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SUBJECT **Ditch/Retention/Detention System Cleaning**

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PURPOSE

To establish the Institutional Service Contract (ISC) quality and environmental guidelines, procedures and responsibilities for performing ditch and retention system cleaning on Kennedy Space Center (KSC). Drainage ditches and retention systems on KSC are designed to store and / or move storm water. Cleaning is done to avoid obstruction and maintain flow. Cleaning includes use of equipment for cleaning and reshaping of ditches and retention areas and includes loading, hauling, and disposing of excess materials.

This procedure helps define the process workflow and provides basic instructions for ISC Roads crew personnel performing ditch/retention system cleaning at the KSC. More detailed plans may be provide in work orders from Environmental directing the amount of excavation, shaping, and disposal of debris from these specialized or permitted systems located on KSC

SCOPE AND APPLICABILITY

This document applies to any ISC employee performing ditch/retention system cleaning. Ditch and retention system cleaning is a function of storm water management. The maintenance of storm water systems is intended to provide a cost-effective storm water maintenance program by removing silt and vegetation which may impede water flow. Under normal circumstances, a heavy equipment operator (HEO), who operates the motorized excavation equipment is responsible for the cleaning operations under the direction of Roads management. Additional support may be provided by equipment/truck driver mediums responsible for operating dump trucks used for transporting debris to an approved disposal site. All operations scheduled within controlled areas must be coordinated with appropriate site managers. YEI Manager or Scheduler will normally provide this function.

PROCESS

1. REQUIREMENTS

1.1. Tools/Equipment Requirements

The following tools and equipment are normally required to perform this work task:

- Excavation equipment such as Gradall, backhoe, track hoe or other excavation equipment.
- Dump trucks to haul off debris if removal is required.
- Hand tools such as rake, hoe, shovel, etc.

- Traffic control devices, as required.
- Erosion control devices such as silt socks, silt fences, straw bales, etc.
- Spill kit

1.2. Miscellaneous Requirements

The following requirements are applicable to this procedure:

1.2.1. Excavation Permit

- Request a utility locate and approved excavation permit per ENG-I-MP07, Utility Locate/Excavation Planning, as follows:

  At least five (5) days prior to digging, complete the electronically available ISC Utility Locate/Excavation Permit Request from the ISC Home Page Web Application. Fax or hand carries an area/site map, drawing or sketch of the area to be excavated. (The web application is the preferred method for requesting a dig permit; however, a permit may be requested manually)

1.2.2. Environmental Checklist

- Prior to starting work, a KSC Environmental Checklist (KSC Form 21-608V2) must be submitted to the ISC Environmental Assurance Branch (EAB) for evaluation and processing. This will be submitted by the Roads supervisor or management prior to beginning any excavation work.

1.2.3. Certifications

- Equipment and Equipment/ Truck Driver Mediums must have current Training Certifications to operate equipment or trucks required to perform the work tasks. Proper and up to date equipment certification training as identified on certification card and in PM50 as required under SMA-TCP (Training & Certification Plan) see Supervisor or Training Coordinator if unsure.

1.3. Safety Requirements

Having and wearing the approved personal protective equipment (PPE) and following safety requirements are applicable to this procedure:

- Hearing protection.
- Safety glasses. (A face shield may be required. This will be per direction of the supervisor or Safety official)
- Safety vests shall be worn at all times when working within twelve feet (12) of roadway.

- Traffic control devices, such as traffic cones, concrete barriers, or roping shall be utilized along the road shoulder to warn drivers that work is being performed. . If work is being performed within 12 foot of a major roadway traffic control devices shall be installed in accordance to the Manual on Uniform Traffic Control Devices (MUTCD) and Florida Department of Transportation (FDOT) Standards Index Series 600.

- If questions regarding safety arise, **Stop Work** and contact appropriate management or safety representative for direction or clarification prior to completing work.

2. PROCEDURE

The ditch/retention system cleaning workflow is shown in the process flowchart and described in the following sections.

2.1. PREPARATION

These steps are normally accomplished prior to leaving the Roads yard or operating the equipment:

- Ensure an approved excavation permit has been obtained and utilities have been located and marked by Locator. Excavation Permit Locator will be contacted to locate utilities on a real time basis if questions arise.

- Check assigned vehicles and equipment for damage, loose bolts and proper operation of all lights prior to use. Check hydraulic hoses for excessive wear, leakage or damage. If damage is found, it must be reported per SHP-P-9311 (Vehicle Operations)

- Check fluid levels and grease equipment as required.

- If repairs are required contact Trouble Call.

- Install erosion and sedimentation controls such as silt fence, turbidity boom, or other best management practices (BMPs) as required. This will be stated on the work order or under direction of management in consultation with ISC EAB.

- Ensure compliance with environmental requirements identified by the approved excavation permit, the response to the Environmental Checklist and any regulatory permits that apply.

  Verify hand tools are available, as required.

2.2. TASK PERFORMANCE

- Inspect site prior to beginning work.

- Install traffic control equipment, as necessary.

- Use erosion control devices such as check dams, silt fences and other acceptable techniques, when the potential exists to have sediment or other materials enter a water of the State. Install check dams on steep slopes, as necessary, to slow water velocity reduce erosion and sedimentation. The installation of erosion control devices will be directed by work order, Environmental officials, or supervision. Use of sediment and erosion control best management practices will be required to prevent silt and sediment from migrating into adjacent wetland areas, clogging downstream storm water facilities and negatively impacting water quality.

- Position excavation equipment at the downstream side of work area.

- HEO is primarily responsible to direct trucks into proper position to receive debris.

- Remove build-up of accumulated silt and vegetative debris. This is normally excavated down to original grade or grade stakes if they have been installed. Debris build-up is normally a dark organic material ranging in depth from 2-3 inches to 8-12 inches.

- Deposit waste material into dump truck.

- Work up-grade to remove soil and vegetative debris while ensuring proper water flow. This is normally done through observation by the HEO.

- All efforts should be made to retain existing vegetation, especially along the ditch slopes to maintain slope stability.

- Once the storm water system has been completed, the inclines or berms must be shaped to the original configuration. Shape banks to original grade as cleaning progresses when possible. Avoid any unnecessary disturbance to grass and vegetation growing on upper portion of slope or berm.

- Maintain the water flow grades. Special cleaning requirements may be provided through design specifications. This information will be provided by engineering drawings, work order, or by an Environmental direction.

- When the truck is full, the driver will transport debris to the KSC Landfill or designated area for disposal. Any excavated debris or vegetation pulled directly from the water must be allowed to drain before being hauled over hard top

roadways. Water drainage from the dump must not be allowed to drip onto the road way causing a vehicle slipping hazard for other drivers

Note*: Extremely water-soaked debris may have to be transported to a staging area to drain excessive water prior to being disposed of at the KSC Landfill. Staging area locations will be determined by Roads Supervisor or as directed by ISC or NASA Environmental officials.*

- Grade and level the areas disturbed by cleaning operation. Remove roots, rocks, and limbs, which may pose a safety hazard to mowing operations.
- Seed or sod areas, as directed.
- Secure all hand tools t prior to moving to a new location.
- Remove previously installed traffic control equipment.

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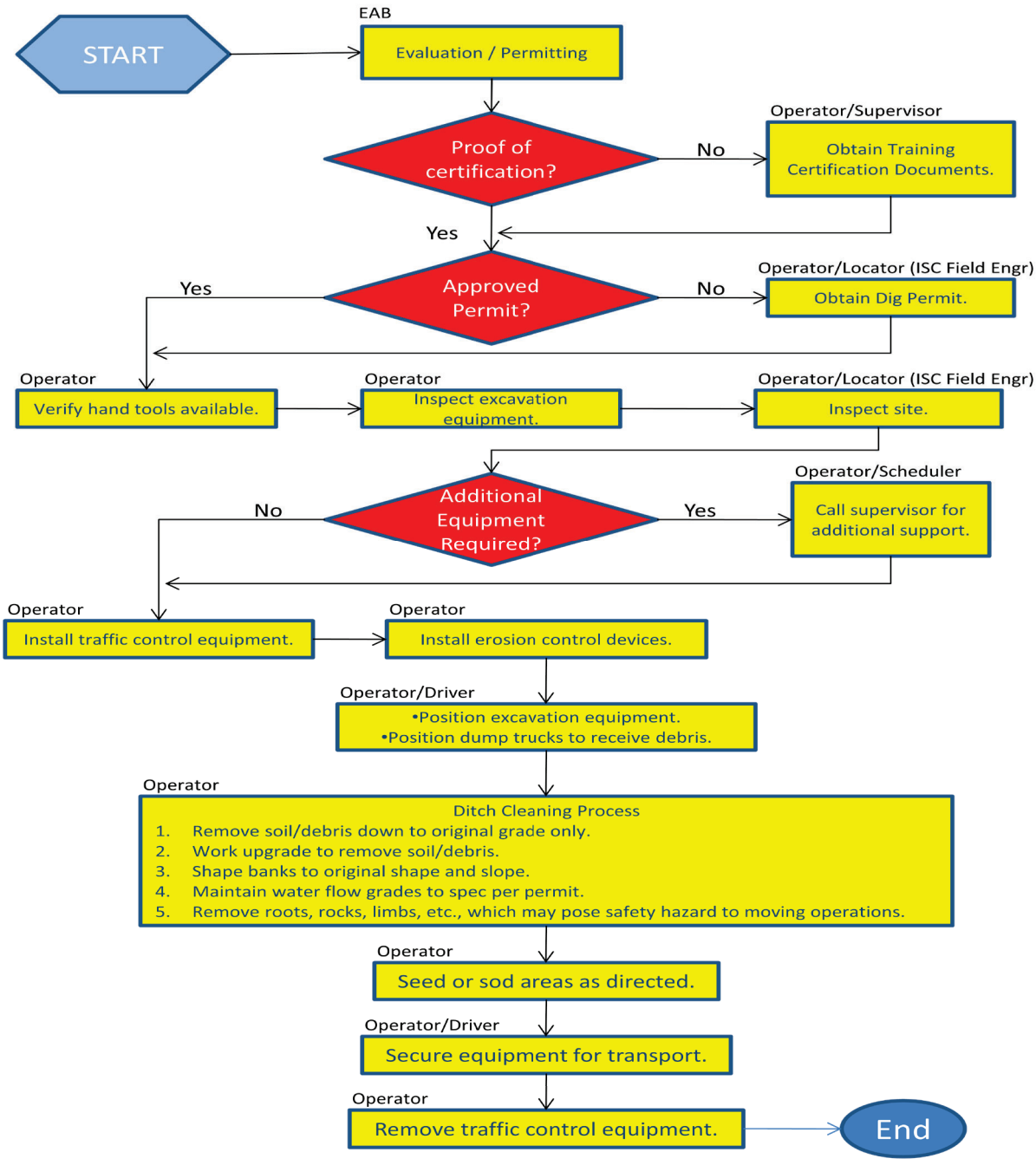
Figure 1: Ditch/Retention/Detention System Cleaning Procedure



RECORDS

The following records are retained by the organizations listed below:

Record	Responsible Organization	AFS/ Item #	Retention Period
Training Records in PM-50	Technical Training	3400/33G.2	*Destroy 5 yrs after separation of employee or when no longer needed (ISC chooses to retain until end of contract)*
KSC-23-312NS, Utility Locate/Excavation Permit Request	Engineering	1442/78E.2	*Destroy or delete when no longer needed (ISC chooses to retain for two years.)*
Utility Locate/Excavation Permit Request Web Application	Mission Support Office	1442/78E.2	*Destroy or delete when no longer needed (ISC chooses to retain for two years.)*

AFFECTED DIVISIONS

Engineering Services
FSEU and OM&E
Safety & Mission Assurance

MANAGEMENT ROLES AND RESPONSIBILITIES

ISC Branch Manager: Ensures ISC compliance to the requirements stated in this procedure. Reviews and approves or disapproves waiver requests written against this standard.

Supervisor III: Ensures compliance within the Roads shop to the requirements stated in this informational procedure.

Supervisor II: The supervisor shall be responsible for the overall implementation of this procedure, allocates equipment and instructions for performing the job task, and oversees the efficient and safe completion the assignment. The Supervisor II shall ensure that each employee receives an adequate level of training and understanding of safety issues, and have the proper personal protective equipment (PPE) required for completing work assignments. Supervisor II ensures compliance at the Roads level to insure that roads personnel understand and follow this procedure when cleaning detention and retention areas and storm water systems as stated in this procedure.

Environmental Assurance Branch- Review and process KSC Environmental Checklist for ditch projects and provides environmental requirements and overview. Assist with

implementation of environmental requirements through plan development, scheduling, or biological surveys, regulatory permitting, etc.

Employees - (Equipment Operator & Equipment/Truck Driver Medium)
These labor classifications shall provide operational skills as listed in the current job descriptions under the Collective Bargaining Agreement. Employee responsibilities shall include the following duties:

- Perform routine maintenance of equipment. This will be a daily responsibility and may include checking equipment several times per day based on use. Daily checks will include visual inspections of hydraulic hoses and fittings to insure hydraulic oil does not leak onto the ground or into water systems.

- Request repairs to equipment or assistance through the Branch Manager (867-8186), Roads Supervisor (861-6297) or through the Trouble Call Office (861-5050).

- Report all damage or potentially damaging issues to management or a safety official.

- Wear proper safety equipment such as safety glasses, hearing protection, etc., while performing work task or operating equipment.

- Cease work immediately, if questions regarding obstacles, such as wires, pipes, cables, etc. or if any other safety related issues arise during the operation, until proper clarification and direction has been provided by YEI management or other official.

- Report all spills or releases of fuels or fluids from equipment and vehicles by calling 911 or 867-7911 by cell phone. Take action to contain the spill as necessary to minimize the release. Secure the area until assistance arrives and details of the event have been documented.

- Work efficiently and safely in performing work tasks.

REFERENCE DOCUMENTS

The following documents are referenced in this procedure:

Document Number	Title
ENG-I-MP07	Utility Locate/Excavation Planning

Document Number	Title
Procedure No. 625-010-009	(Maintenance of Traffic Committees) Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD); Design Standards, Topic No. 625-010-003; Plans Preparation Manual (FPPM) Topic No. 625-000-007; Construction Project Administration Manual (FCPAM), Topic No. 700-000-000
	Manual on Uniform Traffic Devices for Streets and Highways, (U.S. Department of Transportation)
	Maintenance of Traffic Training, FDOT, Central Florida Safety Council

ACRONYMS

AFS – Agency Filing Scheme
FDOT – Florida Department of Transportation
FSEU – Facility, System, Equipment & Utilities
HEO – Heavy Equipment Operator
ISC – Institutional Services Contract
KSC – Kennedy Space Center
MUTCD – Manual on Uniform Traffic Control Devices
MSO – Mission Support Office
NASA – National Aeronautics and Space Administration
OM&E – Operations, Maintenance & Engineering
PPE – Personal Protection Equipment
YEI – Yang Enterprises, Inc.
EAB-Environmental Assurance Branch

DEFINITIONS

Cleaning - The process of removing silt, vegetation or debris impeding the efficient flow or storage of storm water. Cleaning is normally done to remove debris in an effort to return system back to original design capabilities.

Controlled Areas - Facilities or areas under limited access based on safety or security related issues and limited access areas requiring special permission or badging to gain access.

Excavation Permit - Policy that all excavations will be properly authorized and documented to ensure personnel safety, prevent damage to existing underground utilities by locating and identifying, and to maintain current as-built drawing data. The dig permit is the official document issued by the Mission Support Office (MSO) after processing a dig permit request. Permits are requested electronically via the ISC Home Page Web Application or manually on KSC Form 26-312NS. Individuals involved with

excavation activities must have an Approved Permit at the worksite prior to beginning any new excavation work.

Ditch - Any system designed to drain, absorb, store, or retain water to prevent flooding in the management of storm water. A ditch is a man-made trench which is dug for the purpose of draining water from the land or for transporting water for use on the land and which is not built for navigational purposes. A ditch may be wet or dry and may be part of a retention/detention system providing conveyance, percolation, and storage for water quality treatment, runoff flow attenuation and/or flood prevention.

Erosion Control Equipment - Any materials used to prevent loose soil and debris from an excavation operation from entering into the main water system. Materials may include straw bales, turbidity barrier, silt fence, sandbags, etc. or any combination used to prevent silt debris from entering the water.

Excavate - Any modification to an existing grade or area storm drainage profile by digging, cutting an existing grade, probing, drilling, installing tie down rods, driving ground roads, trenching and back filling, and all other penetrations to subsurface area.

Locator - Field Engineer, who processes excavation permits, locates and identifies utility locations for excavation activities.

Real time - Onsite support provided during the process of doing work either as a scheduled occurrence or on an emergency basis.

Retention/Detention System - Any independent or system of holding areas and/or ditches designed to hold rainfall runoff water for water quality treatment, runoff flow attenuation and/or flood prevention. These systems may be normally wet or dry depending on design configuration.

REVISION RECORD

The following revisions have been applied to this document:

Revision Number	Change Description	Date
0-2	No revision history	10/02/01 – 05/30/07
3	Revised for ISC format	06/18/10