Long Term Pollution Prevention & Stormwater Operation and Maintenance Plan

Morrison Farm
116 - 120 Concord Road
Acton, MA

November 2015

Submitted to:
Acton Board of Selectmen and
Conservation Commission
Acton Town Hall
472 Main Street
Acton, MA 01720

Submitted by:
Morrison Farm Committee
Tom Tidman
472 Main Street
Acton, MA 01720

Prepared by:
Goldsmith, Prest & Ringwall, Inc.
39 Main Street, Suite 301
Ayer, MA 01432

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121084

GPR Engineering Solutions for Land & Structures

LONG TERM POLLUTION PREVENTION & STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Preface:

The goal of this manual is to improve water quality by initiating performance standards for the operation and maintenance of stormwater management structures, facilities, and recognized practices. The stormwater performance standards are set up to meet the statutory and regulatory authorities of the Department of Environmental Protection, including the Wetland Protection Act, surface water discharge permits under the Clean Waters Act, the 401 certification program for fill in wetlands, and the 401 certification of federal permits based on the water quality standards.

The local Conservation Commission and the Department of Environmental Protection are responsible for ensuring the protection of wetlands through the issuance of permits for activities in flood plains and in or near wetlands, as per the Wetlands Protection Act, MGL c.131 s. 40. Proposed work within a resource area or a one hundred (100') foot buffer zone requires an order of conditions.

Resource areas include freshwater and coastal wetlands, banks, beaches, and dunes bordering on estuaries, streams, riverfront, ponds, lakes, or the ocean; lands under any of these bodies of water; land subject to tidal action, coastal storm flowage, or flooding.

The discharge of pollutants to water of the Commonwealth without a permit is prohibited under the state Clean Waters Act, MGL c. 21, ss 26-53. Stormwater discharges are subject to regulations when two criteria are met under 314 CMR 3.04(2). First, there must be "conveyance or system of conveyances (including pipes, ditches, and channels) primarily used for collecting and conveying stormwater runoff." 314 CMR 3.04(2)(a). Second, the stormwater runoff must be "contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, or oil and grease," or, be designated on a case-by-case basis. Such designations must be made when the "stormwater discharge" is subject to effluent or toxic pollutant limitations, is located in an industrial plant area, or may be a significant contributor of pollutants to waters of the Commonwealth. Any activity resulting in a discharge to waters of the United States must comply with Section 401 of the Federal Clean Water Act and comply with state water quality standards. All stormwater discharges must be set back from the receiving waters or wetlands and best management practices (BMP) must be implemented. A permit is required for any stormwater discharge to an Outstanding Resource Water (ORW) which meets the regulatory definition in 314 CMR 3.04(2). Outstanding Resource Waters are defined under Surface Water Quality Standards 314 CMR 4.06 and include public surface water supplies, coastal and some inland Areas of Critical Environmental Concern (ACECs), and certified vernal pools.

This manual is set up to explain how to operate and maintain Best Management Practices that control erosion and minimize delivery of sediment and other pollutants to surrounding water and air.

Chapter 1 is an introduction to the site and describes the Best Management Practices used on this site.

Chapter 2 outlines the inspection and maintenance schedules for the site.

Chapter 3 shows the location of the Best Management Practices used on-site.

Chapter 4 outlines the operation and function of the Best Management Practices.

Chapter 5 describes how and when the Best Management Practices should be inspected and how frequently they must be maintained and cleaned.

1. Introduction:

The proposed development is located at 116 - 120 Concord Road, Acton, MA, adjacent to Acton's Ice House Pond and off Great Road. The project area is comprised of two parcels, F4-34 and G4-27 per the Acton Town Assessor, and is used as a park and nature walk. This manual is limited to the parking area, driveway, boat launch and areas that are directly adjacent that were permitted in 2015 and have been designed in accordance with the Massachusetts Stormwater Handbook. While the intent of this Manual is to be a free standing document complying with current stormwater management regulations, the property owner and BMP caretakers should make every effort to incorporate it into any current, applicable operation manuals and care practices.

The project site contains a Recycled Asphalt Paving (RAP) driveway, a boat launch and an existing foundation of a former Ice House that incorporates a pervious pavement parking lot and a landscaped area within it. The site generally slopes towards a wet swale located adjacent to the southeastern corner of the foundation footing. Slopes are generally consistent at 1-3%. The site contains a bordering vegetated wetland (BVW) to the north which continues along the bank of Ice House Pond tributary to Nashoba Brook. A drainage swale to the west of the site conveys stormwater from Concord Road into the northern BVW. The wetland resource area and Ice House Pond are protected by, but not limited to, the Wetlands Protection Act, Massachusetts Department of Environmental Protection and the Town of Acton Conservation Commission, including the Acton Wetland Bylaw Rules and Regulations and Chapter F.

To control erosion and minimize delivery of sediment and other pollutants into the atmosphere and adjacent wetlands, Best Management Practice (BMP) has been provided within the site's stormwater management system. These practices include but are not limited to:

- Porous Pavement;
- Water Quality Swale.

This manual is designed to help responsible parties become aware of non-point pollution problems and to provide detailed information about operating and maintaining stormwater management practices. The success of the Best Management Practices is dependent on their continued operations and maintenance.

2. Maintenance Requirements:

BMP's Owners:

- The OWNERS of the BMP's shall be the person, persons, trust, corporation, etc., or their successors who have title to the land on which the BMP is located. It is anticipated that all BMP's will be owned and maintained by the Morrison Farm Committee. Should the title of land upon which they are located is transferred the purchaser of the property, at that time, will assume all responsibilities set forth within this document.

Operation and Maintenance Responsibilities:

- The party or parties responsible for the funding, operation and maintenance of the BMP's shall be the OWNER or their designees.
- BMP's each have specific maintenance requirements to ensure long-term effectiveness. These stormwater management systems will be operated, inspected and maintained on a regular basis **by a qualified professional with expertise in inspecting drainage system components**. All of the stormwater BMP's shall be kept in good working order at all times.
- A maintenance agreement providing for the funding, operation and maintenance of all the stormwater management BMP's shall be provided.

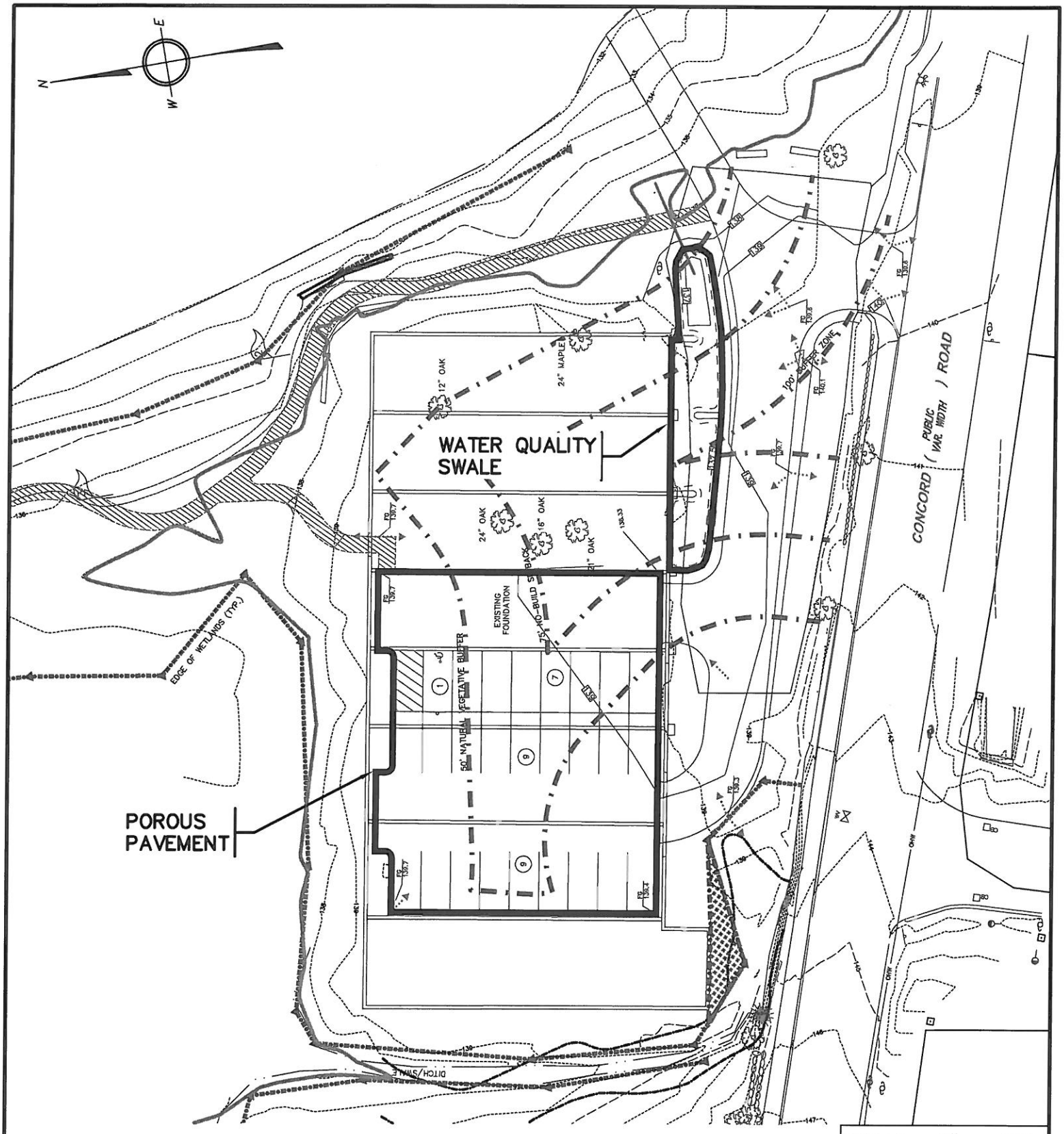
Source of Funding for Operation and Maintenance:

- The party or parties responsible for the funding, operation and maintenance of the BMP's shall be the OWNER or their designees.
- A maintenance agreement providing for the funding, operation and maintenance of all the stormwater management BMP's shall be provided.
- Approximate estimated annual maintenance costs for the site are:

-	Street sweeping -	$500 to $1,500 (depending on frequency and type of sweeping preformed)
-	Water Quality Swale	$250

Schedule for Inspection and Maintenance:

* BMP's each have specific maintenance requirements to ensure long-term effectiveness. These stormwater management systems will be operated, inspected and maintained on a regular basis in accordance with this manual. All of the stormwater BMP's shall be kept in good working order at all times.
* As a minimum, the OWNER shall follow the general guidelines outlined herein for the BMP's provided on this site.
* An Operation and Maintenance log must be maintained for the last three years, outlining inspections, repairs, replacement and disposal for each Best Management Practice (BMP). In the case of disposal, the log shall indicate the type and material and the disposal location. This rolling log shall be made available to the Mass DEP and/or the Acton Conservation Commission upon request.



SCALE : 1" = 40'

GPR Engineering Solutions for Land & Structures

GOLDSMITH, PREST & RINGWALL, INC.
39 MAIN STREET, SUITE 301. AYER, MA 01432
CIVIL ENGINEERING · LAND SURVEYING & LAND PLANNING
VOICE: 978.772.1590 FAX: 978.772.1591
www.gpr-inc.com

116 – 120 CONCORD ROAD
ACTON, MASSACHUSETTS

BEST MANAGEMENT PRACTICE LOCUS

JOB: 121084
BY: JEG | CHK: DEM
DATE: NOV.. 2015

P:\12---\121084\DWG\PERMIT\SITE IMPROVEMENTS.DWG 11-09-15 2:10:23 PM – LAYOUT BMP LOCUS

4. Operation of Best Management Practices:

Porous Pavement – is a paved surface with a higher than normal percentage of air voids to allow water to pass through it and infiltrate into the subsoil. This porous surface replaces traditional pavement, allowing parking lots, driveways and roadway runoff to receive water quality treatment and infiltrate directly into the soil at the point of collection. The porous pavement is a system that includes the porous pavement overlying a layer of smaller aggregate (choker course) which provides filtering of the runoff and a stone bed (reservoir) that stores runoff before it infiltrates into the underlying parent soil. Permeable paving techniques include porous asphalt, porous concrete, paving stones and even manufactured "grass pavers" made of concrete or plastic. The many different types of porous pavement allow for it to be used on a wide range of applications, including walkways, patios, plazas, driveways, parking stalls and overflow parking areas, to identify a few. The functions of porous pavement include:

- Reduce stormwater runoff volume from paved surfaces having to be collected and treated by other BMP's;
- Reduce peak discharge rates by capturing runoff as close to it origin;
- Reduce pollutant transport through direct treatment and infiltration.

Water Quality (Wet) Swales – are grassed open channels which convey stormwater to appropriately designed water quality basins significantly reducing the pollutant load and sediment load introduced into the water quality basin.

- provide runoff volume control by means of gradual infiltration of stormwater, as it passes through the water quality swale.
- provide moderate to high pollutant removal through sedimentation, filtration, nutrient uptake, and infiltration.

Street Sweeping – is a nonstructural source control preformed by mechanical means in an effort to limit sediment and particulates from impervious surfaces as an effort to control or limit the sediment migration to other stormwater BMP's during storm events. There are three typical types of sweeping methods, including mechanical, regenerative air and vacuum filter. Mechanical sweepers are the most common and use brooms or brushes to scour the pavement. Regenerative air sweepers blow air onto the impervious surface causing sediment and other fine particles to be blown from the surface so they can be vacuumed. Vacuum filter sweepers are available in wet and dry types. Dry types use brooms to agitate the sediment prior to vacuuming. Wet types work in a similar fashion but use water to suppress dust during the collection activity. The functions of street sweeping include:

- Limit sediment and other fine particulates on impervious surfaces from entering other BMP's;
- Remove and prevent the accumulation of sediment along road and driveway edges.

5. Inspection and Maintenance of Best Management Practices:

Porous Pavement – The functionality of any porous pavement surface requires not only routine maintenance to ensure its continued performance but also preventative measures. Winter sanding of the porous surface should be minimized to prevent clogging of the porous surface and underlying choker and reservoir areas. At a minimum, the porous pavement shall be inspected after every major storm event (1-inch of rain or greater) for the first six (6) months, then 2 to 4 times per year thereafter, depending on the intensity of use.

Surfaces shall be inspected to ensure that the paving surface drains properly during and after storm events. Surfaces and the perimeter should be inspected for any deficiencies, deterioration and areas of accumulated sediment, at a minimum once per year. Surface shall be vacuumed at least once per year or as necessary as intensity of use conditions demand to ensure the porous pavement remains in proper working order (see Street Sweeping procedures below). Cleaning of the surface using a power washer to dislodge trapped participles and then vacuum sweep the areas using a well maintained regenerative air vacuum is recommended.

During winter maintenance / snow removal, sanding of the porous pavement shall be minimized and not directly applied to the section itself. Plow edges should be well maintained and fitted with shoes or rollers. Where possible, plow passes should be made at a 45-degree angle to the slab joints. Inspect the units after the spring thaw to identify and replace any damage caused during the winter.

Collected sediment and debris will be properly disposed of per local, state and federal requirements. Any sediment and debris removed from the porous pavement deemed to be contaminated must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

Water Quality (Wet) Swales - at a minimum shall be inspected after every major storm event for the first six (6) months, then in the spring and fall of every year, thereafter.

Water quality (wet) swales shall be mowed a minimum of once per year. Grass clippings should be removed to a non-sensitive area. Repairs and reseeding should be done as required. Sediment and debris should be removed manually, a minimum of once per year or when the sediment level reaches a depth of 3”.

Collected sediment and debris will be properly disposed of per local, state, and federal requirements. Any sediment and debris removed from the sediment forebay deemed to be contaminated must be evaluated in accordance with the Hazardous Waste Regulations, 310 CMR 30.000, and handled as hazardous waste.

Street Sweeping / Pavement Area - At a minimum, the parking area will be inspected every spring to determine if any damage has occurred from snow plowing operations. Additionally, asphalt and curbing should be checked every six (6) months [Spring & Fall] in high traffic areas and truck travel areas for damage.

Curbing and/or asphalt is to be repaired using similar materials, to prevent erosion to surrounding soils.

Access drives and parking areas aggressively maintained through the use of mechanical sweepers. Vacuum, regenerative air or rotary broom sweepers may be used at the minimum schedule outlined below:

Vacuum Sweeper (wet or dry)	An average of once per month over the period of each year
Regenerative Air Sweepers	An average of once every two weeks over the period of each year
Rotary Broom Sweepers	An average of once per week over the period of each year

Regardless of type of sweeper used, sweeping will be scheduled primarily in the spring immediately following winter snowmelt and again prior to the first frost of the year in the fall, with the remaining sweepings at regular intervals between these times. The above schedule may be modified in connection with the use of alternative de-icing methods to impervious surfaces during the winter months, such as brine solutions that are applied as a liquid rather than traditional sand and salt methods.

Snow shall not be stockpiled in wetland areas or any of the Best Management Practice areas. Every effort shall be made to plow snow so when it melts, the runoff will be toward a best management practice which provides treatment.

Best Management Practices (BMP) Inspection Log

General Information			
Project Name	Morrison Farm		
Location	116 - 120 Concord Road, Acton, MA		
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications			
Type of Inspection: ❑ Regular ❑ Emergency			
Weather Information			
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds ❑ Other: Temperature:			
Are there any discharges at the time of inspection? ❑Yes ❑No **If yes, describe:**			

Site-specific BMPs

- *The structural BMPs are identified on the BEST MANAGEMENT PRACTICES LOCUS included within the LONG TERM POLLUTION PREVENTION & STORMWATER SYSTEM OPERATION & MAINTENANCE PLAN. Carry a copy of the Locus map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		❑Yes ❑No	❑Yes ❑No	
2		❑Yes ❑No	❑Yes ❑No	
3		❑Yes ❑No	❑Yes ❑No	
4		❑Yes ❑No	❑Yes ❑No	
5		❑Yes ❑No	❑Yes ❑No	
6		❑Yes ❑No	❑Yes ❑No	
7		❑Yes ❑No	❑Yes ❑No	
8		❑Yes ❑No	❑Yes ❑No	
9		❑Yes ❑No	❑Yes ❑No	
10		❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are discharge points and receiving waters free of any sediment deposits?	❑Yes ❑No	❑Yes ❑No	
2	Are storm drain inlets properly working?	❑Yes ❑No	❑Yes ❑No	
3	Is trash/litter from site areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
4	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	
5	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No	
5	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No	
6	(Other)	❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature:_____ Date:_____