CONESTOGA-ROVERS
& ASSOCIATES

OPERATION AND MAINTENANCE PLAN

SOIL MANAGEMENT AREA
REALM/ENCORE
TONAWANDA, NEW YORK

FEBRUARY 2005
CRA REF. NO. 017310 (1)
ENCORE Site # 136
Project Memo #111

TABLE OF CONTENTS

LIST OF DRAWINGS
(Following Text)

LIST OF TABLES
(Following Text)

LIST OF APPENDICES

GLOSSARY

ENCORE	Environmental Corporate Remediation Consortium in which GM is a party
HASP	Health and Safety Plan
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M Plan	Operation and Maintenance Plan
PPE	Personal Protective Equipment
Site	Soil Management Area, General Motors Powertrain Group – Tonawanda Engine Plant, Tonawanda, New York
SMA	Soil Management Area

1.0 INTRODUCTION

This report presents the Operation and Maintenance Plan (O&M Plan) for the Soil Management Area (Site) located next to the General Motors Powertrain – Tonawanda Engine Plant (GMPTG) in Tonawanda, New York (Drawings 1 and 2). The purpose of this O&M Plan is to provide the detailed operation, maintenance, and monitoring requirements for the post-closure oversight at the Site. The O&M activities will be performed by the engineers/contractors hired by ENCORE.

The SMA is a 15-acre parcel of land located northeast of Motor Plant 4. This 15-acre parcel, which was part of the former delisted DuPont Landfill, was purchased by GM in the 1970's (Drawing 3).

1.1 SCOPE OF THE OPERATION AND MAINTENANCE PLAN

The purpose of the O&M Plan is to detail the operation, maintenance, and monitoring requirements for the following post-closure components:

i) SMA cap;

ii) other Site areas (access roads, perimeter fence).

This report is organized as follows:

Section 1.0 Introduction;

Section 2.0 SMA Construction;

Section 3.0 Records and Reports;

Section 4.0 Site Maintenance;

Section 5.0 Personnel; and

Section 6.0 Health and Safety Plan.

1.2 REVISIONS TO THE O&M PLAN

This O&M Plan presents the details of the operation, maintenance, and monitoring requirements of the post-closure components representative of the final construction and future use considerations. The materials of construction presented in the O&M Plan are those used for the final construction.

At the end of each year of post-closure monitoring, the O&M Plan will be further amended (as necessary) to reflect experience gained during the first year.

Table 1 provides a list of site contacts pertinent to the implementation of the SMA O&M Plan.

2.0 SMA CONSTRUCTION

The construction of the SMA was completed in accordance with the Conestoga-Rovers and Associates, Inc., documents entitled, "*Soil Management Plan, General Motors Powertrain Group, Tonawanda, New York,*" (July 30, 2001) and the "*Soil Management Plan Addendum – 3.9 Liter Engine Expansion Project, General Motors Powertrain Group, Tonawanda Engine Plant, Tonawanda, New York,*" (May 21, 2003).

The major components of the Plans are summarized as follows:

i) placed materials;

ii) landfill cover system;

iii) vegetative cover;

iv) snow fences; and

ii) runoff control.

A description of the Plan components is provided in the following sections.

2.1 PLACED MATERIALS

In July 2001, GM commenced construction activities associated with the GM Inline 4/5 Plant Expansion Project. As a result of that project, approximately 150,000 cubic yards of construction-related soil materials were managed at the SMA. The materials consisted of non-hazardous granular fill that were generated during construction activities and were unsuitable for construction reuse. The announcement of the 3.9-Liter Engine Expansion Project in April 2003 created a new need to manage additional construction materials, specifically excavation soils and concrete. Therefore, in May 2003, GM extended the scope of the Inline 4/5 Soil Management Plan to include the 3.9-Liter Expansion Project. Approximately 39,000 cubic yards of excavated soils and concrete flooring generated during the 3.9L Engine Expansion construction project were managed at the SMA.

Excavated materials were placed at the SMA in overlying lifts of 12 inches or less to ensure adequate compaction and minimal subsidence later on. In addition, portions of the SMA were also terraced to assist with surface drainage and to prevent migration of surface drainage from the SMA to nearby offsite storm sewer systems. Once the materials had been placed and graded for proper drainage, the area was covered with topsoil and seeded.

2.2 SMA COVER SYSTEM

The SMA encompasses an area of approximately 8 acres. A cover system consisting of topsoil and vegetation was placed over all areas of the SMA with the exception of the Site access roadway and drainage ditches. Since the desire was to have minimal runoff from the SMA, no low permeability membranes were used during the construction process. The use of topsoil allows for surface infiltration of precipitation, erosion prevention of managed materials, and prevention of direct human contact with the managed materials. The cover system consists of the following layers, in descending order:

i) vegetative cover; and

ii) 6-inch topsoil layer capable of supporting vegetation;

The cover system layers are briefly described in the following subsections.

2.2.1 SOIL CAPABLE OF SUPPORTING VEGETATIVE GROWTH

A 6-inch thick layer of topsoil capable of supporting vegetative growth was placed over the managed materials layer. The topsoil provided a layer to support a vegetative cover and to provide a barrier against erosion of the underlying managed materials and direct human contact with the underlying managed materials.

2.2.2 VEGETATIVE LAYER

The vegetative layer was planted over the entire 8-acre Site. The vegetative layer is essential for maintaining the long-term effectiveness of the erosion control and surface drainage. The vegetation will serve to:

i) stabilize the soil against erosion due to runoff and wind;

ii) promote evapo-transpiration of soil moisture; and

iii) improve the aesthetics of the backfilled area and the cap.

The vegetative layer will be maintained by appropriate mowing so that root penetration remains within the soil and natural reseeding of grass varieties occurs while weed growth is reduced since maturity of weeds will not be achieved.

2.3 PERMANENT SNOW FENCES

During the final grading, topsoiling and seeding activities, permanent snow fences (wind breaks) were installed on the eastern portion of the SMA area and on the extension area on the northeast corner of the SMA. The wind breaks were designed to reduce the amount of snow drifting onto perimeter fences. The snow fences were constructed of pre-treated lumber. Support beams were constructed of 8-inch by 8-inch by 12-foot long pretreated posts. The cross planks were constructed of 2-inch by 6-inch by 16-foot long pretreated planks. All materials were connected using galvanized bolts, washer and nuts. The supporting posts were placed six feet into the ground, resulting in six-foot tall fences. Each fence segment is approximately 40- to 60-feet in length.

3.0 RECORDS AND REPORTS

3.1 RECORDS AND REPORTS

Monitoring Reports and Inspection and Maintenance Reports will be submitted to the ENCORE Manager. The ENCORE Manager, as of the date of the report, is James F. Hartnett, GM WFG Remediation. All reports will be submitted annually unless more frequent reporting for maintenance activities is required.

All records resulting from O&M activities will be stored at the ENCORE Engineers offices and will be available for inspection by ENCORE and GMPTG personnel upon request.

4.0 SITE MAINTENANCE

Site maintenance requirements include routine Site inspections, scheduled preventative maintenance, unscheduled maintenance in response to inspection reports or component failures, and record keeping for maintenance activities.

4.1 SITE INSPECTIONS

4.1.1 INSPECTION SCHEDULE

Table 2 presents an outline of the inspection and preventative maintenance schedule for the SMA. This schedule will be revised as more experience with the particular maintenance requirements of the Site is gained.

Required maintenance as identified by the annual inspections will be performed as soon as possible following identification.

4.1.2 INSPECTIONS

The Site will be inspected on a annual basis as shown in Table 2. These inspections will ensure that the Site components are functioning effectively as designed following construction. Give particular attention to the following system components:

SMA Cover Areas

- roads;
- surface structures;
- snow fences;
- vegetated soil cover;
- ditches and culverts;
- perimeter fencing; and
- general surface conditions.

Low-Lying Areas with Seasonal Standing Water

- vegetation;

- water levels; and
- general condition of the low-lying area.

Off-Site Surface Water Drainage Pathways

- ditches and culverts.

The surface of the SMA areas will be inspected to ensure that the integrity of the cover is being maintained. The surface of the cover will be inspected for signs of damage due to loss of vegetation, settlement, erosion, and burrowing by animals. Surface ditches and culverts will be inspected for signs of off-Site drainage.

Low-lying areas, located on the north side of the SMA, will be visually inspected to ensure the integrity of the areas are being maintained. Inspections will include observation of the condition of the vegetation and of the level of any water that may be present.

Off-Site surface water drainage pathways will be visually inspected to ensure that obstructions/blockages that would prevent drainage from the Site are not present.

Inspections will be recorded on the Inspection Log. A copy of the completed logs will be submitted with the annual reports. All original logs will be kept on file at the ENCORE Engineer's office.

4.2 PREVENTATIVE MAINTENANCE

Regular scheduled maintenance based on Site conditions and the annual inspection. Maintenance items include, but are not limited to, the following components:

SMA Cover and Miscellaneous Areas

1. cutting, fertilizing, and restoring the Site vegetative cover;
2. repairing the Site access roads;
3. repairing surficial erosion and sloughing along the perimeter slopes;
4. repairing damage caused by burrowing wildlife, presence of deep-rooted weeds, or other vegetation;
5. repairing or replacing fencing, signs, and locks;

6. repairing leachate seeps; and
7. cleaning ditches and culverts.

Off-Site Surface Water Drainage Pathways

1. removing minor obstructions/blockages; and
2. notification of the ENCORE Project Manager of erosion issues.

Maintenance of the SMA cover and miscellaneous areas will be identified during the annual inspections and will be performed as soon as problems are encountered and ENCORE approval has been obtained. Maintenance of the SMA cover and miscellaneous areas includes the repair of damaged areas and the cutting and/or fertilizing of the Site vegetative cover.

Maintenance of the off-Site surface water drainage pathways will be identified based on the annual inspections and will be performed as soon as practical after problems are observed and upon ENCORE approval.

An appropriate Work Plan will be submitted to the ENCORE Project Manager prior to the commencement of any maintenance or remedial works at the Site.

4.3 UNSCHEDULED MAINTENANCE

Additional maintenance is required when inspections reveal a problem with one of the systems or when system components fail. Should inspections reveal that non-emergency maintenance or response is required, obtain ENCORE approval and complete the work as soon as practicable in order to eliminate further damage and the need for emergency repairs. If a situation requires immediate action, initiate emergency actions immediately. Notify the ENCORE Project Manager of all emergency actions. All replacement equipment must be of equal or better quality than the original components and when possible should be the same make and model as the original. All replacement materials must meet or exceed ENCORE specifications. A summary of potential problems, which may require maintenance and the appropriate corrective actions, is presented in Table 3.

4.3.1 SMA COVER

The purpose of the SMA cover is to promote infiltration of precipitation into the Site, prevent erosion of managed materials, and eliminate direct human contact with the managed materials. The layers of the cover work together to achieve these goals and, therefore, each one of the layers is necessary for the cover system to function effectively. When a problem is detected with the cover, notify the ENCORE Project Manager and correct it once approval from ENCORE has been obtained.

4.3.1.1 VEGETATIVE COVER

Visible indications of problems, which may occur with the vegetative cover, include bare areas, dead or dying grass, and growth of weeds or bushes. When inspection reveals bare areas or dead or dying grass, perform the following actions to correct the problem:

1. till the topsoil; and
2. reseed and mulch.

Mowing will be performed semi-annually in the early summer and fall (e.g. June and October) of each year.

4.3.1.2 IMPORTED CLEAN SOIL AND TOPSOIL LAYERS

Visible indications of problems, which may occur with the imported clean soil and topsoil layers include washout and erosion, settlement, standing water, and animal holes or burrows.

If the cover has been damaged by erosion or a washout has occurred, perform the following actions to correct the problem:

1. recover the washed out soil at the bottom of the slopes, or from drainage culverts using appropriate equipment, if possible;
2. backfill with recovered soil and additional soil to the original design elevation;
3. place a 6-inch thick layer of soil capable of supporting vegetative growth over the managed materials;
4. check the final elevation to ensure adequate drainage; and
5. seed and mulch.

Settlement and standing water can be corrected by either regrading or by placing additional topsoil in the low areas.

Repair animal holes or burrows by performing the following actions:

1. capture and remove the rodents;
2. replace the disturbed underlying soils and topsoil layers to the original design elevation/thickness; and
3. seed and mulch.

4.3.1.3 GROUNDWATER SEEPS

A groundwater seep may appear as a groundwater discharge from the landfill slopes. If a seep is detected, inspect the seep area for erosion, discoloration, and migration from the seep area. If erosion has occurred, perform the activities described in Section 4.3.1.2. If discoloration of seep liquids is observed, a visual inspection of the area should be conducted to determine whether migration of the seep materials has occurred. If migration has occurred, the ENCORE Project Manager should be notified immediately. If the seep has not migrated, the observations should be noted in the annual inspection reports.

Sampling of a seep area will be left to the discretion of the ENCORE Project Manager.

4.3.2 OTHER SITE SYSTEMS

Other Site systems include access roads, perimeter fences, signage, snow fences and drainage ditches. When a problem is detected with these systems, correct it as soon as possible upon approval from ENCORE.

4.3.2.1 ACCESS ROADS

Visible indications of problems which may occur with Site access roads include washed out surface gravel or sub-base material, potholes, puddles, and obstructions.

If the surface gravel or sub-base material is washed out, take the following actions as soon as possible:

1. recover washed out gravel, if possible;
2. use recovered gravel to backfill the eroded area;
3. use new material to supplement the recovered material as necessary; and
4. compact to the original elevation.

When a substantial puddle or pothole is detected, take the following actions as soon as possible:

1. backfill with new material; and
2. compact to the original elevation.

4.3.2.2 PERIMETER FENCE AND SIGNS

Visible indications of problems, which may occur, with the perimeter fence and signs include broken locks or gates, gaps in the fence, and missing or damaged signs.

Property signage is to be installed that indicates that the SMA is the property of ENCORE. The sign should be placed at 200 foot internals along the perimeter fenceline. The sign should contain the following information, at a minimum:

"Property of ENCORE"
"ENCORE Site #136"
"Notify: James Hartnett"
"ENCORE Project Manager"
"315-463-2391"

If locks or gates are missing or damaged, replace them as soon as possible upon approval from ENCORE. If there are gaps in the fence, repair or replace the damaged section as soon as possible upon approval from ENCORE. If signage is damaged or missing, replace them as soon as possible.

4.3.2.3 DRAINAGE DITCHES

Visible indications of problems which may occur with the Site drainage ditches include bare areas, dead or dying grass, displaced stone fill, and the accumulation of obstructions or debris. When inspection reveals bare areas or dead or dying grass, perform the following actions to correct the problem:

1. till the top soil; and
2. reseed and mulch.

If stone fill becomes displaced, recover the stone and place it in its original position. Repair of underlying soils may also be necessary. Remove any obstructions or debris accumulated in the drainage ditches.

4.3.2.4 SNOW FENCES

Visible indications of problems which may occur with the Site snow fences include leaning fences, warped and twisted horizontal planks, broken planks, split planks, and broken hardware. In addition to physical damage, other problems would be UV damage and water damage. When inspection reveals leaning fences, perform the following actions to correct the problem:

1. inspect anchor posts for damage;
2. inspect the surrounding soil area for subsidence; and
3. notify the ENCORE PM to initiate and obtain approval to reset the fence.

When damaged hardware or warped, twisted, or broken planks are detected, take the following actions as soon as possible:

1. mark all damaged planks or hardware with orange marking paint; and

2. notify the ENCORE PM to initiate and obtain approval to repair or replace damaged planks and hardware.

When weather damaged components are detected, take the following actions as soon as possible:

1. mark all damaged components with orange marking paint;
2. inspect wood and hardware for damage; and
3. notify the ENCORE PM to initiate and obtain approval for water proofing and UV maintenance.

4.3 DISPOSAL OF USED MATERIAL AND WASTE

The consultant performing the inspections shall containerize material and waste resulting from the inspection and transport them to their office for disposal at a licensed off-Site disposal facility in accordance with all applicable Federal and New York State Regulations.

For waste materials generated during on-Site maintenance activities, contractors shall provided the necessary waste containers staged at the Site. Upon completion of the maintenance activities, the contractor will coordinate the transport of the waste container to a licensed off-Site disposal facility in accordance with all applicable Federal and New York State Regulations.

The disposal of all wastes generated through maintenance activities will be coordinated through the ENCORE PM.

4.4 MAINTENANCE RECORDS

A record of all maintenance scheduled and performed will be kept with the ENCORE PM. The record will include a description of the work performed, whom it was performed by, and comments which may arise.

4.5 REMEDIAL WORKS

Should inspections reveal that non-emergency maintenance or response is required, it will be completed as soon as practicable in order to preclude further damage and the need for emergency repairs. Should a situation exist requiring immediate action, on-Site

personnel must initiate emergency actions and immediately notify the ENCORE Project Manager of any emergency actions.

5.0 PERSONNEL

This section describes the required minimum experience for key project personnel, responsibilities of the personnel, the organizational structure, and lines of communication and authority for the performance of the O&M Plan at the Site.

5.1 ORGANIZATION

The O&M Plan will be carried out by the ENCORE Project Manager. The evaluation of inspection results, preparation of reports, design of significant contingency measures, and Site oversight/construction management will be performed by the ENCORE Project Manager.

5.2 PERSONNEL REQUIREMENTS

Personnel conducting field activities at the SMA will be required to abide by all applicable Site, local and State worker and health and safety requirements, as well as the included ENCORE Health and Safety Plan.

5.3 RESPONSIBILITIES AND DUTIES

A description of the required duties and qualifications of the key personnel are presented below.

The ENCORE Project Manager will have responsibility for overseeing/ensuring performance of administrative functions during the performance of the O&M Plan. The ENCORE Project Manager will retain the services of a Contractor to perform certain portions of the services required by the O&M Plan. The selected Contractor will be subject to approval by ENCORE.

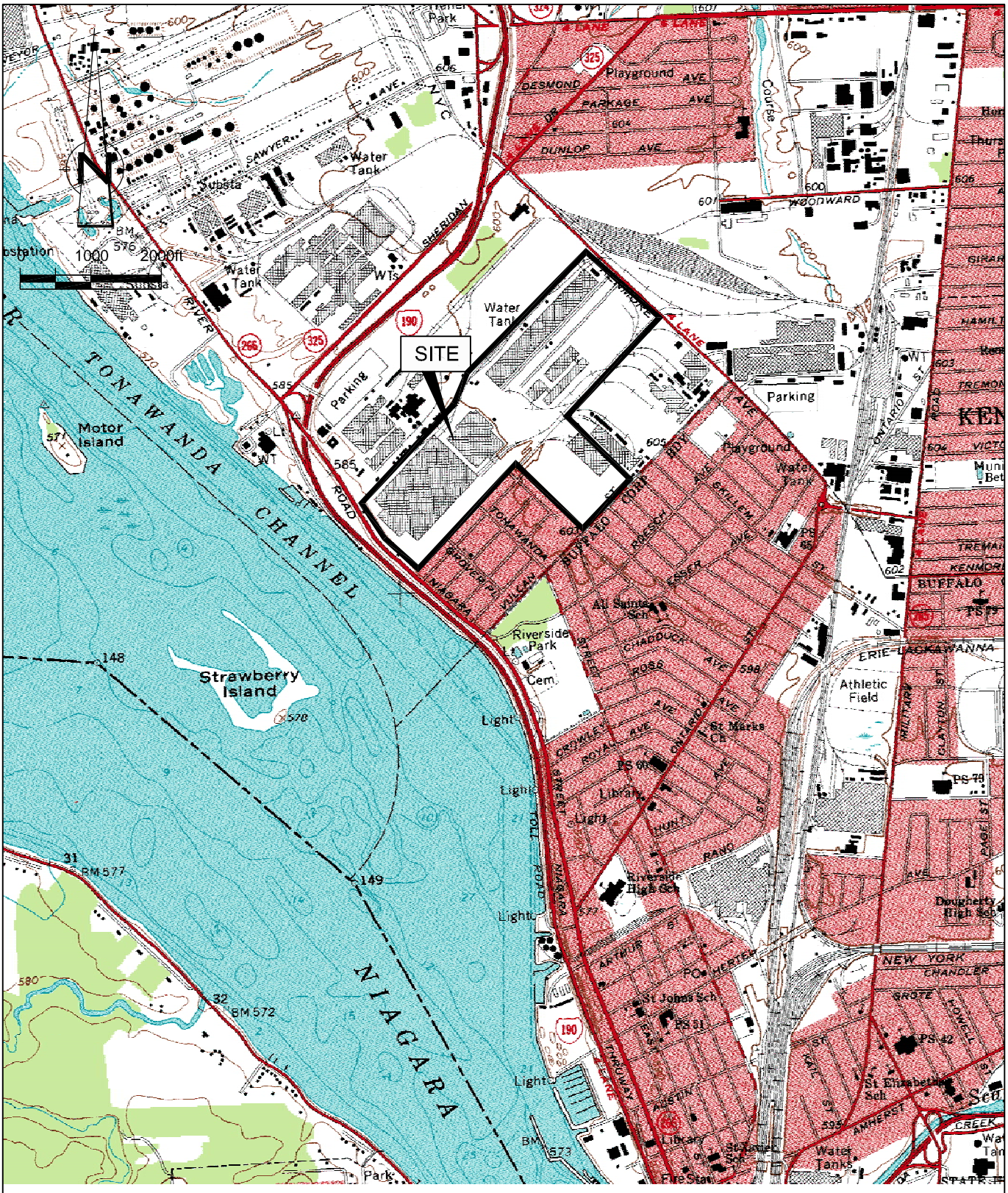
5.4 WORKER HEALTH AND SAFETY TRAINING

Prior to performing any Site activities, all personnel who will be or are expected to be involved with Site activities will review the ENCORE Health and Safety Plan for O&M Activities.

The health and safety plan will stress the importance that each attendee understands the basic principles of personnel protection and safety, be able to perform their assigned job tasks in a safe and environmentally responsible manner and be prepared to respond in an appropriate manner to any emergency which may arise while at the Site. A description of the Site will be included and the various components of the HASP will be presented followed by an opportunity to ask questions to ensure that each attendee understands the HASP. Personnel not successfully completing this training program will not be permitted to enter or work at the Site. Personnel successfully completing this training program will be issued a Site access badge that must be renewed annually.

6.0 HEALTH AND SAFETY PLAN AND SITE-SPECIFIC PROJECT WORK PERMIT

Prior to commencing field activities, the ENCORE Engineer shall prepare a Health and Safety Plan in accordance with ENCORE Site Safety requirements.



REFERENCE:

UNITED STATES GEOLOGIC SURVEY
TONAWANDA WEST QUADRANGLE, NY
TOPOGRAPHIC, 7.5 MINUTES SERIES 1965
SCALE: 1:24,000

DRAWING 1

SITE LOCATION MAP
GM POWERTRAIN GROUP TONAWANDA ENGINE PLANT
Tonawanda, Erie County, New York

N

0 200 400ft

NIAGARA RIVER

STORM SEWER INTERCEPTOR SYSTEM

NORTH DOCK "B"

INDUS. WASTE

POWER PLANT

G. M. POWER TRAIN
MOTOR PLANT 1

PC & L BUILDING

MOTOR PLANT 4

AMERICAN AXLE & MANUFACTURING

PARKING AREA

INLINE 4/5 PLANT

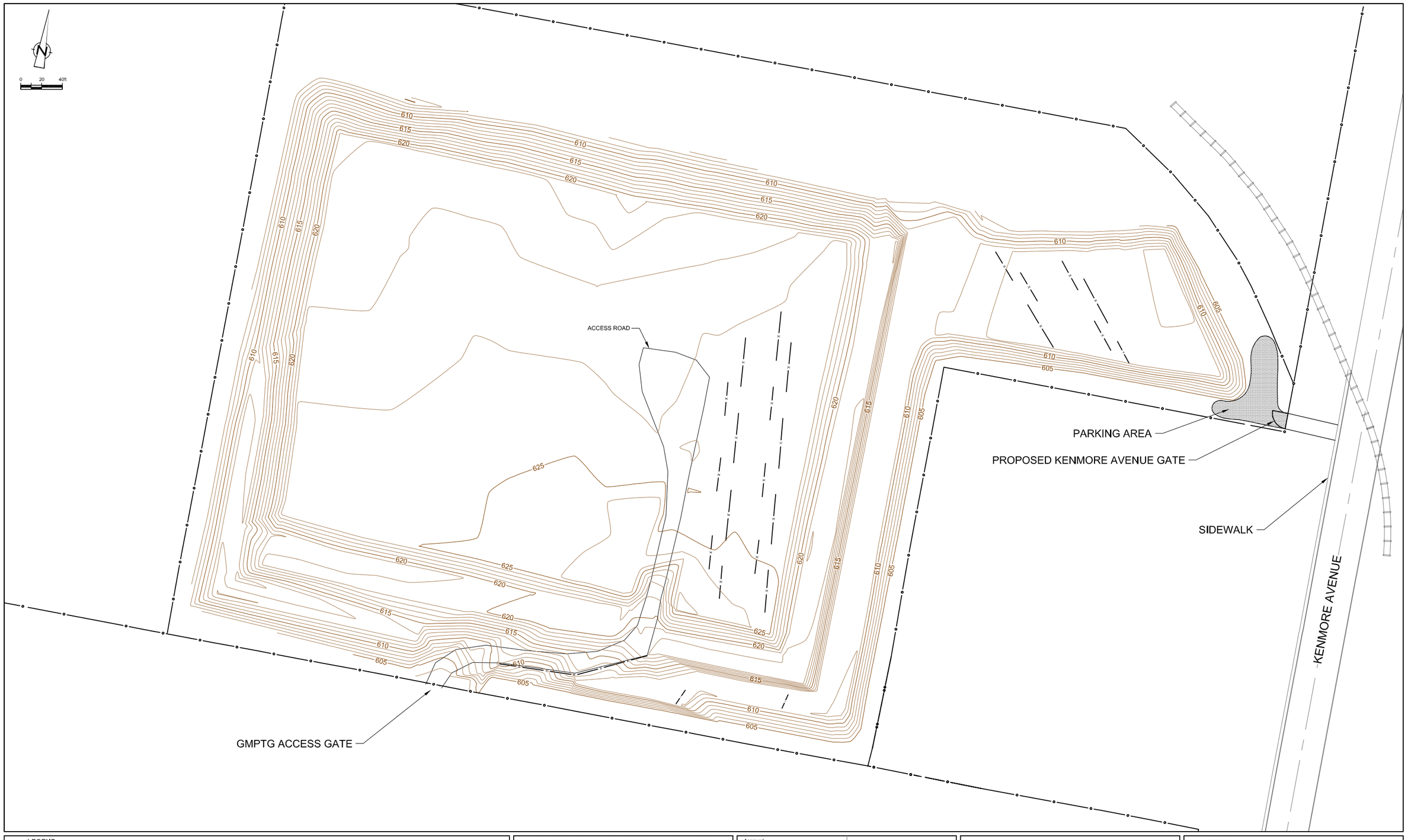
DRAWING 2

SITE PLAN

GM POWERTRAIN GROUP TONAWANDA ENGINE PLANT

Tonawanda, Erie County, New York

17310-01(001)GN-NF002 FEB 10/2005



LEGEND:

SNOW FENCE

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No	Revision	Date	Initial

Approved

GENERAL MOTORS POWERTRAIN GROUP
TONAWANDA ENGINE PLANT

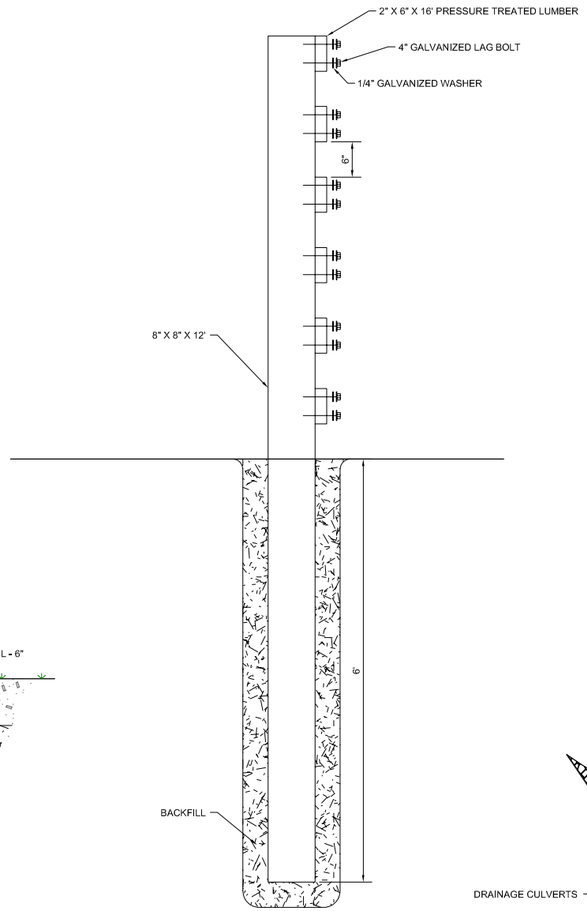
SOIL MANAGEMENT PROJECT SUMMARY

3.9 L. ENGINE EXPANSION PROJECT
FINAL SITE LAYOUT

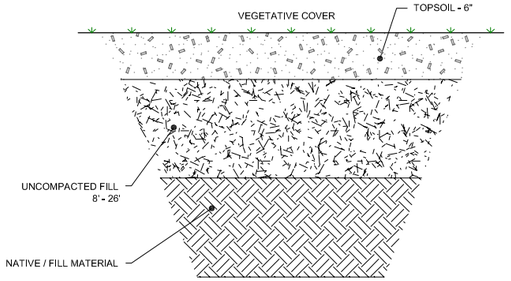
CONESTOGA-ROVERS & ASSOCIATES

Source Reference:			Date: DECEMBER 2004
Project Manager: D. HOYT	Reviewed By: S. MCEVOY	Designed By:	Drawn By: JM
Scale: 1"=40'	Project No: 17310-01	Report No: 001	Drawing No: 3

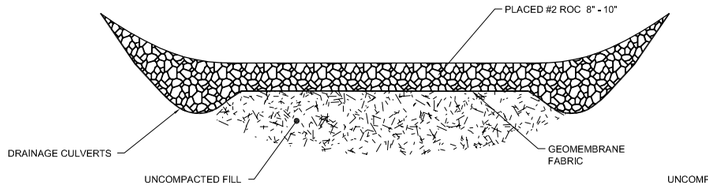
17310-01(001)GN-NF003 FEB 10/2005



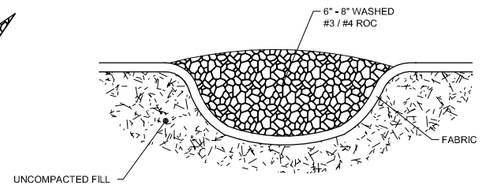
DETAIL 2
WINDBREAK FENCEPOST CONSTRUCTION
NTS



DETAIL 1
SOIL MANAGEMENT AREA COVER
NTS



DETAIL 3
ACCESS ROAD CONSTRUCTION
NTS



DETAIL 4
DRAINAGE DITCH
NTS

SCALE VERIFICATION: THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

No.	Revision	Date	Initial

Approved

GENERAL MOTORS POWERTRAIN GROUP
TONAWANDA ENGINE PLANT

SOIL MANAGEMENT PROJECT SUMMARY

3.9 L. ENGINE EXPANSION PROJECT
DETAILS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:			Date: DECEMBER 2004
Project Manager: D. HOYT	Reviewed By: S. MCEVOY	Designed By: S. MCEVOY	Drawn By: S. PIKE
Scale: NTS	Project No: 17310-01	Report No: 001	Drawing No: 4

17310-01(001)GN-NF004 FEB 10/2005

TABLE 1

CONTACTS FOR PROPERTY ACCESS
OPERATION AND MAINTENANCE PLAN
SOIL MANAGEMENT AREA
GENERAL MOTORS POWERTRAIN-TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

Contact Person and Address	*Responsibility*
ATTN: James F. Hartnett GMWFG Remediation General Motors Corporation 1 General Motors Drive STE2 Syracuse, NY 13206-1127 315-463-2391	ENCORE Project Manager
ATTN: Dennis Hoyt Conestoga-Rovers & Associates, Inc. 2055 Niagara Falls Blvd., Suite 3 Niagara Falls, NY 14304 716-297-6150	ENCORE Engineer
Niagara Mohawk Power Corp. 1800 Main Place Plaza Buffalo, NY 14202	High Tension Power Line Right-of-Way

TABLE 2

INSPECTION AND PREVENTATIVE MAINTENANCE SCHEDULE
OPERATION AND MAINTENANCE PLAN
SOIL MANAGEMENT AREA
GENERAL MOTORS POWERTRAIN-TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

Item	*Inspect For*	*Semi-Annually*	*Annually*
1. **SMA Cover and Miscellaneous Areas**			
Vegetated Soil Cover	- erosion, bare areas, washouts, leachate seeps, length of grass, dead/dying grass		**
	- mowing	**	
Access Roads	- erosion, obstructions, potholes, puddles, debris		**
Perimeter Fence	- integrity of fence, gates, locks, placement and condition of signs		**(1)
Grass	- bare areas, length of grass, dead/dying grass		**
Drainage Ditches	- sediment build-up, erosion, condition of erosion protection, obstructions, dead/dying grass		**
Culverts	- sediment build-up, erosion, condition of erosion protection, obstructions, debris		**
Snow Fences	- broken planks, twisting and warping planks, leaning fences, subsidence around support posts		**
	- UV wear/protection		**(2)
3. **Low-Lying Areas with Seasonal Standing Water**			
Water Levels	- general condition of water		**
Erosion Protection	- general condition and stability, replacement requirements		**
Sediments	- build-up of sediments, flow restrictions		**
Vegetated Cover	- bare areas, washouts, dead/dying plants		**
4. **Off-Site Surface Water Drainage Pathways**			
Ditches and Culverts			**

Notes:
1 - Anticipated frequncy of major repairs - every 15 years
2 - To be completed every 5 years

TABLE 3

POTENTIAL PROBLEMS AND APPROPRIATE CORRECTIVE ACTIONS
OPERATION AND MAINTENANCE PLAN
SOIL MANAGEMENT AREA
TONAWANDA, NEW YORK

Areas of Concern	*Potential Problem*	*Action*
SMA Cover		
Vegetated Soil Cover	Washout and erosion of grass, topsoil, clay, or sand. Typically on steep slopes.	Take immediate action to prevent further erosion and to protect exposed underlying soils. Recover washed out soil. This material may be used to restore the eroded area. Backfill with additional soil to original cover design thickness. Reseed with grass. If seeding slopes, consider erosion control mat to minimize further erosion.
	Bare areas.	Loosen and till topsoil. Re-seed and mulch as necessary. Perform restoration as soon as possible.
	Settlement of original cover. Standing water. Dry bare areas.	Assess size of settlement and potential impact to drainage or low permeability layers. Till topsoil and grade. Add additional topsoil if necessary. Check final elevation to ensure adequate drainage. Re-seed and mulch. Topsoil regrading should be sufficient to correct minor ponding. Additional soil may be required for significant ponding.
	Dead/dying grass (potential for erosion).	Till topsoil and re-seed. Cover with erosion control mat or mulch.
	Animal holes/burrows. Safety hazard. Potential for soil cover erosion.	Capture and remove rodents. Replace cover soil and topsoil as required in specifications. Seed and mulch.
	Sediment or obstruction in ditch, swale, or culvert. Smothering and killing of sod and interruption of normal surface water flow pattern.	Remove sediment and stockpile as topsoil for future repairs. Replace sod or re-seed and mulch if damaged.
	Groundwater seeps.	Evaluate seep for potential off-Site migration. Notify ENCORE Project Manager immediately (to be done by Engineering PM). If migrating off-Site, implement response activities to prevent further migration off-Site. Coordinate response activities with PM's.
Access Roads	Washed out surface gravel or sub-base material.	Recover washed out gravel. This material may be used to restore the eroded area. Backfill to specifications. Backfill and compact to original grade.
Access Roads (continued)	Potholes (potential safety hazard).	Backfill and compact to grade as required in specifications.
	Puddles (potential safety hazard).	Backfill and compact to grade as required in specifications.
	Obstructions (safety hazard).	Remove obstructions as soon as possible. Place in secure area pending off-Site removal.

TABLE 3

POTENTIAL PROBLEMS AND APPROPRIATE CORRECTIVE ACTIONS
OPERATION AND MAINTENANCE PLAN
SOIL MANAGEMENT AREA
TONAWANDA, NEW YORK

Areas of Concern	*Potential Problem*	*Action*
Gates and Locks	Vandalism. Site security.	Replace and secure locks as necessary. Make sure locks are operational.
Perimeter Fence	Forced entry or seasonal damage.	Notify Plant Security of damage if the damage is along the GM perimeter. Obtain authorization from ENCORE PM prior to repair or replacing damaged area.
Signs	Tampering or theft.	Repair or replace signs.
Drainage Ditches	Riprap displaced. Obstructions or debris.	Replace stone cover as specified. Remove obstructions or debris which may affect flow.
Snow Fences	Fence Leaning, Warped or Twisted Planks, Missing Planks	Notify Project Manager immediately. Determine Scope of Work to repair and provide information to PM.
Low-Lying Areas with Seasonal Standing Water		
Water Level	Overflow or dramatic variations in water level have potential for erosion or off-Site impact.	If levels are rising dramatically, check for sediment build-up and obstructions. Notify PM of potential off-Site flooding.
Erosion Protection	Displaced riprap. Potential for erosion in bare areas.	Replace riprap cover to original thickness. Repair or replace geotextile as needed.
	Washout of grass, topsoil, sand, or riprap typically on steep slopes. Take immediate action.	Backfill or replace displaced materials to match original cover. Sod or seed with turf grasses to match existing conditions, mulch if necessary. Refer to detail plan for construction and material specifications.
Low-Lying Areas with Seasonal Standing Water (continued)		
Slope/Bank Erosion	Obstructions causing overflow. Structural damage. Debris.	Remove obstructions and/or debris. Inspect for cracks or structural damages. Initiate repair as soon as possible.
Sediment Build-up	Obstruction to flow. May indicate erosion.	Remove sediments on a regular basis to maintain consistent flow conditions. Check for erosion problems upstream of sediment accumulation.
Other Unforeseen Problems		Record problem on Inspection Log. Notify Project Manager for appropriate action.

TABLE 4

PERSONNEL REQUIREMENTS
OPERATION AND MAINTENANCE PLAN
SOIL MANAGEMENT AREA
GENERAL MOTORS POWERTRAIN-TONAWANDA ENGINE PLANT
TONAWANDA, NEW YORK

Monitoring and Testing Activities (if necessary)	
• groundwater monitoring	one person monitoring/sampling crew
• low-lying areas monitoring	one person monitoring/sampling crew
• discharge (seeps) monitoring	one person monitoring/sampling crew
Inspection Activities	
• all inspection activities	one Inspector
Maintenance Activities	
• all maintenance activities	one Inspector plus Maintenance Contractor's crew
Operation Activities	
• all operation activities	as appropriate

APPENDIX A

STANDARD FORMS

INSPECTION LOG

PROJECT NAME:		PROJECT LOCATION:	
PROJECT NO.:		DATE OF INSPECTION:	
WEATHER:		INSPECTORS:	

Item	*Inspect For*		*Action Required*	*Comments*
1. Soil Management Area Cap				
☐	Vegetated Soil Cover	- erosion		
☐		- bare areas		
☐		- washouts		
☐		- leachate seeps		
☐		- length of grass		
☐		- dead/dying grass		
☐	Access Roads	- erosion		
☐		- obstructions		
☐		- potholes		

INSPECTION LOG

PROJECT NAME:		PROJECT LOCATION:	
PROJECT NO.:		DATE OF INSPECTION:	
WEATHER:		INSPECTORS:	

Item	*Inspect For*		*Action Required*	*Comments*
1. Soil Management Area Cap (con't)				
☐	Access Roads (con't)	- ponding of water		
☐		- debris		
☐	Perimeter Fence	- integrity of fence		
☐		- integrity of gates		
☐		- integrity of locks		
☐		- placement & condition of signs		

INSPECTION LOG

PROJECT NAME:		PROJECT LOCATION:	
PROJECT NO.:		DATE OF INSPECTION:	
WEATHER:		INSPECTORS:	

Item	*Inspect For*		*Action Required*	*Comments*
1. Soil Management Area Cap (con't)				
☐	Grass	- bare areas		
☐		- length of grass		
☐		- dead/dying grass		
☐	Drainage Ditches	- sediment build-up		
☐		- erosion		
☐		- condition of erosion protection		
☐		- flow obstructions		
☐		- dead/dying grass		

INSPECTION LOG

PROJECT NAME:		PROJECT LOCATION:	
PROJECT NO.:		DATE OF INSPECTION:	
WEATHER:		INSPECTORS:	

Item	*Inspect For*		*Action Required*	*Comments*
1. Soil Management Area Cap (con't)				
☐	Culverts	- sediment build-up		
☐		- erosion		
☐		- condition of erosion protection		
☐		- flow obstructions		
☐	Snow Fences	- damaged boards		
☐		- damaged anchor posts		
☐		- subsidence		
☐		- leaning fence rows		

MAINTENANCE RECORD LOG

PROJECT NAME:	_____	**PROJECT LOCATION:**	_____
PROJECT NO.:	_____	**DATE OF MAINTENANCE:**	_____
WEATHER:	_____	**INSPECTOR(S):**	_____
			_____

1. Date: |____|____|____|____|____| (MM DD YY)

   Time: |____|____|____|____|____| (HH mm)

   Scheduled/Unscheduled (Circle One): Scheduled Unscheduled

   Type of Maintenance Performed: _____

2. Company Performing Maintenance:

   Name: _____

   Address: _____

   _____

   Contact Name: _____

3. Methods Used:

_____

_____

_____

_____

Description of Maintenance Activity:

_____

_____

_____

_____

Problems/Comments:

_____

_____

_____

_____

Inspector: _____ Signed: _____ Date: _____