Concrete Washouts
–
More than a Hole in the Ground

(and the New IDEM Guidance)

Concrete Washouts

The problem with cementitious washout:

- The washwater is highly alkaline (typical pH is 11 to 12 or higher)
- Frequently includes heavy metals

- These materials may leach into the ground or impact aquatic life is discharges to stream or wetlands

- Indiana operates with a zero discharge goal. NO RELEASE is considered acceptable
- (Concrete material that has not been diluted with water may be placed on the ground and allowed to set up and then disposed as construction debris)

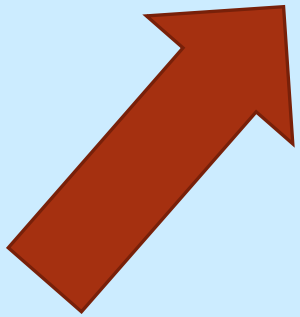
Concrete Washouts

Cementitious Material –

- Concrete
- Mortar
- Plaster
- Stucco
- Grout
- Flowable Fill

NOT Cementitious Material –

- Wood
- Paper
- **PAINT**



These materials may reduce opportunities to recycle (or dispose) of the washout materials.

Concrete Washouts

Separate Paint Washout

- Disposal
- Oil Bas vs. Latex

Concrete Washouts

But we digress, …..

Concrete Washouts

"ACTIVE MANAGEMENT"

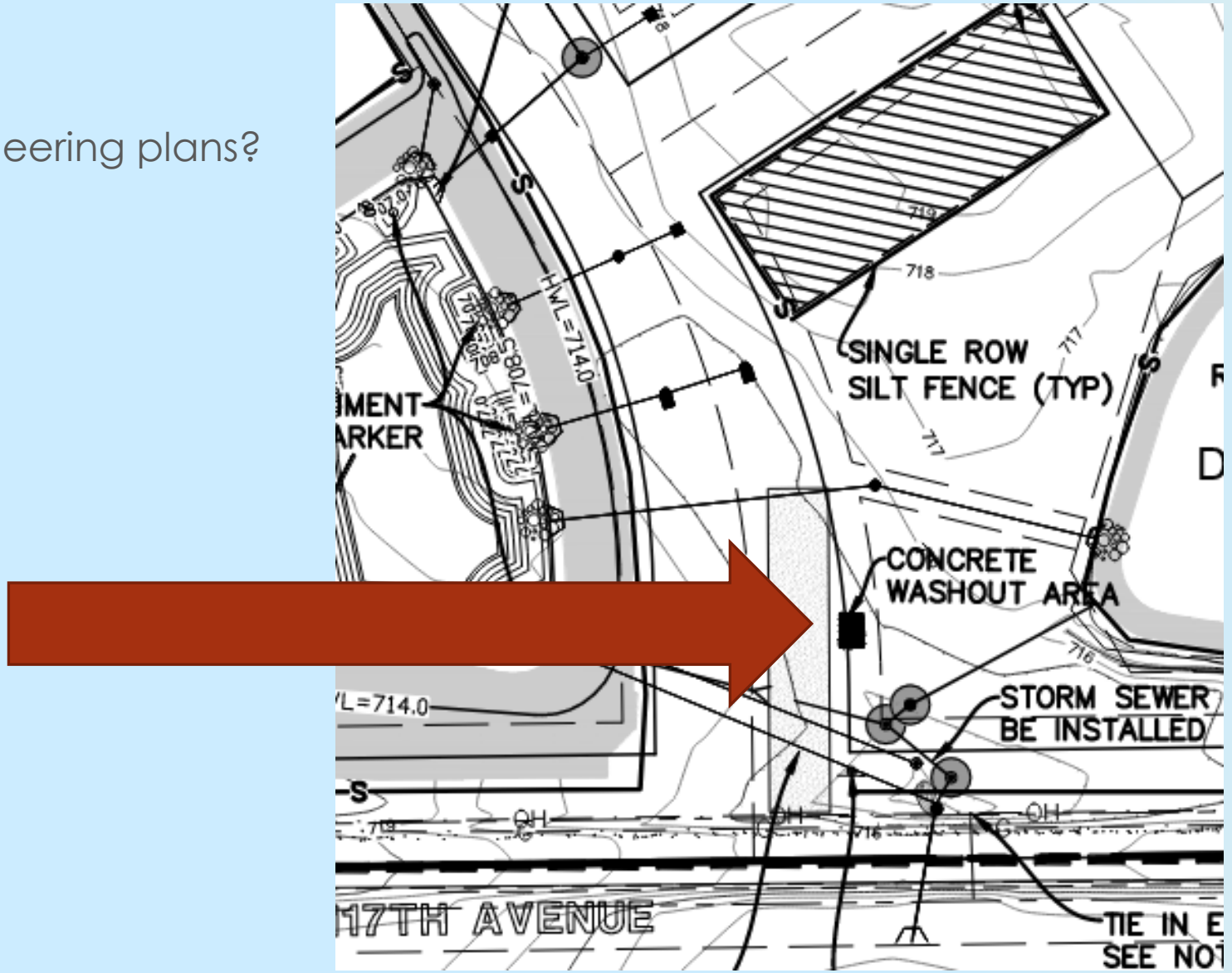
The Storm Water Pollution Prevention Plan (SWPPP or SWP^3) implementation includes:

- Installation of initial practices
- Monitoring
- Maintenance
- Continuous evaluation

These activities constitute active management throughout the life of the development project

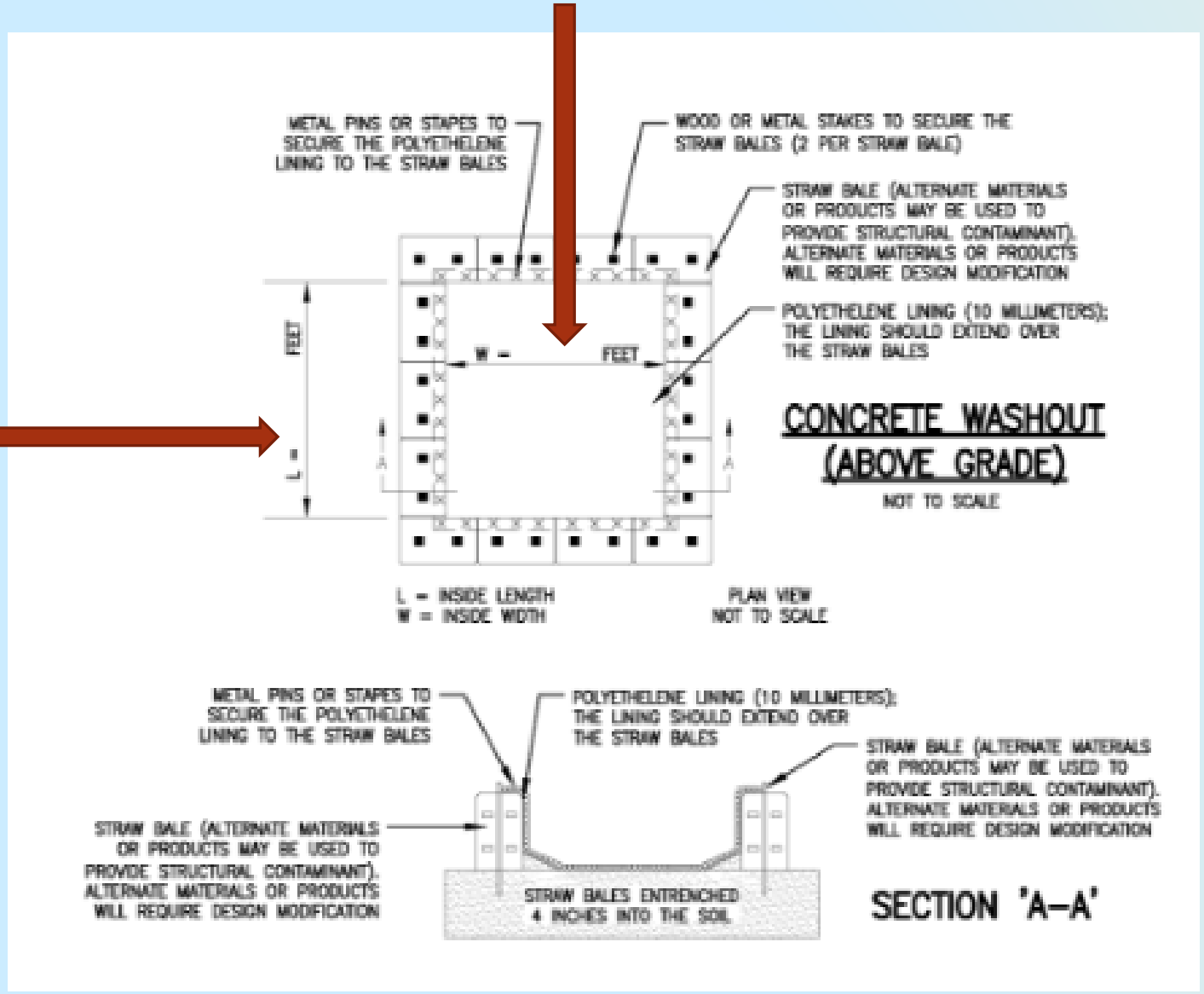
Concrete Washouts

What have we found on engineering plans?



Concrete Washouts

What have we found on engineering plans? (Con't)



Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

The physical size (or the number) of the washout(s) is dependent on the concrete pour activities – how many trucks need to be accommodated within a period of time

- Is a roadway going to be poured in concrete? (Potentially a lot of trucks over a day or more)
- Are footers to be poured? (a truck or 2 a day?)
- Driveways? (a truck or 2 a day?)
- Basement Walls? (Maybe 3-4 trucks?)

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

Other Considerations:

- How long will it take for the water to evaporate?
- Will multiple washouts be required to allow for evaporation?
- Will a cover be required to prevent rain from slowing the evaporation time?

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

Per the ***draft*** guidance from the Indiana Stormwater Quality Manual (under revision):

Estimating washwater volumes for ready mixed concrete delivery can be highly variable due to many factors such as weather, air temperature, product slump, temperature of concrete, length of time on truck, and number of chutes used.

- One method to estimate washwater volume is to use 20 to 40 gallons per ready mixed truckload (20 40 gallons x total cubic yards/8 cubic yards per truckload = total estimated gallons washwater generated).
- When concrete pump trucks are used allow for a minimum of 50 gallons of washwater per pump use.

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

Per the Draft guidance from the Indiana Stormwater Quality Manual: (Con't)

- Estimating the amount of washwater volume from cementitious products other than ready mix concrete is quite variable. Estimates that utilize higher volumes may ensure adequate washwater capacity. Provisions for additional storage are recommended.
- Recommended minimum depth of containment structure shall be 1 foot.
- Containments with larger footprints allow for greater evaporation potential of the washwater.
- The system shall be designed, to the extent practical, to eliminate run-off and minimize precipitation from entering the washwater containment system. Covering of washwater containments when not in use is recommended to prevent overflow and this will help minimize the amount of cementitious fluid that requires management

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

The "active" SWPPP manager will need to coordinate with the construction manager to estimate the concrete maximum truck traffic and provide the anticipated washout volume.

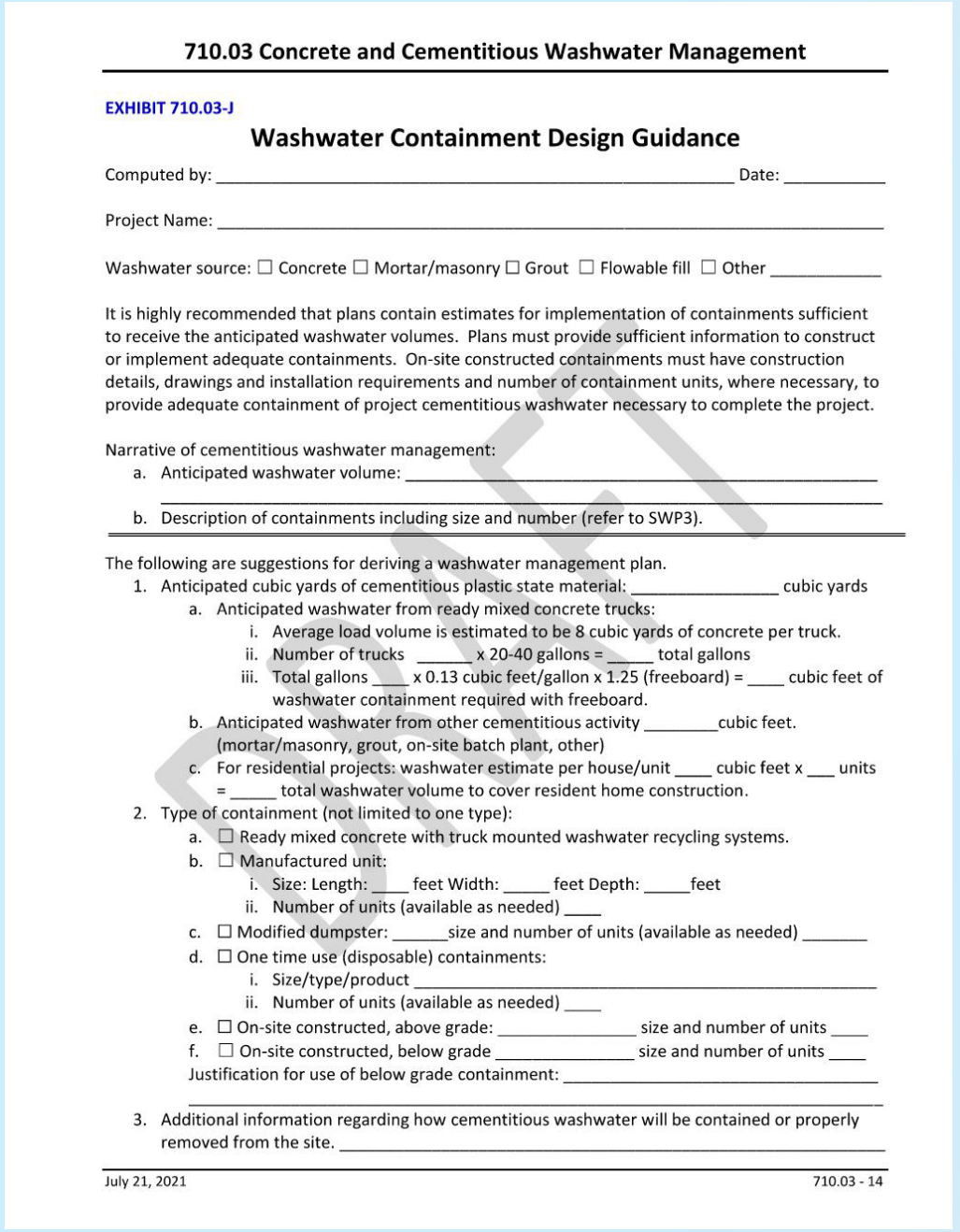
If the turn around time for replenishing the washout volume becomes short, an option that can be considered is the use of a polymer to solidify the liquid on top of the solids. This is especially useful when a dumpster type washout is utilized. These containers will spill during loading and splash during transportation. Both releases are prohibited in Indiana. A leaking container during transport could be stopped for DOT violations.

Note: The use of a polymer will increase expense and may limit recycling options.

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

Draft Stormwater Quality Manual!



710.03 Concrete and Cementitious Washwater Management

EXHIBIT 710.03-J

Washwater Containment Design Guidance

Computed by: _____ Date: _____

Project Name: _____

Washwater source: ☐ Concrete ☐ Mortar/masonry ☐ Grout ☐ Flowable fill ☐ Other _____

It is highly recommended that plans contain estimates for implementation of containments sufficient to receive the anticipated washwater volumes. Plans must provide sufficient information to construct or implement adequate containments. On-site constructed containments must have construction details, drawings and installation requirements and number of containment units, where necessary, to provide adequate containment of project cementitious washwater necessary to complete the project.

Narrative of cementitious washwater management:

a. Anticipated washwater volume: _____
_____

b. Description of containments including size and number (refer to SWP3).

The following are suggestions for deriving a washwater management plan.

1. Anticipated cubic yards of cementitious plastic state material: _____ cubic yards
   a. Anticipated washwater from ready mixed concrete trucks:
      i. Average load volume is estimated to be 8 cubic yards of concrete per truck.
      ii. Number of trucks _____ x 20-40 gallons = _____ total gallons
      iii. Total gallons ____ x 0.13 cubic feet/gallon x 1.25 (freeboard) = ____ cubic feet of washwater containment required with freeboard.
   b. Anticipated washwater from other cementitious activity _____cubic feet. (mortar/masonry, grout, on-site batch plant, other)
   c. For residential projects: washwater estimate per house/unit ____ cubic feet x ___ units = _____ total washwater volume to cover resident home construction.
2. Type of containment (not limited to one type):
   a. ☐ Ready mixed concrete with truck mounted washwater recycling systems.
   b. ☐ Manufactured unit:
      i. Size: Length: ____ feet Width: _____ feet Depth: _____feet
      ii. Number of units (available as needed) ____
   c. ☐ Modified dumpster: _____size and number of units (available as needed) _____
   d. ☐ One time use (disposable) containments:
      i. Size/type/product _____
      ii. Number of units (available as needed) ____
   e. ☐ On-site constructed, above grade: _____ size and number of units ____
   f. ☐ On-site constructed, below grade _____ size and number of units ____
   Justification for use of below grade containment: _____
   _____
3. Additional information regarding how cementitious washwater will be contained or properly removed from the site. _____

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

710.03 Concrete and Cementitious Washwater Management

EXHIBIT 710.03-J

Washwater Containment Design Guidance

Computed by: _____ Date: _____

Project Name: _____

Washwater source: ☐ Concrete ☐ Mortar/masonry ☐ Grout ☐ Flowable fill ☐ Other _____

It is highly recommended that plans contain estimates for implementation of containments sufficient to receive the anticipated washwater volumes. Plans must provide sufficient information to construct or implement adequate containments. On-site constructed containments must have construction details, drawings and installation requirements and number of containment units, where necessary, to provide adequate containment of project cementitious washwater necessary to complete the project.

Narrative of cementitious washwater management:

a. Anticipated washwater volume: _____

_____

b. Description of containments including size and number (refer to SWP3).

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

Draft Stormwater Quality Manual!

The following are suggestions for deriving a washwater management plan.

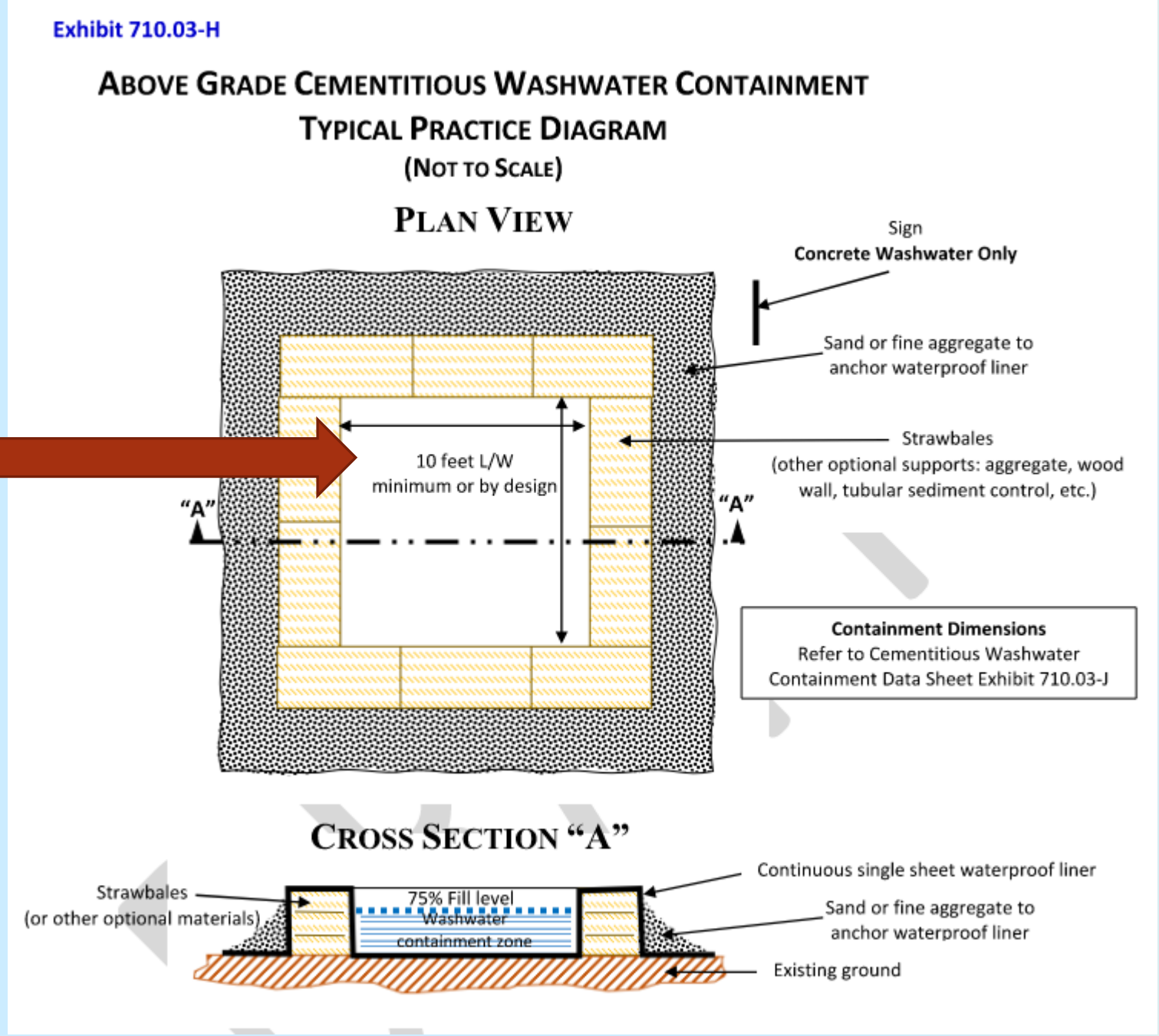
1. Anticipated cubic yards of cementitious plastic state material: _____ cubic yards
    a. Anticipated washwater from ready mixed concrete trucks:
        i. Average load volume is estimated to be 8 cubic yards of concrete per truck.
        ii. Number of trucks _____ x 20-40 gallons = _____ total gallons
        iii. Total gallons ____ x 0.13 cubic feet/gallon x 1.25 (freeboard) = ____ cubic feet of washwater containment required with freeboard.
    b. Anticipated washwater from other cementitious activity _____cubic feet. (mortar/masonry, grout, on-site batch plant, other)
    c. For residential projects: washwater estimate per house/unit ____ cubic feet x ___ units = _____ total washwater volume to cover resident home construction.
2. Type of containment (not limited to one type):
    a. ☐ Ready mixed concrete with truck mounted washwater recycling systems.
    b. ☐ Manufactured unit:
        i. Size: Length: ____ feet Width: _____ feet Depth: _____feet
        ii. Number of units (available as needed) ____
    c. ☐ Modified dumpster: _____size and number of units (available as needed) _____
    d. ☐ One time use (disposable) containments:
        i. Size/type/product _____
        ii. Number of units (available as needed) ____
    e. ☐ On-site constructed, above grade: _____ size and number of units ____
    f. ☐ On-site constructed, below grade _____ size and number of units ____

    Justification for use of below grade containment: _____
    _____
3. Additional information regarding how cementitious washwater will be contained or properly removed from the site. _____

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

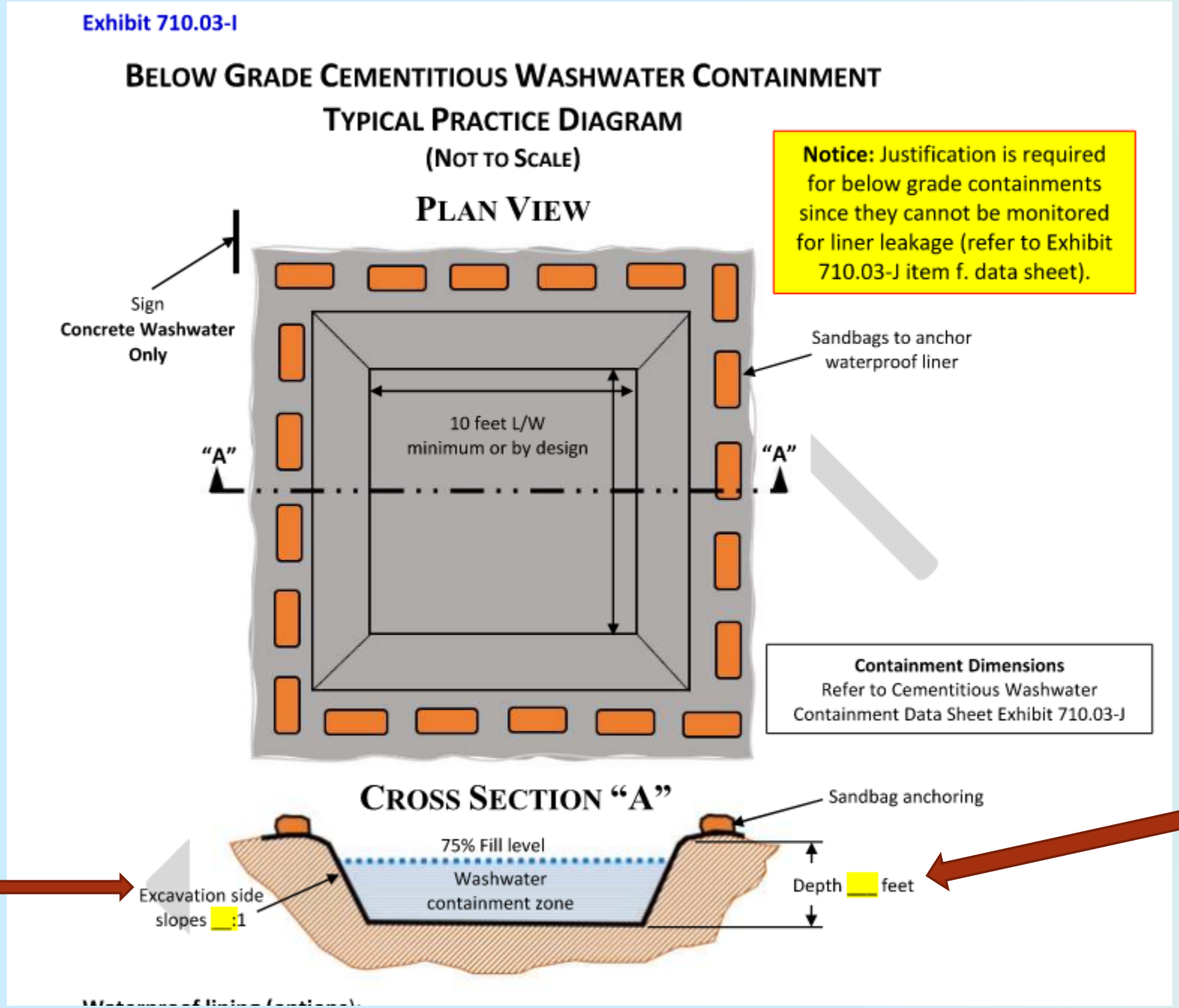
Draft Stormwater Quality Manual!



Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

Draft Stormwater Quality Manual!



Concrete Washouts

Types of Concrete Washouts:

- Dumpster with ramps
- Lined
- Allows truck operator access to remove chutes:

Concrete Washouts

Types of Concrete Washouts:

- Dumpster with ramps allows for pumper trucks to washout
- Also remember pumpers require more washout water!

Concrete Washouts

Types of Concrete Washouts:

"Bag" type –

- Portable – can be set up quickly
- Includes a lid

- Some ready mix suppliers can provide bags at additional cost, **BUT** …

Concrete Washouts

Types of Concrete Washouts:

“Bag” type –

…the SWPPP manager will likely be responsible for removal and disposal.

Plan accordingly.

Also note: the bags or outside containment system is not classified as clean fill and must be disposed as waste. The dried contents can be removed from the container and used as clean fill.

Concrete Washouts

Types of Concrete Washouts:

In-Ground:

- Should not include construction debris
- Liner ?

Concrete Washouts

Types of Concrete Washouts:

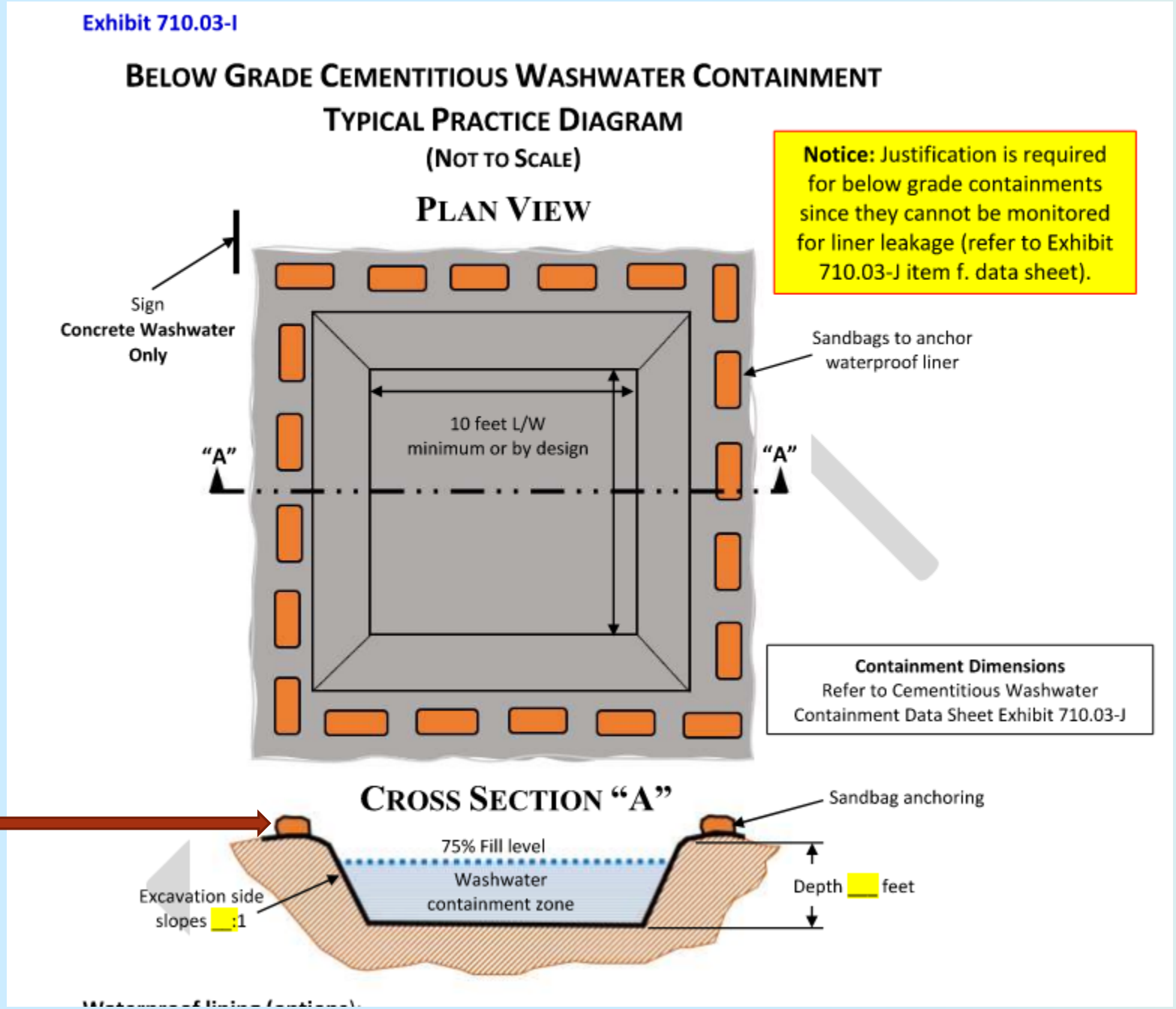
Hay Bail –

- In-Ground?
- Liner above Bails?

Concrete Washouts

OK, how large is it supposed to be?!?!?!?!

Draft Stormwater Quality Manual!



Concrete Washouts

General Washout Specifications:

- Manufactured systems – Per manufacturer
- Must be watertight
- Must support the washout material without tearing
- Must have a waterproof liner such a 10 mil polyethylene sheeting, be free of defects, and should not be seamed
- Resistant to washout water (pH)

Concrete Washouts

General Washout Specifications:

Modified Dumpsters

- Must be in good condition without interior rough edges or defects that will tear the waterproof liner.
- Height of the dumpster sides must be compatible with the plastic state cement containing work activities and equipment being used at the site.
- Waterproof lining must be wide enough and long enough to line the container with a single continuous sheet (without joining or seaming together of sheets) with a sufficient amount to lap/extend over the dumpster walls.
- Waterproof lining must be secured around the edge of the dumpster to prevent liner slippage into or below the containment pooling area

Concrete Washouts

General Washout Specifications:

Concrete Washouts

Site Management:

Communication

- Provide signage marking the washout
- Use "Closed" signs when washout is full
- Coordinate with ready mix suppliers
- Prevent regular construction debris from being placed in the washout
- Prevent undiluted concrete from being placed in the washout – allow to harden
- Provide maximum fill level indicators to allow sufficient capacity in the containment to avoid overfilling or overflows. Typically, containments should not be filled beyond 75 percent of containment capacity and allow for additional storage if unprotected or not covered from precipitation.
- Inform all contractors or users of plastic cementitious materials (concrete, mortar, plaster, stucco and grout) of their responsibility to dispose washwater into washwater containments and where they are located. The responsibility for maintenance and monitoring of washwater containment systems needs to be assigned by the site manager.

Concrete Washouts

Site Management:

General

- *The responsible party must ensure that washwater containments are available at the site to provide appropriate containment for all cementitious washwater even when using ready mix suppliers with trucks equipped with washwater recycling systems*
- Locate away from sensitive areas (creeks, wetlands streams, etc.)
- Prevent runoff and precipitation from entering
- Easily accessible locations provide all-weather access (e.g. temporary ingress / egress pad
- Place on flat ground with vegetative cover
- Inspect for leaks
- Do not use in-ground containment unless no other option
- Do not use washwater containments to dispose of excess concrete or residual ready-mixed loads since surplus plastic concrete can be safely deposited on the ground in small piles to harden. Do not dispose plastic state cement containing materials in water resources or stormwater conveyances.

Concrete Washouts

Site Management:

General

- Hardened concrete is classified as clean fill and is not considered solid waste that requires disposal at solid waste permitted facilities
- When spillage or uncontained discharges are identified through site management, perform an investigation to identify the responsible party and require corrective action.

Concrete Washouts

Site Management:

- Provisions are needed for small mortar operations:
  - Source of clean water for washing tools.
  - Capture of washwater and/or transfer to containment structure.

Washwater from cleaning tools or equipment and run-off from mortar or stucco operations is required to be contained to evaporate or to be properly disposed.

Washwater cannot be discharged at a jobsite to the ground/soil, water resources, or conveyances.

Concrete Washouts

Washwater Treatments

- On-site treatments that chemically alter cementitious washwater for the purpose of discharging is not allowed without appropriate permitting.
- Cementitious washwater treatments that dewater or solidifies liquids or slurries are allowable without additional permitting. Dispose of solidified cementitious materials according to the manufacture's requirements of the solidifying agent.

Concrete Washouts

Do not dispose of hardened concrete or other hardened cement containing materials, trash or debris in washwater containments since typically these materials result in tearing or puncturing of the waterproof liners and also result in rapid filling of storage space.

Provide maximum fill level indicators to allow sufficient capacity in the containment to avoid overfilling or overflows. Typically, containments should not be filled beyond **75 percent** of containment capacity and allow for additional storage if unprotected or not covered from precipitation.

Concrete Washouts

Concrete Truck Cleaning Concerns

Excess plastic concrete left in the chute after the pour should be scraped out and deposited into small piles on the ground (not in water resources or conveyances) and left to harden for removal, recycling into aggregate or used for clean fill.

At the washwater containment location, using water clean the remaining concrete material into the containment.

In general, do not spray off any part of the delivery truck at the job site unless the water collected or placed in a washwater containment system.

Washwater resulting from wash truck windows and mirrors does not require containment (safety requirement).

For trucks with washwater recycling:

Once bucket is clean and rinsed, the remaining aggregate can be placed on the ground, as fill

or with other aggregate.

Concrete Washouts

Inspection Summary:

- Inspect daily as washout containments are being used and after each storm event.
- Inspect the system for leaks or spills. Discontinue use if units are overflowing or leaking. Immediately install “Closed” sign, cover and pump fluids to additional containments or remove from the site for proper disposal for treatment or reuse at the concrete plant.
- Maintain all weather access to the containment facility to minimize tracking.
- Inspect the waterproof lining for failure, including tears and punctures or slide down from containment structure walls.
- When containments reach 75 percent of capacity or according to containment fill level requirements, discontinue use with signage identifying “Closed”, and install or bring in additional containments prior to creating additional cementitious washwater.
- Recycling of material is encouraged. Reuse the material on site as clean fill, recycle, or haul the material to an approved construction/demolition landfill site.

Concrete Washouts

Inspection Summary (Con't):

- The waterproof liner typically cannot be reused and must be replaced after containment cleanout.
- Concrete washout systems are designed to promote evaporation. However, if the liquids do not evaporate and the system is near capacity it may be necessary to vacuum or remove the liquids and dispose of them in an acceptable method.
- When spillage or uncontained discharges are identified through site management, perform an investigation to identify the responsible party and require corrective action.
- When cementitious washwater systems are no longer required, the concrete washout systems shall be closed. Properly dispose of all hardened concrete, containers and other materials used to construct the system.
- Holes, depressions and other land disturbances associated with the system should be backfilled, graded, and stabilized. Where soil has been impacted by washwater deposits removal and replacement with topsoil may be required where landscaping is planned.

QUESTIONS?