	EMS Business Case. • 8 person weeks each of environmental and construction staff time to develop requirements summary, assessment checklist and reporting process, and training program, prepare and present training, develop assessment checklist, and develop planning process. Training (assuming 100 inspectors across the state and 4 hour program) – 400 hours. ***PLEASE NOTE:*** Timeframes for resource commitments are identified in Step 6. • Incidents of contractor non-compliance (that still reflects on the DOT) - eliminate 25 incidents a year (an average based on recent history).. • Productivity gain (by eliminating inspector oversight and coordination of preventable corrective actions) – estimated 75 days of inspector time over a year. • Environmental Manager will manage efforts. Responsibility for implementation thereafter shifts to Department and District construction managers. • Department Construction Manager is expected to serve as "champion."

Template No. 2 (cont'd)
EMS Template for Construction Inspection

Relevant Information

5. Identify existing initiatives, programs, procedures, processes, and tools relevant to the EMS.

Existing initiatives, etc..

- Construction inspectors already have procedures and processes to assess, ensure, and report on contractor conformance to requirements. E&S control could be incorporated with these procedures and processes.
- Construction inspectors already attend regulatory scheduled training programs. E&S control would be incorporated within this program and, possibly, within certain training agendas.
- Employee Job Descriptions already identify work responsibilities. Add brief statements of environmental responsibilities (e.g., attend training, implement environmental procedures, and follow environmentally-related instructions).

6. Identify improvements to achieve EMS objectives.

Specific improvements (refer to actions identified in Step 3).

1)Review existing construction inspection procedures and processes to identify E&S control instructions/procedures. (Within 6 weeks).

*2)*Develop E&S control commitments/requirements summary that will provide the basis for subsequent actions. (Within 6 weeks – concurrent with Item 1).

*3)*Develop contractor E&S control assessment checklist and performance reporting process. (Within first 3 months – subsequent to Items 1 and 2).

*4)*Integrate contractor performance reporting process into existing reporting mechanisms. (Within first 6 months). *PLEASE NOTE: See Template 3 for example of how this effort could be linked with other contract specifications EMS activities.*

5)Provide training to inspectors on E&S controls, the importance of contractor conformance with these requirements within all activities of the DOT, the use of the assessment checklist, making sure the contractors take PREVENTIVE actions, and reporting on contractor E&S control performance. (Within 9 – 12 months).

6)Report on contractor E&S control performance. (Within first year).

7. Assign responsibility for developing enhanced or new procedures, processes, and tools.

Responsibilities (the numbers below refer to those noted in Step 6).

1)Environmental Manager with Department and District construction unit staff.

2)Environmental Manager with Department and District construction unit staff.

3)Environmental Manager with Department and District construction unit staff.

4)Department Construction unit Manager coordinating with Procurement Unit Manager. Support from environmental, construction, and procurement staff.

5)Environmental Manager with Department and District construction unit staff.

6)Department Construction unit Manager with support from District Construction Managers and Department environmental staff.

Template No. 2 (cont'd)
EMS Template for Construction Inspection

Relevant Information

8. Identify personnel (by title) affected by EMS, define responsibilities, and communicate responsibilities.

Personnel involved and responsibilities.

- Construction inspectors and their managers attend training and implement procedures, processes, and tools (e.g., checklists and preventive action development).
- Department and District Construction Managers report on contractor E&S control performance.
- Environmental Manager, Department Construction unit Manager, and environmental staff present and update, as necessary, training.

9. Identify EMS-related training needs, responsibilities and schedule. Conduct the training.

See preceding steps – training was identified as an action to directly address issues and opportunities.

10A and B. Assess EMS progress and performance.

Brief management on status in meeting objectives and targets.

Use assessment performance results; and track incidents requiring corrective action and the DOT resources required to coordinate, oversee, and respond to the corrective actions.

- District Construction Managers provides Department Construction unit Manager with quarterly reports on assessment results, number of incidents, and corrective actions.
- Department Construction unit Manager reviews (on a quarterly basis) E&S control performance with Department Environmental Manager and District Construction unit Managers to identify and implement opportunities for improvement in E&S control processes, instructions, tools, or training. Also identify and implement preventive actions that would minimize or eliminate the potential for future incidents.
- Department Construction unit Manager summarizes performance status (on a quarterly basis) for presentation/review by senior management and presentation to public.

11. Report on EMS progress and performance to managers/senior management.

Management Review.

- Senior Management review performance summary presented by Department Construction unit Manager.
- Senior Management identifies adjustments or enhancements, if needed.
- Senior Management authorizes additional or continued resources, as needed, to maintain or enhance EMS efforts.
- Senior Management authorizes release of performance information to the public.

TEMPLATE NO. 3

EMS Template for Instructions and Procedures

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Template No. 3
EMS Template for Instructions and Procedures

Relevant Information

1. Identify environmental issue(s) and/or opportunity(ies) to be addressed by EMS.

PLEASE NOTE: DOTs have generally well-established processes and documents for identifying and communicating construction, maintenance, and other instructions to contractors and employees.

For the purpose of this exercise, the focus will be on establishing a process to routinely and consistently identify and communicate (through ***Standard Specifications or a Maintenance Manual***) up to date environmental commitments and requirements to DOT contractors and employees who could have a significant and immediate impact on or benefit to the environment. ***The EMS process described herein can be used in other DOT activities involving the coummication of requirements.***

- Issues, in relative order, include: 1) the completeness, accuracy, and currency of environmental instructions and documents is inconsistent, 2) in many cases there is no mechanism to ensure that any new or updated environmental requirements are recognized and implemented by the users (at times instructions are "thrown over the wall from HQ" and it is assumed that any new information is followed, and 3) the inconsistent accuracy, currency, and fulfillment of these requirements has led to incidents of noncompliance.
- Opportunities, in relative order, include: 1) maximizing the ability of DOT employees and contractors to comply with current environmental commitments and requirements, and 2) reducing the number and cost of environmental incidents.
- Evaluation of the above reveals the following: 1) implementing an EMS for environmental commitments and requirements in DOT instructions and documents provides the basis for establishing a consistent process to routinely update (involving all relevant parties) DOT instructions, 2) there have been numerous non-compliance "near misses" that were attributable to a lack of and unfamiliarity with current environmental commitments and requirements, and 3) an ability to demonstrate that the DOT has a consistent system (i.e., an EMS) to facilitate compliance can help in project review and approval (refer to Template No. 1) and ease regulatory oversight burdens.
- Activities related to the above include: routine instruction and document review, dissemination of requirements, and communication of changes and focus on meeting commitments and requirements.

2. Identify desired environmental and business results and benefits.

Desired or expected benefits/results include:

- Reduce number and cost of environmental incidents attributable to inadequate knowledge of or familiarity with commitments and requirements. The average number of construction and maintenance incidents has been 20 per year over the last three years. Corrective actions costs (for DOT labor, and corrective action contractors and supplies) is $10,000 per incident.

Template No. 3 (cont'd)
EMS Template for Instructions and Procedures

	Relevant Information
3. Establish objectives, quantifiable measures and targets, and associated milestones.	• Actions include: 1) develop routine process (including identification of DOT units who could provide relevant information, the process for soliciting and including their input, and communicating changes) to incorporate environmental commitment and requirement updates in the periodic reviews of DOT instructions and documents (including standard specifications and the Maintenance Manual), 2) use this process to identify and incorporate any needed changes in the instructions and documents that are used to reflect current commitments and requirements, and 3) communicate the changes to all parties who may use the instructions and documents. • Objectives include: A) reduce number of environmental incidents attributable to inadequate knowledge of or familiarity with commitments, and B) reduce corrective action costs associated with these incidents. • Measures include: A) number of environmental incidents, and B) $$ and/or DOT employee time spent on corrective actions for the environmental incidents. • Targets and milestones (refer to the measures): A) no incidents without a preventive action follow-up to ensure that the circumstances that led to the incident would not be repeated (target is within 2 years), and B) no corrective actions needed (target is within 2 years). • Responsibilities: Environmental Manager to lead process development efforts. Department Construction and Maintenance unit Managers (they "own" the instructions and documents that are the focus of this effort) responsible for implementing the processes and tracking performance results. Construction and maintenance staff are responsible for following the environmental guidance provided in the specifications and the maintenance manual (refer to Templates 2 and 5 for example).
4. Obtain management commitment to EMS, characterize EMS resource needs, and identify EMS leaders.	EMS Business Case. • 12 person weeks (each) of environmental, construction, contracts, and maintenance staff to develop and implement processes. ***PLEASE NOTE:*** Timeframes for resource commitments are identified in Step 6. • 6-8 person weeks of environmental staff to review instructions and documents to ensure that they include current commitments and requirements. • Number of environmental incidents prevented – compared to 20/year based on historical information (Note that the incidents are those attributable to inadequate knowledge of or familiarity with commitments and requirements). • Corrective action savings associated with the incidents – up to $200,000 per year (based on historical averages). • Improved performance can used to demonstrate that the DOT environmental processes are in place and effective – this information can help to improve project review and approval schedules (see Template 1). • Environmental Director will manage development efforts. Responsibility for implementation thereafter will be with construction and maintenance managers at HQ and in the Districts. • Department Construction and Maintenance Managers are expected to serve as "champions."

Template No. 3 (cont'd)
EMS Template for Instructions and Procedures

Relevant Information

5. Identify existing initiatives, programs, procedures, processes, and tools relevant to the EMS.

Existing initiatives, etc..
- The Standard Specifications and Maintenance Manual already exist.
- These instructions/documents are currently reviewed on an annual basis by their respective "owners" to update them with current practices.

6. Identify improvements to achieve EMS objectives

Specific improvements.
1)Develop and implement routine process to incorporate environmental commitment and requirement updates in the periodic reviews of DOT instructions and documents (including standard specifications and the Maintenance Manual). Process steps include, but are not limited to:
- Designation of DOT units that should be involved in the periodic reviews of the instructions and documents (based on their particular knowledge and relevance to the DOTs needs and issues).
- Schedule and responsibilities for providing updated information.
- Including update information in the instructions and documents.
- Notifying users (employees as well as contractors) of, and confirming receipt of, availability of new documents and instructions including highlighting any changes (environmental or otherwise) of particular note.

(Action to span first 6 months).

2)Track performance, including identification of environmental incidents that are attributable to inadequate knowledge of or familiarity with commitments and requirements. Also track corrective action costs and DOT labor associated with the incidents. (Within 2 months of implementing above processes.

7. Assign responsibility for developing enhanced or new procedures, processes, and tools.

Responsibilities (the numbers below refer to those noted in Step 6).
1)Developmental efforts led by Environmental Director, with support from Department and District Maintenance, Construction, and Contracts Managers and staff.
Implementation efforts led by Department Construction, Contracts, and Maintenance Managers, with support from their staff and environmental staff as needed.
2)Department and District Construction and Maintenance Managers, coordination with Department Environmental Director and environmental staff.

Template No. 3 (cont'd)
EMS Template for Instructions and Procedures

	Relevant Information
8. Identify personnel (by title) affected by EMS, define responsibilities, and communicate responsibilities.	Personnel involved and responsibilities. • Implementation of the processes and the information provided in the instructions and documents falls to: o construction managers and inspectors; o contracts management and staff (to ensure up to date, applicable standard requirements are included in solicitations and contracts; and, o maintenance managers, foremen/supervisors, and staff.
9. Identify EMS-related training needs, responsibilities and schedule. Conduct the training.	• Process Training – Specific training on using the processes to identify and incorporate environmental commitments and requirements in the DOT's instructions and documents would be developed by the Environmental Director in cooperation with the Department Construction, Maintenance, and Contracts Managers. The training would be provided to staff in each unit who are responsible for maintaining the instructions and documents. • Training in following environmental commitments and requirements could be included within this EMS effort, but would be most effective when integrated within training focused on construction inspection or maintenance operations (NOTE: this template focuses on standard specifications and a Maintenance Manual).
10A and B. Assess EMS progress and performance. Brief management on status in meeting objectives and targets.	Tracking performance. • Environmental incidents and corrective action costs/needs – Construction and Maintenance Managers will be responsible for tracking performance results. • Environmental Director and Department Construction and Maintenance Managers meet semi-annually to review performance. Determine "root cause" if there have been environmental incidents, and identify and implement preventive actions. Preventive actions related to this template may include the manner/language in which a commitment or requirement is presented. • Department Construction and Maintenance Managers summarize (on a semi-annual basis) performance status, with any preventive actions, for presentation/review by senior management and presentation to public.
11. Report on EMS progress and performance to managers/senior management.	Management Review. • Senior Management review performance summary presented by Construction and Maintenance Managers. • Senior Management identifies adjustments or enhancements, if needed. • Senior Management authorizes additional or continued resources, as needed, to maintain or enhance EMS efforts. • Senior Management authorizes release of performance information to the public.

TEMPLATE NO. 4

EMS Template for Stockpile and Garage Operations

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Template No. 4
EMS Template for Stockpile and Garage Operations

Relevant Information

1. Identify environmental issue(s) and/or opportunity(ies) to be addressed by EMS.

PLEASE NOTE: For the purpose of this exercise, stockpiles/ storage facilities do not include maintenance garages.

- Issues, in relative order, include: 1) recent release of fuel led to cleanup notice, 2) fuel, hazardous materials stored on site, 3) facility located in populated area and upstream of a sensitive watershed, 4) roadway maintenance materials (salt, liquid asphalt, liquid anti-icing agent) stored on site and should be under cover, and 5) many citizens in area are "environmentally active."
- Opportunities, in relative order, include: 1) several fines over the last 3 years for releases, 2) cleanups diverted work force from routine duties, and 3) personnel building scheduled for replacement in next year.
- Evaluation of the above reveals the following: 1) releases, resulting cleanups, and fines can be traced back to hoses left outside of containment walls and containment valves left open; 2) recent assessments show that materials are not always placed under cover, and pesticides and solvents are not always stored where and how designated; and, 3) citizen surveys indicate that they believe DOT employees don't care about the environment (despite the fact that several live in close proximity).
- Activities related to the above include: materials storage, materials use and distribution, and design/construction of a new personnel building.
- Due to predominance in issues and opportunities – focus on materials, storage, distribution, and use. Personnel building construction/design can be addressed in the next go around provided that engineers are asked to consider energy efficiency.

2. Identify desired environmental and business results and benefits.

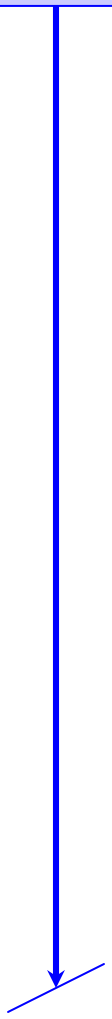
Referring to materials storage, use, and distribution, benefits/results include:

- Fines avoided (in excess of $2,500 per incident, 4 fines in 2000, 3 fines in 2001, 4 fines in 2003, 2 fines to date in 2003).
- Labor savings. Cleanups for each incident required from 2½ to 3 days work from 2 crews.
- Cost savings. Cleanup waste disposal costs average $3,000 per incident.
- Avoid spills. 5 of the incidents (over the last 3 years) involved average release of 750 gallons of fuel. The other 8 incidents involved average release of 500 gallons of liquid anti-icing agent.
- Improved public acceptance. Need to expand operations at certain facilities and land is available at these facilities. DOT demonstration of processes, systems, and improved performance will facilitate citizen reviews to get permission to expend operations.

Template No. 4 (cont'd)
EMS Template for Stockpile and Garage Operations

Relevant Information

3. Establish objectives, quantifiable measures and targets, and associated milestones.



PLEASE NOTE: There has been some occasional (not following a schedule) training in operations for employees assigned to the facility, but the last was provided more than 2 years ago and didn't follow any table of contents/requirements.

- Actions include: 1) identify specific requirements related to materials storage, use, and distribution; 2) clarify requirements so that they provide simple, easy to understand set of bullets that can be summarized in one or two pages; 3) develop and present training materials (with schedule) to present information to employees; 4) develop and implement assessment form that can be used routinely to uncover and correct conditions that could lead to a release; and, 5) after the above have been implemented and practiced for at least 6 months communicate activities to the public.
- Objectives include: A) train employees in proper practices (actions 1, 2, and 3), B) conduct periodic storage facility and procedure assessments (action 4), and C) communicate improved performance to public (action 5).
- Measures include: A) % of employees assigned to a stockpile who are trained and number of incidents without a corrective/ preventive action analysis, B) facility assessments that conform to assessment requirements, and C) % of nearby residents who respond favorably to survey re: DOT environmental performance and acceptance of plans to expand operations.
- Targets and milestones (refer to the measures): A) >95% of workforce receive initial and annual refresher training and Zero incidents without follow-up (to be met within 6 months of instruction material rollout and each year thereafter), B) assessments average (over each year) >90% conformance with assessment requirements (first assessment conducted within 3 months of rollout and in accordance with set schedule thereafter), and C) >66% of public responds favorably (within 1 year of rollout) and formal acceptance of expansion plans (within 1½ years of rollout).
- Responsibilities: environmental manager to lead instructional efforts, maintenance manager to lead implementation, press office manager to lead public survey and coordinate acceptance of plans.

Template No. 4 (cont'd)
EMS Template for Stockpile and Garage Operations

Relevant Information

4. Obtain management commitment to EMS, characterize EMS resource needs, and identify EMS leaders.

EMS Business Case.

- 8 person weeks of environmental staff time to prepare and present instructions, and develop assessment checklist (over a period of 4 months). For support, 2 person weeks (each) of maintenance manager and stockpile manager/supervisor. Two person weeks (total) for employees to do reality check on instructions and checklist. Training (assuming 50 people assigned to stockpile and 3 hour program) – 150 hours. ***PLEASE NOTE:*** Timeframes for resource commitments are identified in Step 6.
- Savings/cost avoidance (based on recent history) - $16,500 per year (for fines and waste disposal). Fuel or agent not lost but available for use.
- Productivity gain (by eliminating cleanups) – at least 3 weeks per year of crew time in each District.
- Environmental protection – at least 1,500 gallons a year of fuel/agent not released to the environment.
- Operational – ability to expand operations leads to improved customer service and no need to acquire additional property.
- Environmental Manager will manage efforts. Responsibility for implementation thereafter shifts to stockpile manager/supervisor.
- Department Maintenance Manager is expected to serve as "champion."

5. Identify existing initiatives, programs, procedures, processes, and tools relevant to the EMS.

Existing initiatives, etc..

- Maintenance instructions are provided in a manual. Add relevant stockpile instructions to this manual.
- Stockpile Manager/Foreman conducts weekly walk- around to determine material quantities on hand/material needs. Add the assessment to this walk-around.
- County and Stockpile Manager meet monthly to review maintenance plans/needs. Use this meeting to review assessment results and identify and assign schedule and responsibility for correction of deficiencies identified through assessments.
- Stockpile Manager/Foreman annual performance review has specific measures/targets. Add %performance on assessments to this performance review.
- Stockpile employees have an all-hands meeting quarterly for a short time to review safety issues and upcoming maintenance plans. Can use this meeting to present training.
- Maintenance Manager and/or County Manager meet at least once a year with citizens group to review maintenance needs. Use this meeting to communicate plans and accomplishments.

Template No. 4 (cont'd)
EMS Template for Stockpile and Garage Operations

	Relevant Information
6. Identify improvements to achieve EMS objectives	Specific improvements. • 1) Clear list of simple instructions that would prevent releases to be added to maintenance manual. Within 1 month of start. • 2) Training materials to fulfill these instructions to be developed and presented. Materials to include photographic examples of DOs and DON'Ts (pictures are better than words). Within 3 months of start. • 3) Present the training materials now and on a set schedule in the future. By 4 months. • 4) Assessment checklist with focus on practices and facilities to prevent releases. Assessment to be performed at least monthly. Within 4 months of start. • 5) Process for managers to follow up on assessment findings, make corrections, and identify "root causes" to prevent recurrence of findings. Within 4 months of start. • 6) Agreement on checklist performance "score" (e.g., % compliance) that ensures prevention, and is practical and achievable.
7. Assign responsibility for developing enhanced or new procedures, processes, and tools.	Responsibilities (the numbers below refer to those noted in Step 6). • 1) Environmental Manager, coordination with Maintenance Manager, Stockpile Manager/Foreman, and sample of stockpile employees. • 2) Environmental Manager, coordination with Maintenance Manager, Stockpile Manager/Foreman, and sample of stockpile employees. • 3) Environmental Manager and Stockpile Manager/Foreman. Employees instructed to attend. • 4) Environmental Manager, coordination with Maintenance Manager, County Manager, and Stockpile Manager/Foreman. Stockpile Manager/Foreman to implement once established. • 5) Environmental Manager, coordination with Maintenance Manager, County Manager, and Stockpile Manager/Foreman. County Manager and Stockpile Manager/Foreman to implement once established. • 6) Environmental Manager, coordination with Maintenance Manager, County Manager, and Stockpile Manager/Foreman. County Manager and Stockpile Manager/Foreman to implement once established.
8. Identify personnel (by title) affected by EMS, define responsibilities, and communicate responsibilities.	Personnel involved and responsibilities. • All employees assigned to a stockpile attend and implement training. • Stockpile Manager/Foreman conducts assessments. • County Manager and Stockpile Manager/Foreman implement corrective and preventive actions and maintain assessment performance "score." • Environmental Manager presents and updates, as necessary, training. • Environmental Manager maintains summary information on assessment "scores" for management review.

Template No. 4 (cont'd)
EMS Template for Stockpile and Garage Operations

Relevant Information

9. Identify EMS-related training needs, responsibilities and schedule. Conduct the training.

See preceding steps – training was identified as an action to directly address needs and issues.

10A and B. Assess EMS progress and performance.

Brief management on status in meeting objectives and targets.

Use assessment performance "scores" and track incidents/releases.

- County Manager provides Maintenance Manager and Environmental Manager with quarterly reports on performance "scores" and status of corrective/preventive actions.
- Maintenance Manager and Environmental Manager (if not otherwise notified) immediately informed (by County or Stockpile Managers) of releases or conditions, including practices, that could result in imminent threat of release. Also informed of preventive actions taken.
- Environmental Manager and Maintenance Manager meet quarterly, or as needed in emergency situations, to review adequacy and applicability of corrective and preventive actions. Make adjustments to preventive actions to minimize future potential for release.
- Summarize performance status (on a quarterly basis) for presentation/review by senior management and presentation to public.

11. Report on EMS progress and performance to managers/senior management.

Management Review.

- Senior Management review performance summary presented by Environmental Manager and Maintenance Manager.
- Senior Management identifies adjustments or enhancements, if needed.
- Senior Management authorizse additional or continued resources, as needed, to maintain or enhance EMS efforts.
- Senior Management authorizes release of performance information to the public.

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TEMPLATE NO. 5

EMS Template for Roadway Maintenance

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Template No. 5
EMS Template for Roadway Maintenance

Relevant Information

1. Identify environmental issue(s) and/or opportunity(ies) to be addressed by EMS.

PLEASE NOTE: For the purpose of this exercise, roadway maintenance includes any activity related to roadway maintenance that would have an erosion or sedimentation environmental impact.

- Issues, in relative order, include: 1) recent incidents of sediment deposition or erosion (e.g., washouts) that required corrective actions in response to regulatory notification or stakeholder complaints, 2) roadway maintenance activities leave conditions (e.g., unstabilized areas, areas not mulched or seeded, steep cuts, or no diversion channels or rip rap) which could lead to erosion or sedimentation problems after DOT crews are finished working in the area, 3) roadway maintenance work is planned in an area adjacent to a wetland or sensitive watershed, 4) there are a number of sensitive watersheds and wetlands (by regulatory definition) near roadways maintained by the DOT, 5) regulators (including conservation district staff) have expressed increasing concern about the DOT's lack of adequate erosion and sedimentation (E&S) control, and 5) many citizens in area are "environmentally active."
- Opportunities, in relative order, include: 1) several fines over the last 1-2 years, 2) actions to correct erosion or sedimentation conditions that diverted work force from routine duties, and 3) roadway maintenance locations and activities are routinely planned for the season/quarter in general terms and in detail on a weekly or biweekly basis.
- Evaluation of the above shows that: 1) foremen/supervisors were unaware of or unfamiliar with specific E&S control requirements mandated by regulations and DOT procedure, 2) managers and foremen/supervisors are not familiar with the definitions of wetlands or sensitive watersheds and the locations of these areas in their county/district, and 3) E&S control materials are not readily available.
- The identification and evaluation of the issues and opportunities leads to a focus on planning for and taking actions to ensure compliance with E&S control requirements and procedures.

2. Identify desired environmental and business results and benefits.

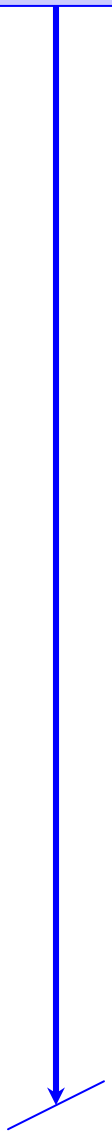
Expected benefits/results include:

- Fines avoided (in excess of $5,000 per occurrence, 2 fines in 2000, 3 fines in 2001, 2 fines in 2003, 1 fine to date in 2003).
- Labor savings. Corrective actions (returning to site after crews have departed) have required from 1 to 2 days work from a crew. There has been an average of 7 incidents per year over the last 3 years that required crews to return to a location to take corrective actions. Education and planning could free up this time for productive work.
- Improving permit review/issuance cycle times and avoiding project delays. Regulator dissatisfaction with E&S control performance has led to delays (in excess of 2 weeks) in reviewing and issuing stormwater management permits for construction and maintenance activities.
- Easing oversight burdens. Over the last few months, regulators have been stopping by work sites at least twice a week in each county to query work force on plans for E&S control, "poke" around the work area, and otherwise delay work progress. Estimated average delay at each visit is 2 hours.

Template No. 5 (cont'd)
EMS Template for Roadway Maintenance

Relevant Information

3. Establish objectives, quantifiable measures and targets, and associated milestones.



PLEASE NOTE: Roadway maintenance activities are planned following an established process (the process does not address E&S control). Also roadway maintenance procedures for the DOT identify the need for E&S control, but foremen/supervisors and managers do not typically refer to these procedures ("they're paid because they already know what to do").

- Actions include:
  - Identify simple, easily understood summary of relevant E&S requirements,
  - Educate managers and workforce on these requirements,
  - Plan (including ensuring materials are available and coordination with regulators) for conformance with the requirements, and
  - Check and report on conformance (to take preventive actions and "prove" conformance to regulators and stakeholders.
- Objectives include: A) develop E&S requirements checklist, B) develop E&S planning information and process that is integrated into existing planning activities, C) develop and present E&S training, D) develop conformance/compliance checklist, and E) collect and disseminate relevant checklist information internally and externally.
- Measures include: A) number of incidents that require corrective action, B) % of employees trained in E&S control requirements, C) number of hours or days spent on corrective actions that could have been prevented or on addressing regulator concerns at a work site, D) number of days or weeks delay in obtaining necessary permits from regulators that are attributable to regulator concerns re: E&S control, and E) conformance/compliance checklist "scores."
- Targets and milestones (refer to the measures): A) zero for incidents that could have been prevented or, if accidental, without corrective/preventive action follow up, B) >95% of workforce receive initial and annual refresher training, C) zero, D) zero, and E) >80% (on a 0-100% scale).
- Responsibilities: environmental manager to lead instructional efforts and coordinate requirements identification and planning process development activities, maintenance manager to lead implementation and collate checklist performance information, and community relations/press office staff to prepare performance information for public release.

Template No. 5 (cont'd)
EMS Template for Roadway Maintenance

Relevant Information

4. Obtain management commitment to EMS, characterize EMS resource needs, and identify EMS leaders.

EMS Business Case.

- 8 person weeks of environmental staff time to prepare and present training, develop assessment checklist, and develop planning process. For support and process implementation, 2 person weeks (each) of maintenance manager and each foreman/supervisor. Three person weeks (total) for employees to do reality check on instructions and checklist. Training (assuming 50 people in each county and 4 hour program) – 200 hours. ***PLEASE NOTE:*** Timeframes for resource commitments are identified in Step 6.
- Savings/cost avoidance (based on recent history) - $10,000 per year per district (for fines).
- Productivity gain (by eliminating preventable corrective actions) – 2 to 3 weeks of a crew in each district.
- Operational – avoid project delays (at least 2 weeks on each project requiring a stormwater managements permit). Each district may have 2 to 4 such projects each year.
- Environmental Manager will manage efforts. Responsibility for implementation thereafter shifts to district/county managers and foremen/supervisors.
- Department Maintenance Manager is expected to serve as "champion."

5. Identify existing initiatives, programs, procedures, processes, and tools relevant to the EMS.

Existing initiatives, etc..

- E&S control procedures for maintenance activities are already provided in a Department maintenance manual. Build training and implementation on these procedures.
- County/District managers and foremen/supervisors already use annual and bi-weekly planning sessions and plans to locate, schedule, and make resources available for roadway maintenance activities. Incorporate planning for E&S control into these planning efforts.
- Use the E&S control planning (refer to the preceding bullet) to identify sensitive watersheds and wetlands that could be affected by roadway maintenance activities. Once areas identified, contact regulators to inform them that work may be performed in a particular area and that the Department is planning to ensure E&S controls are practiced. Use existing contacts by maintenance or environmental staff.
- The Department already identifies training needs for types of employees and maintains records of training provided. Add E&S control training as a requirement for appropriate job titles.
- Manager and foreman/supervisor annual performance review has specific measures/targets. Add performance measures based on the objectives and targets identified in Step 3 to this performance review.
- Employee Job Descriptions already identify work responsibilities. Add brief statements of environmental responsibilities (e.g., attend training, implement environmental procedures, and follow environmentally-related instructions).

Template No. 5 (cont'd)
EMS Template for Roadway Maintenance

	Relevant Information
6. Identify improvements to achieve EMS objectives.	Specific improvements (refer to actions identified in Step 3). 1)Review existing maintenance work procedures to identify instructions/procedures related to E&S control (including permitting needs). Within 2 months. 2)Communicate E&S control performance objectives, measures, and targets to managers and staff involved in development and implementation. Within first month. 3)Determine if stated E&S control requirements are current and update work instructions as needed to reflect current requirements. *NOTE:* ensure that instructions in place or updated/added can be easily understood and implemented by maintenance employees. Within first 3 months. 4)Develop E&S control planning processes (e.g., process flow diagrams or checklists) that can be used as part of ongoing work planning activities to address E&S control needs (including permits, resources, or regulatory contacts). Within first 3 months. 5)Develop and present initial and refresher E&S control training program. *NOTE:* include practical examples so that employees can recognize streams and wetlands that may not be obvious but that meet regulatory definitions. By the 6th month (or as related to maintenance seasons). 6)Develop and implement E&S control assessment process and tool(s) that can be used to verify conformance with regulatory requirements as well as procedures noted above. By the 6th month.
7. Assign responsibility for developing enhanced or new procedures, processes, and tools.	Responsibilities (the numbers below refer to those noted in Step 6). 1)Environmental Manager with Department Maintenance unit staff. 2)Environmental Manager in coordination with Department Maintenance unit management. 3)Environmental Manager in coordination with Department Maintenance unit staff. 4)Environmental Manager in coordination with Department Maintenance unit staff, District/County Maintenance managers, and maintenance foremen/supervisors. 5)Environmental Manager in coordination with Department Maintenance unit staff to develop. District/County Maintenance managers and environmental staff to present. 6)Environmental Manager in coordination with Department Maintenance unit staff, District/County Maintenance managers, and maintenance foremen/supervisors.
8. Identify personnel (by title) affected by EMS, define responsibilities, and communicate responsibilities.	Personnel involved and responsibilities. • All employees involved in roadway maintenance activities that could have an E&S impact attend and implement training. • District/County Managers and foremen/supervisors implement planning processes. • District/County Maintenance Managers and foremen/supervisors conduct assessments and implement corrective actions. • Environmental Manager and District/County environmental staff present and update, as necessary, training. • Environmental Manager maintains summary information on assessment results for management review.

Template No. 5 (cont'd)
EMS Template for Roadway Maintenance

Relevant Information

9. Identify EMS-related training needs, responsibilities and schedule. Conduct the training.

See preceding steps – training was identified as an action to directly address needs and issues.

10A and B. Assess EMS progress and performance.

Brief management on status in meeting objectives and targets.

Use assessment performance results and track incidents requiring corrective action and the resources required for the corrective actions..

- District/County Manager provides Environmental Manager with annual (e.g., end of maintenance season) reports on assessment results, number of incidents, and corrective actions.
- Environmental Manager reviews (on a quarterly basis) E&S control performance with Department and District/County Maintenance Managers to identify and implement opportunities for improvement in planning process(es), E&S control instructions, or training. Also identify and implement preventive actions that would minimize or eliminate the potential for future incidents.
- Environmental and Department Maintenance Managers summarize performance status (on a quarterly basis) for presentation/review by senior management and presentation to public.

11. Report on EMS progress and performance to managers/senior management.

Management Review.

- Senior Management review performance summary presented by Environmental Manager and Department Maintenance Manager.
- Senior Management identifies adjustments or enhancements, if needed.
- Senior Management authorizes additional or continued resources, as needed, to maintain or enhance EMS efforts.
- Senior Management authorizes release of performance information to the public.

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TEMPLATE NO. 6

EMS Template for Rest Areas

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Template No. 6
EMS Template for Rest Areas

Relevant Information

1. Identify environmental issue(s) and/or opportunity(ies) to be addressed by EMS.

PLEASE NOTE**:* For the purpose of this exercise, the focus will be on establishing a process to routinely and consistently identify and implement pollution prevention and energy efficiency (P2/E2) opportunities in the operation and maintenance of rest areas. This effort addresses areas and activities that the DOT directly controls (e.g., the DOT cannot control how customers use the rest area). ***This process can be used in the design and operation of other facilities.

- Issues, in relative order, include: 1) reducing energy consumption, 2) eliminating or minimizing the environmental impacts associated with chemicals and other materials used in maintaining the rest areas, 3) reducing resource (e.g., water) consumption, and 4) ensuring effective treatment of wastewaters (sanitary and parking area runoff).
- Opportunities, in relative order, include: 1) reducing utility costs, 2) using "green" chemicals and other materials, and 3) avoiding or minimizing wastewater treatment system "upsets."
- Evaluation of the above reveals the following: 1) there have been specific, non-routine P2/E2 actions taken when a new rest area is designed or an existing rest area is undergoing a major renovation, 2) the DOT does not have a routine means to consider the "green-ness" of products used in operations and maintenance, and 3) regulatory staff have noted (although no fines or formal notices have been issued) that rest area treatment facilities are prone to upsets.
- Activities related to the above include: rest area design and equipment selection, chemicals and materials selection, and wastewater treatment facility design and operation.
- Due to predominance in issues and opportunities – focus on equipment selection and design, support facilities operation, and maintenance materials selection.

2. Identify desired environmental and business results and benefits.

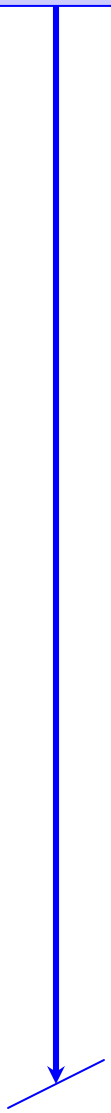
Desired or expected benefits/results include:

- Reduce energy costs – each rest area averages $10,000/year for electricity and $7,000 for natural gas.
- Control chemicals/materials used in maintenance (e.g., cleaning products) – each rest area requires 500 gallons per year of cleaners and 1,000 pounds per year of herbicides and pesticides.
- Reduce water consumption (lavatories, drinking water, and cleanup) –each rest area uses an average of 1,000,000 gallons per year of water, DOT cost for treating well water or purchasing water averages $1.75 per 1,000 gallons.
- Reduce the number of and the potential for wastewater treatment upsets – records show an average of 4 upsets (e.g., discharge parameters not met) per month at each area's treatment facilities.

Template No. 6 (cont'd)
EMS Template for Rest Areas

Relevant Information

3. Establish objectives, quantifiable measures and targets, and associated milestones.



PLEASE NOTE: While there have been a handful of specific P2/E2 actions that the DOT can point to at its rest areas, there is no process to consistently practice P2/E2.

- Actions include: 1) develop routine process to consider P2/E2 effects in support equipment design and selection, 2) identify and develop P2/E2 reference library or manual, 3) prepare list of maintenance chemicals and materials used and identify "green" options, 4) develop process to routinely identify and use "green" chemicals and materials, and 5) develop comprehensive, but easily understood, instructions for treatment facility operations. *NOTE: There is a substantial amount of relevant P2/E2 information currently available from various government agencies including Department of Defense, Navy, Air Force, US EPA, and state agencies. In fact, PENNDOT has prepared a P2/E2 Guide identifying and characterizing the costs and benefits of various P2/E2 options.*
- Objectives include: A) reduce energy and water consumption and associated costs (actions 1 and 2), B) increase use of "green" products used in rest area maintenance (actions 3 and 4), and C) reduce or eliminate treatment facility upsets (action 5).
- Measures include: A) kilowatt hours, MCF, gallons X 1,000, and dollars (may also include return on investment expressed in months or years), B) number or quantity of "green" products used in place of previous materials (may also include facility assessments that conformance with assessment requirements, and C) reduction in number of upsets.
- Targets and milestones (refer to the measures): A) costs for utilities reduced by 15% and water consumption reduced by 10% within 2 years (return on investment <4 years); B) all products reviewed for "green" options, 300 gallons replaced with "greener" products, and 500 pounds replaced by "green" products within 1 year; and, C) target is 0 upsets, realistic expectation is <4 upsets per year within 1 year.
- Responsibilities: Environmental Manager to lead efforts. Process developmental efforts to be coordinated with Department design, purchasing/procurement, and maintenance managers and staff. Implementation efforts to be led by Department and District maintenance managers and supported by Environmental Manager.

Template No. 6 (cont'd)
EMS Template for Rest Areas

Relevant Information

4. Obtain management commitment to EMS, characterize EMS resource needs, and identify EMS leaders.

EMS Business Case.

- 12 person weeks (each) of environmental, design, procurement, and maintenance staff to develop facility/equipment and chemicals/materials selection and options review processes noted in Step 3. ***PLEASE NOTE:*** Timeframes for resource commitments are identified in Step 6.
- 2 person weeks (each) of environmental and operations staff to develop an up-to-date, comprehensive set of instructions for rest area wastewater treatment facilities (to avoid and minimize the potential for upsets).
- Savings on energy – target is at least $2,500/year for each rest area.
- Savings on water - target is 100,000 gallons.
- Switch more than 50% of products used to "greener" alternatives – this information can be highlighted to the public.
- Avoid, including the negative publicity, most, if not all, treatment upsets (recent history shows almost 50 upsets per year at each rest area).
- Environmental Director will manage development efforts. Responsibility for implementation thereafter will be design, operations and maintenance, and procurement.
- Department Maintenance Manager is expected to serve as "champion."

5. Identify existing initiatives, programs, procedures, processes, and tools relevant to the EMS.

Existing initiatives, etc..

- P2/E2 options identification and selection processes will be integrated into well-established facilities and equipment design and selection processes.
- "Green" alternatives identification and selection process will be integrated into well-established materials procurement process.
- Maintenance activity instructions are presented in existing procedures. However, these procedures do not provide up-to-date, comprehensive instructions on wastewater treatment facility operations. Relevant instructions will be developed and added.
- Districts/Counties already track resource consumption and associated costs. This information provides basis for determining success.
- Department and District Maintenance, Design, and Procurement units have general strategic objectives and targets. P2/E2 objectives and targets will be added.

Template No. 6 (cont'd)
EMS Template for Rest Areas

	Relevant Information
6. Identify improvements to achieve EMS objectives	Specific improvements. 1)Develop reference library of P2/E2 information sources. (Within 2 months). 2)Develop routine process to integrate P2/E2 consideration in support equipment design and selection. (Within 6 months). 3)Develop list of maintenance chemicals and materials used. (Within 2 months). 4)Use reference materials (see item 1 above) to identify "green" options and incorporate these choices in procurement/ purchasing processes. (Within 4 months). 5)Develop process to routinely identify and use "green" chemicals and materials. (Within 8 months). 6)Prepare comprehensive, easily understood, instructions for treatment facility operations. (Within 4 months).
7. Assign responsibility for developing enhanced or new procedures, processes, and tools.	Responsibilities (the numbers below refer to those noted in Step 6). 2)Environmental Director, coordination with Department Maintenance and Design Manager and staff. 3)Environmental Director, coordination with Department Maintenance, Design, and Procurement Managers and staff. 4)Environmental Director, coordination with Department Maintenance Manager and staff. 5)Environmental Director, coordination with Department Maintenance and Procurement Managers and staff. 6)and 6) Environmental Director, coordination with Department Maintenance Manager and staff. Implementation by District/County maintenance staff assigned to rest areas. *PLEASE NOTE:* Implementation of processes identified in items 2 and 5 will fall to Department and/or District/County maintenance staff who select facilities, equipment, and chemicals.
8. Identify personnel (by title) affected by EMS, define responsibilities, and communicate responsibilities.	Personnel involved and responsibilities. • Implementation of processes identified in items 2 and 5 will fall to Department and/or District/County maintenance and design staff who select facilities, equipment, and chemicals. • Implementation of the wastewater treatment facility instructions will be the responsibility of District/County maintenance staff assigned to rest areas. • Department and District/County Maintenance Managers will be responsible for tracking performance results (i.e., savings, consumption, material switch to "green" products, treatment upsets).

Template No. 6 (cont'd)
EMS Template for Rest Areas

	Relevant Information
9. Identify EMS-related training needs, responsibilities and schedule. Conduct the training.	• Facility/Equipment Selection Training – Training on the use of the reference materials will be developed and presented by the Environmental Director and staff. Training on the process will be developed and presented by the Environmental Director and Department Maintenance, Design, and Procurement Managers. Attendees will be all maintenance, design, and procurement staff who may be involved. Training (at least as a refresher) will be presented annually. • "Green" Products Selection Training – Training on the use of the reference materials will be developed and presented by the Environmental Director and staff. Training on the process will be developed and presented by the Environmental Director and Department Maintenance and Procurement Managers. Attendees will be all maintenance and procurement staff who may be involved. Training (at least as a refresher) will be presented annually. • Treatment Facility Operations – Training program will be developed and presented by the Environmental Director and District/County Maintenance Managers. Attendees will be all maintenance staff who operate treatment facilities at rest areas. Training (at least as a refresher) will be presented annually.
10A and B. Assess EMS progress and performance. Brief management on status in meeting objectives and targets.	<u>Tracking performance.</u> • Reduction in Energy Consumption and Savings – Department and District/County Maintenance Managers will be responsible for tracking performance results. • Switching to "Green" Products – Department and District/County Maintenance Managers will be responsible for tracking performance results. • Reduction in Treatment Facility Upsets – District/County Maintenance Managers will be responsible for tracking performance results. • Environmental Director and Department Maintenance Manager meet semi-annually to review performance. Update P2/E2 reference library and processes as needed to reflect new opportunities, lessons learned, and any adjustments to processes. • Summarize performance status (on a semi-annual basis) for presentation/review by senior management and presentation to public.
11. Report on EMS progress and performance to managers/senior management.	<u>Management Review.</u> • Senior Management review performance summary presented by Environmental Director and Maintenance Manager. • Senior Management identifies adjustments or enhancements, if needed. • Senior Management authorizes additional or continued resources, as needed, to maintain or enhance EMS efforts. • Senior Management authorizes release of performance information to the public.

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