

CITY OF SACO

DEPARTMENT OF PUBLIC WORKS

TRANSFER STATION OPERATIONS MANUAL

Revised January 2001

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EMERGENCY PHONE NUMBERS

FIRE DEPARTMENT	(207) 282-3244
POLICE DEPARTMENT	(207) 284-4535
MAINE STATE POLICE	1-800-452-4664
PUBLIC WORKS DEPARTMENT	(207) 284-6641

## **SACO TRANSFER STATION OPERATIONS MANUAL**

### **1.0 GENERAL**

The purpose of this Operations Manual is to describe the policies and procedures to be utilized in the day to day operations of the Saco transfer station. All transfer station operations personnel shall read this manual in its entirety prior to the start of initial operations. If there are any questions concerning this manual, a supervisor should be contacted. Failure to follow this manual could result in termination of employment.

The Site Supervisor reports directly to the Manager of BBI Waste Services, Inc. The Site Manager is responsible for:

1. overseeing the day-to-day operations of the transfer station.
2. Keeping track of the types of waste received, the volume, and the community that generated it.
3. Estimating the amount of waste received by volume from each generator for billing purposes.
4. Ensuring that only acceptable wastes are received at the facility.
5. For loading the debris into the transfer trailers. In addition, the supervisor is responsible for compacting the waste as much as possible with the bucket of the front end loader.

For reference, current Maine Department of Environmental Protection Solid Waste Management Rules for transfer stations is Chapter 11.

Appended is a copy of the site layout plan which reflects individual storage areas.

### **2.0 ACCESS TO FACILITIES**

All vehicles shall enter the site from Route 112 and Foss Road to the gravel access road on the northerly side of Foss Road, approximately 1400' from Route 112. The gate on Foss road shall be locked during non-operational hours. All vehicles will stop at the portable office to have their loads inspected by the attendant. The Transfer Station accepts demolition debris, white goods, wood waste and tires. The operating hours are from 8:00 a.m. to 4:00 p.m in the Fall/Winter (Oct 29th to Apr. 1) and from 9:00 a.m. to 5:00 p.m.(April 2nd to Oct 28th) during the Spring/Summer. They are closed on Thursdays and Sundays. The operating hours are posted at the gate. An attendant shall be on duty at the site during all operating hours.

### **3.0 TYPES OF WASTE ACCEPTED**

This transfer station will only accept construction/demolition debris, wood waste, white goods and tires. The following is a brief description of each waste stream:

#### **3.1 Construction/Demolition Debris**

Debris resulting from construction, remodeling, repair and demolition of structures or the clearing of land, and consisting solely of brush, stumps, soil material, rocks, bricks, concrete, steel, pipe, asphalt or other masonry materials.

#### **3.2 Wood Waste**

Wood Waste may contain brush, stumps, lumber, bark, woodchips, shavings, slabs, edgings, slash and sawdust.

#### **3.3 White goods**

Large appliances, including but not limited to stoves, refrigerators, freezers, washing machines, clothes dryers, dishwashers and air conditioners. other metal will also be accepted.

#### **3.4 Tires**

All types of tires shall be accepted at the transfer station.

Only the above types of materials will be accepted at this transfer station. All other items will be rejected by the Site Manager and the hauler shall immediately remove the material from the site. Haulers that repeatedly haul unacceptable material to the transfer station will have their dumping privileges revoked. No asbestos, drums or cans with any residue inside will be accepted.

Burning the wood waste on site is not allowed. All non-recyclable waste received on site will be transferred to an acceptable solid waste disposal facility. No waste is to be landfilled at the transfer station site. Wood waste is separated and shipped to FTI in Lewiston to be chipped and ultimately used as fuel. White goods, metal and tires are separated and recycled.

The construction/demolition debris, tires, wood waste and white goods will be deposited in the respective areas denoted on the Site Layout Plan. At the end of each operating day,

all waste shall be loaded into a trailer so that there is no waste on the ground.

### 3.5 Transfer storage trailers; covering/construction

The Saco Transfer station is not designed or equipped to handle liquid waste streams. Therefore, the storage trailers and containers shall be watertight and covered for protection when not in active use.

## 4.0 CLEANUP PROCEDURES

"The Saco Transfer Station does not have and is not permitted for the use of water or other liquids for cleaning of the facility or adjacent grounds. Roll off containers shall be periodically cleaned offsite at a facility designed to receive and treat the wash down waters. The transfer station site shall be monitored in a biweekly basis and cleaned as follows:

- o Any litter shall be collected from the grounds at the end of each operating day and litter loaded into a trailer.
- o Any evidence of or liquid spills which occur during the operations shall be cleaned with a dry absorbent material.
- o The wet retention pond shall be monitored with any debris or floatable materials removed and properly disposed.
- o If any oil sheen is observed on the pond surface, it shall be removed with floatable oil sorbent.
- o The pavement area shall be swept on an "as needed" basis.

Dry absorbent and floatable oil absorbent shall be kept at the field office at all times.

## 5.0 DUSTS AND ODOR CONTROL

Odors will not be a problem because no putrescible waste will be accepted. The access road will be periodically watered down if dust becomes a problem.

## 6.0 HAZARDOUS/SPECIAL WASTE EXCLUSION PLAN

"The Transfer Station is licensed to handle removal of solid wastes including:

- o Wood Waste
- o Clean construction debris
- o Tires
- o Metal/White goods

In the event that a load of waste is received at the transfer station which is believed to be special and hazardous wastes or which is not clearly identifiable as one of the above waste types, it shall be isolated, roped off, and the facility would be closed. Appropriate authorities shall be contacted immediately to access the wastes. Where possible, the source and responsible party for the undefined waste should be recorded. During the interim period between roping off the facility and review by authorities, no sorting or other handling of the non-defined waste should occur."

## **7.0 EQUIPMENT**

Front-end loaders provided and operated by the Saco Public Works Department will be used to load the transfer trailers and compact the waste in the trailers. No other mechanical equipment is necessary on the site.

### **7.1 Equipment Maintenance**

The operator shall maintain a log of any equipment breakdowns at the site. Those breakdowns, which result in temporary closure of the facility shall be expressly noted. It shall be the responsibility of the operator to maintain all equipment to minimize shutdown of the facility. In the event of equipment breakdown, the operator shall contact the City of Saco Public Works Director in order that substitute equipment can be brought to the site.

## **8.0 HOT LOAD AREA**

### **Hot Loads Area**

A hot loads area has been provided on the transfer station site. After the hot load has cooled the material shall be examined carefully to insure that all burning has ceased. The material should be collected and if appropriate, disposed of in the suitable containers on the site. In the event that the material is not suitable for disposal at the site it should be collected, removed, and properly disposed.

In the event that uncertainties exist, the area shall be secured and appropriate authorities contacted to review the disposition of the material (see procedure for hazardous/special wastes).

## **9.0 FIRE PROTECTION**

The Saco Fire Department will be available, if needed, to provide emergency services. The loader will be provided with a detachable fire extinguisher. The Saco Fire Department phone number is 282-3244.

#### Fire Prevention/Control

The facility has a designated area for hot loads. When a hot load is received, it should be placed in the hot load area and the following procedure used:

- The Fire Department should be contacted as a precaution to explain that a hot load has been received and that nature of it explained. A decision on whether Fire Department assistance is needed immediately should be made. If not, the Fire Department should be told a second call will be placed after the hot load is extinguished.
- The hot load should be spread in a thin layer. Minor fires should be extinguished using fire extinguishers which should be kept inside the office at all times.
- If the hot load does not cool or poses any risk of fire, contact the Fire Department.
- After the hot load has cooled or been extinguished, the Fire Department should be notified.
- On any days when a hot load has been received, the following procedures should be used:
  - Prior to closing the facility for the day, the Police Department should be notified that a hot load was received, the nature of it explained, etc.
  - The Operator should log the date and nature of the hot load in the permanent records for the facility.

#### **10.0 SAFETY**

1. Equipment will not be operated when public is present. Keyed operators will be used to prevent unauthorized operation.
2. Salvaging by the public will not be permitted.
3. No loitering will be allowed at the site.
4. No refrigerators or freezers will be accepted with doors still attached.
5. Employee shall be trained in first aid and cpr annually.
6. A first aid kit will be kept on site at all times.

7. Place emergency telephone number near the telephone.
8. Lock all gates when station is unattended.
9. In winter, keep all access areas around hopper sanded or free from ice and snow to prevent vehicles or people from sliding into hopper.

#### **11.0 SITE OPERATION**

The Transfer Station layout is denoted on the "Site Layout Plan." Construction/demolition debris shall be unloaded in the storage area denoted on the plan. The clean wood waste shall be separated from the other material and loaded into a separate trailer. The front-end loader will transfer other debris to the transfer trailer located adjacent to the retaining wall. After the debris is transferred to the trailer, the front end loader bucket will be used to compact the debris in the trailer further. When the trailers are full, they shall be removed from the dumping area, and the material either disposed of or recycled.

White goods will be deposited in the designated area shown on the "Site Development Plan". They are loaded into roll-off containers as they arrive on-site. When a trailer is full, it will be hauled offsite for recycling.

There are no restrictions, based on residency, on using the transfer station facility. Saco residents receive a yearly 3 cubic yard allowance free of charge. A card will be presented by Saco residents upon entering the facility. The card should be punched by the Site Manager to indicate the yardage of waste delivered to the site. When a resident's card is full they will be required to pay the standard rate per cubic yard for disposal. The rates are as follows:

Saco residents	-	\$20/cubic yard
Saco commercial	-	\$22/cubic yard
Non Residents	-	\$22/cubic yard

Volumes are determined based on the vehicle type entering the facility as shown below:

#### Yardage Conversions

A. Cars/Station Wagons	1.0	cu.yds.
B. Pickup - Half load	1.50	cu.yds.
C. Pickup - Full load	3.0	cu.yds.
D. Pickup with sideboards.	By measurements	
E. Compact pickup	2.0	cu.yds.
F. Compact pickup with sideboards	By measurements	
G. Trailers (41x81)	3.0	cu.yds.
H. Trailers (41x81) with sideboards	By measurements	

Detailed records of the volumes and types of waste delivered to the facility should be kept, along with the residence of the delivering party. Daily forms utilized to City's requirements. Appended are samples. Tires will be deposited in a 10-yard bin and hauled offsite for recycling when the bin is full.

**12.0 MAINTENANCE OF THE ACCESS ROAD**

The maintenance of the access road is the responsibility of the City of Saco.

**13.0 WET POND FACILITY**

Wet Pond Facility

The Saco Transfer Station is an open facility and is not designed for the use of liquids in cleanup. Because of the open nature of the facility, the use of water tight containers and keeping the containers covered is mandatory. The wet pond should be inspected on a twice-weekly basis with debris and floatable removed. If any oil sheen is observed, it should be removed from the pond using the oil solvent material.

In the event of an accident spill, all material in the immediate spill area should be cleaned up as soon as possible. The wet pond offers a secondary containment mechanism. In the event of a spill which results in a discharge to the wet pond, the outlet of the wet pond should be sealed using an inflatable pipe plug or sand bags. (A suitable plug and a manual inflator or sand bags should be kept at the operator's office at all times). Subsequently, the material should be removed from the pond.

In the event the accidental spill contains non-floatable containments, contact appropriate authorities. After cleanup, the plug should be removed.

**14.0 WET POND MAINTENANCE**

The maintenance of the wet pond is the responsibility of the City of Saco. Pond maintenance procedures are attached as an appendix to this manual.

**14.1 SACO PUBLIC WORKS TELEPHONE LIST**

Larry Nadeau.....Director.....284-6641  
Dale Shannon.....Recycling Foreman.....284-6641  
Amy Oliver.....Administrative Assistant...284-6641  
Mike Tilley.....Facilities Supervisor.....282-4646

## NEW SACO TRANSFER STATION APPLICATION

### WETPOND INSPECTION/MAINTENANCE DESCRIPTIONS

#### A. Level LIP Spreader

##### Preface

The outflow from any storm water management ponds is generally directed over a level lip spreader. This is a device to spread the outflow over a considerable area to achieve sheet flow conditions as the flow disperses to a Non-disturbed vegetated area. This spreading of flow avoids potential erosion of the natural surface, and promotes additional non point pollutant removal through absorption by vegetation and organics in the soil.

##### Inspection

The level lip spreader unit should be inspected frequently as accumulation of debris can negate its benefits. Any debris noted should be immediately removed to allow uniform flow over the weir. The spreader should also be observed for any signs of "piping" or water migration under or around the weir. This will be evident by sags in the riprap, or signs of siltation on the outlet side of the weir.

Periodically, the weir must be checked for elevations to assure it is level. Elevations should be taken on the weir at the end supports and at all intermediate supports to an accuracy of 0.01 feet. The elevation across the weir should not vary by more than plus or minus 0.01 feet.

##### Maintenance

Debris should be removed from the spreader weir at each inspection. The weir level should be adjusted through the bolts and adjustment slots provided in the weir or other pertinent design feature. Any evidence of "piping" or flow short-circuiting should be repaired immediately upon documentation of its presence.

##### Frequency

The level lip spreader should be inspected monthly. The weir elevations should be checked and adjusted semi-annually, typically in April and November.

### Applicability

A level lip spreader exists on the pond outlet.

## **B. Spreader Outlets**

Preface: The function of the level lip spreader is to disperse pond outflow onto adjacent undisturbed ground to achieve sheet flow. The sheet flow condition will enhance additional surface water contaminant uptake by vegetation, and will prevent erosion of the natural soils. It is vital that the sheet flow conditions be maintained in the receiving area of the spreader outlet.

Inspection: The natural undisturbed area that receives flow from the level lip spreader should be inspected to observe any erosion or channelization that would tend to concentrate flows that negate the desired sheet flow conditions. The area should also be inspected for silt accumulation that may indicate migration of soil particles under the spreader.

Maintenance: Should inspection reveal indications of flow concentration, the spreader-outlet riprap pads should be adjusted to minimize flow concentration. Any erosion gullies or channels that are identified should be filled and seeded to reestablish sheet flow conditions.

Frequency : The spreader outlets should be inspected on a semi-annual basis in conjunction with the elevation checks on the weirs. Maintenance on the outlet pad riprap or repair of any erosion channels should be undertaken in a timely manner to prevent further erosion.

## **C. Emergency Overflow Channel**

Preface: Most storm water ponds are designed for a specific storm event. When major storm events occur, the capacity of the pond may be exceeded. Typically all ponds are equipped with an emergency spillway channel to carry peak flows in excess of the rated storm event. These channels are normally rip rapped with a riprap outlet pad to conduct flow down the berm or embankment. The riprap at the top of the overflow channel is occasionally set in concrete to restrict flow from lower storm events.

Inspection: While the emergency overflow channel will operate infrequently, it is important to assure that it is operable as intended when the need arises. The channel must be inspected to assure the stone riprap (or other surface) is stable and has not been removed or displaced by vandals.

While random grass growth between stone is acceptable, the area should be inspected to note any larger--brush or trees

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which could become established in the spillway channel and outlet pad.

Maintenance: Requirements for the emergency spillway should be limited. If displacement of any stones in the riprap is noted they should be replaced and chinked. Any brush or trees which become established should be cut and kept in a cropped condition. Any debris that may accumulate in the channel should be removed.

Frequency: The emergency spillway should be inspected on an annual basis, and after a high intensity rainfall event (in excess of 3 inches in a 24-hour period). Maintenance should be conducted on an as needed basis.

Applicability: The wet pond includes an emergency overflow.

**D. Control Structures**

Preface: Some ponds may also serve as hydraulic detention ponds that may require a special flow control structure, usually consisting of weirs and orifices in a manhole structure. The hydraulic function of these structures must be assured to allow proper function of the overall facility. Such control devices may also exist on the tributary drainage system upstream of the pond. These units should be included in any maintenance program.

Maintenance: Maintenance of the control structure will consist primarily of removing debris and silt, which may accumulate. If an orifice plate or weir plate becomes damaged, it should be replaced. Out of level weir plates should be adjusted to achieve design conditions. orifice and weir edges should be wire brushed to remove corrosion.

Frequency: The control structure should be inspected semi-annually, and after a high intensity rainfall event (in excess of 3 inches in a 24-hour period). Debris and silt should be removed during each inspection. orifice or weir replacement on adjustment should be on an as needed basis.

Applicability: The pond has an outlet control structure.

Comments: See special provisions for handling of accidental spills.

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#### **E. Pond Beams**

Preface: Many times pond construction will include installation of an earthen berm or dike to contain the water. This berm must maintain its integrity to contain water without catastrophic leakage. Erosion or piping could cause pond failure. It is critical that the integrity of the berm be maintained.

Inspection: The hydraulic control structure must be inspected to assure it maintains its intended hydraulic characteristics. The inspection would note any debris or sediment which may accumulate in the structure and in the incoming and outlet pipes. It is noted that it does not take much debris or silt to alter the hydraulic characteristics of a control orifice. The orifice plate should be inspected to assure it is held firmly in place, and that it is not corroded or the perimeter damaged to the extent that its flow characteristics may be altered.

If the structure has a weir plate it should be checked for its design elevation, to make sure it is level across the weir length.

Inspection: The berm must be periodically inspected to note any sags, slope sloughing, erosion, cracking, or undesirable tree growth. Inspection can be best accomplished at low pond level in the late summer to allow observation of normally submerged slopes. Any defects in the berm must be noted and documented. It is noted that on larger ponds muskrats can burrow into the sidewall to the extent that the wall's structural integrity can be diminished. Dry ponds may have occasional problems with burrowing animals.

Maintenance: Tree or large shrub growth on the berms should be discouraged as root penetration can allow "piping" of water along the root which can lead to significant erosion. The ground cover should be mowed to prevent shrub or tree growth.

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Any noted sags, or slope sloughing should be corrected after the causative factor has been identified and mitigated. If muskrat burrows become a problem the muskrats should be trapped and removed from the site. This should be accomplished in cooperation with wildlife officials. Some situations have occurred where burrowing animals cause a significant problem with pond integrity. While this situation is generally rare, in certain instances it may warrant placement of a barrier. Chain link fence with shallow cover has been a successful deterrent in some cases.

Frequency: Berm inspections should be done annually during a low water regime. The berm should be mowed monthly during the growing season. Repair of any berm defects should be accomplished in a timely manner to limit further deterioration.

Applicability: The south and easterly side of this pond are berms.

#### **F. Vegetation in Pond**

Preface: Typically, ponds constructed for stormwater management will have an earthen bottom, sometimes placed on an impervious liner. Aquatic vegetation will often become established in such ponds. It will be more prevalent in ponds with silty soils and less prevalent in granular soils. This vegetation is beneficial as it assists in nutrient removal, provides wildlife habitat, and assists in side slope stability through its root structure. In certain cases, specific vegetation is planted during construction as part of a wetland mitigation plan. If the vegetation proliferates it can become a detriment to the pond function. Dying vegetation may also accumulate on the pond bottom where it will release nutrients back in the water, and may lower oxygen levels. If allowed to accumulate it will lessen pond volumes over time.

Inspection: The extent of aquatic vegetation in the pond should be observed, typically in the late summer or early fall at the end of the growing season. A photographic record of growth is desirable.

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Maintenance: Judgment must be used to determine a proper balance between desirable growth levels and excessive growth. This will be gained by experience. If a fairly dense growth is observed it should be cut back and removed on an annual basis. This should be accomplished in the late fall or early winter. When ice forms sufficiently to walk on, the vegetation extending above the ice level should be cut and removed from the pond. The material should be disposed on in accordance with applicable ordinances. The material can sometimes be composted particularly if the municipality operates such a facility.

Frequency: Inspect and document aquatic vegetation growth annually in late summer or early fall at the end of the growing season. Cutting and removal of growth will depend on its density. Removal on a 1 to 3 year frequency will be typical.

Applicability: The vegetation on this wet pond should be removed to allow for ease of inspection.

#### **G. Pond Dewatering**

Preface: Some wet ponds are designed with valved drain pipes that can be utilized to dewater the pond. If no drain exists, pond dewatering must be accomplished by pumping. Some ponds will naturally empty each year through infiltration into the ground. Dewatering the pond periodically to check sediment accumulations, side slope conditions and debris accumulation is desirable.

Inspection: The purpose of pond dewatering is to allow observation of sediment buildup and the accumulation of debris on the pond bottom. It also allows inspection of the lower slopes of the sidewalls for stability. Pond dewatering is a preferred method of inspection and cleaning. Inspection and maintenance of wet ponds is possible, but is generally more expensive. A separate section discusses wet pond inspections.

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Dewatering of the pond should be accomplished only in the summer months when normal pond level is minimal. If the pond is equipped with a valved drain line, the rate of outflow should be controlled to a rate that will not carry significant amounts of sediment from the pond. If pumping is required to dewater the pond, pump suction should be kept above the sediment level to minimize silt transfer. Filter fabric over the suction may be required to prevent excessive silt from being discharged.

If the pond being cleaned is one of a series, the pumped flow should be transported to a system tributary to that pond. If only a single pond exists, the pumping rate should be designed by a professional engineer, and the effluent should be transferred to an upland area for discharge through a perforated pipe distribution system to achieve sheet flow. The distribution/sheet flow area should be inspected for silt buildup.

Upon draining the pond the sediment level should be measured at multiple locations in the pond to determine a representative depth. Sidewalls should be observed for sloughing.

Maintenance: If the volume of sediment recorded exceeds 15% of the normal operating volume of the pond, the sediment should be removed. Prior to removal the material should be sampled and analyzed in accordance with current practice as promulgated by appropriate regulatory agencies. Upon documentation of its chemical characteristics, the material should be removed by appropriate means for trucking from the site. Disposal of removed material must be in compliance with all regulatory requirements which will vary with the documented characteristics, with material. Guidance should be sought from appropriate regulatory agencies.

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Frequency: An initial pond draining and inspection should be made after the first 5 years of operation. The rate of recorded sediment buildup will then be utilized to schedule subsequent draining. sediment removal will be accomplished when the sediment occupies 15% of the normal pond operating volume. Sediment removal once every 15 to 20 years may be expected in most instances. Upon completion of sediment removal a topographic survey should be accomplished to document pond shape and elevation.

Applicability: This pond is not equipped with a drain line. Therefore, pond dewatering should be via pumping.

#### **H. Sediment Monitoring/Wet Ponds**

Preface: Some large ponds may have a permanent pool which could support various fish and wildlife species where full dewatering may be difficult and undesirable except in critical circumstances. It is, however, still important to monitor sediment build-up in such ponds to assure that capacity remains to accomplish its intended water quality function.

Inspection: Measuring sediment build-up in a pond with a permanent pool that cannot be readily dewatered must rely on recorded differential elevation. In such an installation, it is important to have accurate "As Built" elevations on the pond bottom prior to its being placed in operation. This should be a requirement of the construction contract.

The build-up of sediment requires establishing the elevation of the top of the sediment layer for comparison with original bottom elevations. To accomplish this, a permanent benchmark should be established at the site that is not subject to frost action. The elevation of the water surface at the time of survey can thus be established. Measurement should then be taken from the water surface to the top of the sediment layer. This should be done at sufficient locations to cover the total pond area. It is noted that sediment build-up will be more rapid near the inlet of the pond.

The depth measurements can be taken in the Summer utilizing a small boat, or in the Winter through the ice. The depth measuring staff should have a flat plate attached to the bottom so it will not sink substantially into the sediment layer.

By comparing the measured elevations with the as-built elevations of the pond bottom it will be possible to compute sediment build-up levels.

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Maintenance: If sediment build-up in the pond becomes sufficient to diminish its treatment function it will have to be removed. This may be accomplished in a similar manner to that described previously for smaller ponds by dewatering and removal. If the pond cannot be dewatered, hydraulic dredging should be utilized. When pond sediment removal is planned, record drawings should be reviewed for special linings or other special features that may influence removal techniques, or may have to concurrently maintained.

Frequency: The sediment buildup measurements should be accomplished at 5-year intervals. Removal of sediment should be accomplished when it occupies 15% of the effective pond volume. Options to sediment removal will vary on each project, but could include enlargement of the pond, or qualitative sampling to examine pond performance. If such options are considered, existing permit conditions, as well as current regulations, should be examined where necessary, and permit amendments should be obtained.

Comments: See special provisions for emergency spills in Transfer station operations Manual.

Maintenance: The key maintenance is the removal of any blockage which restricts the entry of storm water to the inlet. The removed material should be taken out of the area of the inlet and placed where it will not reenter the runoff collection system. Snow should be removed from inlets in parking lots/roadway areas. This is generally done by others.

Frequency: All inlets should be inspected on a monthly basis, and after/during significant storm events. A windshield survey is suitable for most inlets but off road inlets and pond structures require more rigorous inspection.

### Storm water Inlets

Preface: The success of any storm water facility relies on the ability to intercept, stormwater runoff at the design locations. Storm water inlets may include catch basins, open culverts, culverts with bar screens, and field inlets. Inlets exist throughout the system at the points of collection as well as at the outlet of many ponds. Bar racks are common on many inlet locations which intercept an open channel. This section is directed at maintenance of the actual inlet point. A later section addresses more substantive maintenance of the structures and conveyance facilities.

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Inspection: The inspection of inlet points will need to be coordinated with other maintenance items, these include:

- o Maintenance of the Transfer Station described in the Operations Manual.

The key elements of the inspection is to assure the inlet entry point is clear of debris, and will allow the intended water entry.

In some projects most of the storm water is carried in open swales, channels or ditches. These conveyance channels may be rip rapped or vegetated, depending on the gradient and expected flow velocities. These facilities must be inspected to insure debris or sedimentation does not reduce their carrying capacity. Excess vegetative growth must also be noted. The surface protection for the channels, either stone or vegetation, must be inspected to insure its integrity. Any areas subject to erosion should be noted.

#### **J. Tributary Drainage System**

Preface: Storm water from the proposed development is normally directed to a conveyance system which transports the flow to the retention/detention pond entrance. This conveyance system can consist of open swales and ditches, a piped drain system, or a combination of the two. Sediment which accumulates in the ponds is carried by the drainage system. Maintenance of this system can play a major role in the long term maintenance costs and the effectiveness of the pond system.

Inspection: The tributary drainage system should be periodically inspected to assure that it is operating as intended, and that its carrying capacity has not been diminished by accumulations of debris and sediment or other hydraulic impediments. on piped systems the inlets must be inspected to assure the rims are set at the proper elevation to optimize flow entry and are not clogged with leaves or other debris. (See prior section for inlet location data). The inlet basins are normally equipped with sumps that will remove large sediment particles from the flow stream.

The level of sediment in the sumps should be checked to assure their effectiveness. Pipelines connecting the inlets should be checked to determine if siltation is occurring. This will be most critical on drain lines laid at minimal slopes. This can usually be accomplished by a light and mirror procedure.

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Maintenance: Maintenance of the storm drainage system must assure that it continues to serve its design function on a Long-term basis, and that its operation does not transport excessive sedimentation to any downstream retention/detention pond, or the receiving waters. Elevations on the rim of catch basins should be adjusted as needed to assure optimal water entry. Depending on the frost susceptibility of the soil, the rims may become elevated over time causing flow to circumvent the inlet. When the sump in an inlet reaches two thirds of its volume the sediment should be removed.

This will typically be every 1 to 3 years depending on the tributary drainage area and the amount of sand utilized for winter ice control. Catch basin cleaning would normally be accomplished with vacuum trucks under contract. The removed material must be disposed of at an approved site for such materials.

If sediment in the pipeline exceeds 20% of the diameter of the pipe, it should be removed. This may be accomplished by hydraulic flushing, or by mechanical means. If hydraulic flushing is used the downstream conditions should be analyzed. In general a sump or sediment trap where it can be removed from the system is desirable. If it is simply flushed into the retention/detention pond, it will reduce pond volume and hasten the time when it must be cleaned.

Vegetated ditches or swales should be mowed at least monthly during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any vegetation cut in the ditch area should be removed from the site. Any areas where the vegetation fails will be subject to erosion and should be repaired and re-vegetated. Any riprap, that becomes displaced should be replaced and chinked to assure its stability.

Frequency: The piped drainage system should be inspected on an annual basis. Adjustment of inlet rim elevations should be on an as needed basis. Cleaning catch basin sumps and pipelines will depend on the rate of accumulation. Typically, catch basin sumps should be cleaned on a 1 to 3 year cycle. Pipeline cleaning schedules will be more variable. Open, vegetated swales should be mowed at least monthly-during the growing season. Debris should be removed as required to maintain hydraulic capacity.

Applicability: All paved portions of the Transfer Station discharge to the pond through a series of catch basins and storm drains.