Three Key Factors for Effective Surface Stormwater Management Facility Inspection

June 14, 2018

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Overview

- Background
- Factors
- Conclusion

Background

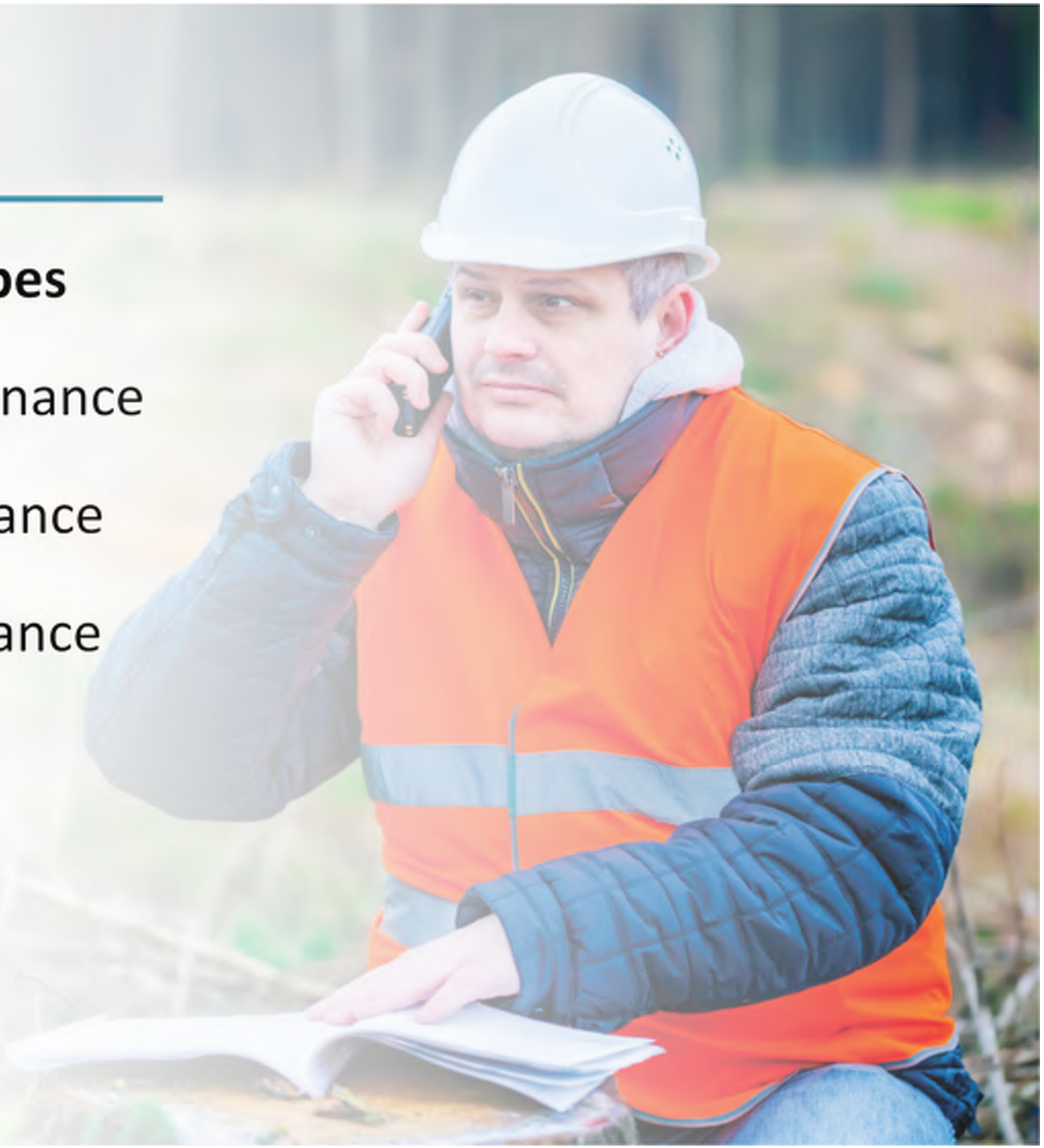
Purpose of SWM Inspections

- Meet NPDES Requirements
- Determine maintenance needs
- Track life cycle of facility
- Determine changes affecting facility function

Background

Maintenance Types

- Routine Maintenance
- Minor Maintenance
- Major Maintenance
- Retrofit
- Abandonment



Routine Maintenance

Includes mowing and trash removal around the perimeter of the facility or areas of the facility that are highly visible.

Minor Maintenance

Includes brush cutting, storm drain cleaning and debris removal along facility or at structures connected to the facility. This may also include replacement of items such as well caps.

Major Maintenance

Includes major clearing and grubbing and debris removal. It also includes re-grading of facility, replacement of filter media and repair or replacement of structures.

Retrofit

A retrofit is initiated when it is determined that a facility will not function as designed even if maintenance is performed. This is typically due to factors such as change in hydrology or design error. If it is determined that a change in facility type is needed, then the facility is classified as a retrofit.

Abandonment

A facility is abandoned when it is determined that there is no suitable facility for that location or maintenance of the facility will not bring about any substantial benefit for treatment.

Three Key Factors

- Understanding the Original Design
- Access Planning
- Selecting Correct Field Tools

Preparation is the key!

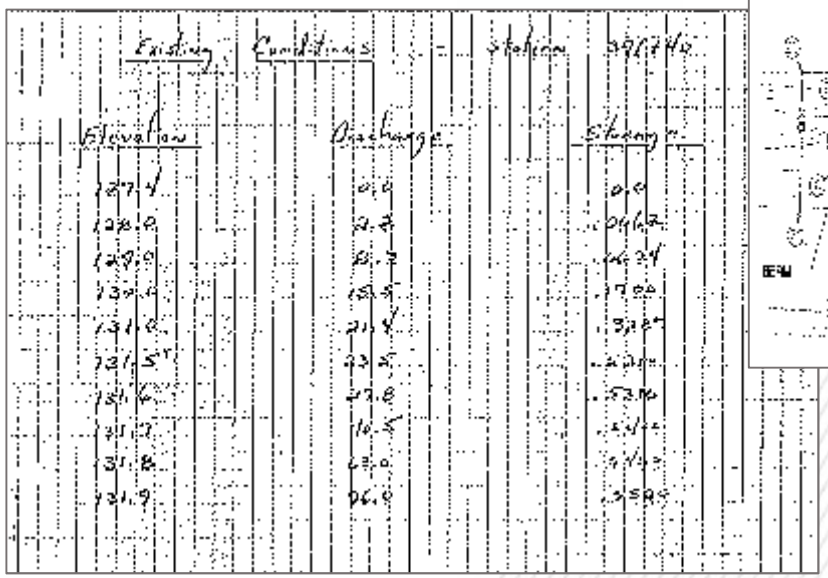
Understanding the Design

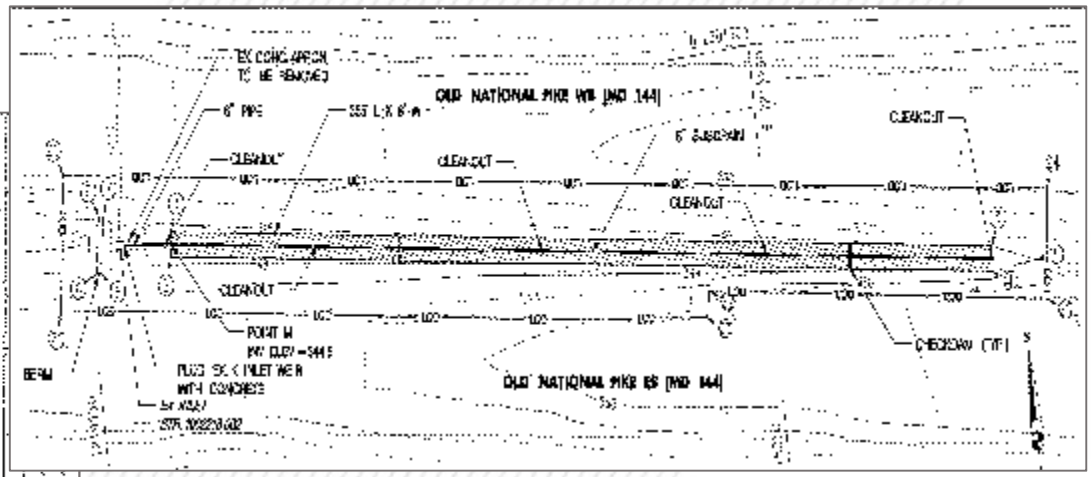
- Basic design experience of different facility types is an important asset for stormwater management (SWM) facility inspections.
- There are additional resources that can be used to understand the design intent of a facility being inspected.

Understanding the Design

- As-Built Plans
- Stormwater Management Report
- Computations
- Previous inspection documents
- Existing photos

Review these documents (if available) to verify facility type and design intent.





Understanding the Design

- Some facilities may have special design requirements such as MD 378 Pond Code requirements which require inspection of additional facility components.

Understanding the Design

- Reviewing documents PRIOR to field inspection also helps with facility identification in the field and to document if As-Built plans are correct.

Access Planning

WHY PLAN ACCESS?

- Determine location of each facility
- Plan most effective route
- Determine safest, legal access points
- Save time in the field

Access Planning

HOW TO PLAN ACCESS

- Use Aerial mapping (GIS, Google Earth)
- Check Right-of-Way information
- Use previous inspection information

Always check the weather before field visits. Previous weather will determine if sufficient post-rainfall time has passed (typically 72 hrs.) for the inspection of most facilities. The previous or anticipated weather conditions can also alter access plans.

Access Planning

- Determine if MOT Plan is required.
- Permission to access non-public right-of-way.
- Easements or entry agreements.
- Special entry requirements e.g. Federal facilities
- Always choose the safest route (topography, traffic safety, wildlife, rail systems)
- Check for facility enclosures such as walls and fences.
- Retrieve access codes and keys.
- Prior authorization to replace locks may be required.

Be Safe!

Field Tools and Equipment Selection

COMMON TOOLS & EQUIPMENT

- Safety Vest
- Hard Hat (for active construction sites)
- Camera
- Brush Cutter
- Pliers
- Machete
- Bug Spray
- Lock Cutter
- Water

Prepare an equipment checklist that can be used for all site visits.

Field Tools & Equipment Selection

- Additional tools that are not commonly used may be required for some facility inspections. For example, a channel lock may be required for removal of obstructed observation wells.

Field Tools & Equipment Selection

DIGITAL INSPECTION TOOLS

- Tablet
- Wi-Fi
- Charging Cables
- GPS

Underground Inspections

- Since Confined Space Entry is required, the inspection of underground facilities involves additional preparational work for safety and efficiency.

Underground Inspections

- The same three (3) factors required for the inspection of surface facilities also apply to underground inspections. However, there are additional factors to consider.

Underground Inspections

- Pre-Visit Safety Plan
- Inspection Process Procedures Overview
- Selection of Safety Equipment

Underground Inspections

PRE-VISIT SAFETY

- Develop Safety Plan – Discuss potential safety risks and mitigation
- Assign roles – entrant, attendant, supervisor, safety officer, office point of contact
- Determine location
  - Need for MOT
  - Identify and number entrance locations on as-built plans, leave specifics with office point of contact

Underground Inspections

INSPECTION PROCESS

- Develop Safety Plan Site Arrival – site safe from traffic (Safety Officer)
- Determine point(s) of entry
- Prepare permit (Attendant)
- Use air meter to check facility before entry
- Notify office of point of contact (Attendant)
- Issue permit (Entrant, Attendant, Supervisor)
- Entry/Inspection

Underground Inspections

CONFINED SPACE ENTRY EQUIPMENT

- Air meter, tripod, harness, air blower, manhole fence, PPE, camera, walkie-talkies, cones, etc.

Conclusion

- An effective facility inspection is one that is well thought out and organized for execution.
- Adequate planning and organization maximizes time in the field.
- Proper facility inspection leads to better reporting and asset management.

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