

Module 4

Construction Inspection Strategies

Module 4 Contents

4a. Overview

4b. Pre-Inspection Preparation

4c. Site Entry

4d. Posting Requirements and SWPPP Review

4e. Site Inspection

4f. Inspection Report

Module 4a.

Overview

Overview



Module 4b.

Pre-Inspection Preparation

Pre-Inspection Preparation

- Review available documents:
 - Permit(s)
 - Previous inspection reports, enforcement actions
 - Complaints

Pre-Inspection Preparation

- Pack:
 - Inspection forms, checklists
 - Logbook
 - Digital camera
 - Inspection credentials/identification
 - Safety equipment

Helpful Hint!



Stormwater Best Management Practice

Concrete Washout



Minimum Measure

Construction Site Stormwater Runoff Control

Subcategory

Good Housekeeping/Materials Management

Description of Concrete Washout at Construction Sites

Concrete and its ingredients

Concrete is a mixture of cement, water, and aggregate material. Portland cement is made by heating a mixture of limestone and clay containing oxides of calcium, aluminum, silicon and other metals in a kiln and then pulverizing the resulting clinker. The fine aggregate particles are usually sand. Coarse aggregate is generally gravel or crushed stone. When cement is mixed with water, a chemical reaction called hydration occurs, which produces glue that binds the aggregates together to make concrete.

Concrete washout

After concrete is poured at a construction site, the chutes of ready mixed concrete trucks and hoppers of concrete pump trucks must be washed out to remove the remaining concrete before it hardens. Equipment such as wheelbarrows and hand tools also need to be washed down. At the end of each work day, the drums of concrete trucks must be washed out. This is customarily done at the ready mixed batch plants, which are

Construction workers should handle wet concrete and washout water with care because it may cause skin irritation and eye damage. If the washwater is dumped on the ground (Fig. 1), it can run off the construction site to adjoining roads and enter roadside storm drains, which discharge to surface waters such as rivers, lakes, or estuaries. The red arrow in Figure 2 points to a ready mixed truck chute that's being washed out into a roll-off bin, which isn't watertight. Leaking washwater, shown in the foreground, will likely follow similar



Figure 1. Chute washwater being dumped on the ground



Figure 2. Chute washwater leaking from a roll-off bin being used as a washout container

paths to nearby surface waters. Rainfall may cause concrete washout containers that are uncovered to overflow and also transport the washwater to surface waters. Rainwater polluted with concrete washwater can percolate down through the

Module 4c.

Site Entry

Site Entry

- Stormwater Management Act authorizes:
 - DEQ, VSMP authority, MS4 authority
 - Reasonable times
 - Reasonable circumstances

Site Entry

- Best Practices
 - Enter through main entrance or other agreed access point
 - Document names of people you meet
 - Provide credentials/ID
 - Provide authority for inspection



Site Entry

- Best Practices
 - Notify person in charge of the inspection
 - Inquire about any specific onsite safety issues or requirements
 - Explain purpose of inspection
 - Use clear language



Site Entry

- Best Practices
 - One question at a time
 - Write responses
 - Repeat or rephrase
 - Listen carefully and actively
 - Do not fill in the blanks



Site Entry

- Best Practices
 - Do not include the answer in a posed question
 - Summarize and verify important details



Site Entry

- If denied entry
 - Remain calm, professional, courteous
 - Explain right of entry under the Act
 - Document reasons for denial
 - What are underlying concerns
- If still denied entry
 - Leave
 - Seek access through other means

Module 4d.

Posting Requirements and SWPPP Review

Public Notification

- Copy of notice of coverage letter
 - General LDAs - Main entrance
 - Linear projects – publicly accessible location near active part of project

SWPPP

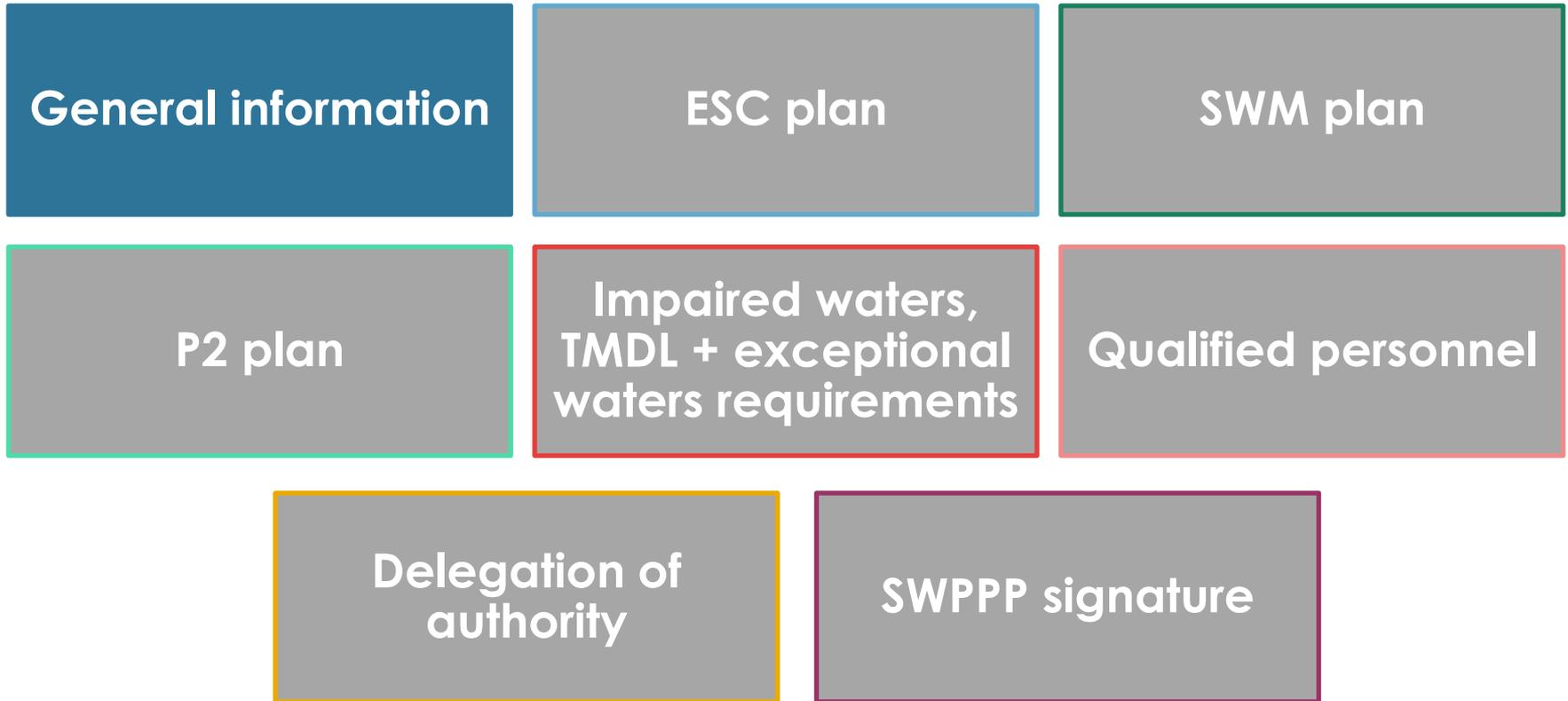
SWPPP Availability

Construction
personnel

DEQ,
VSMP/VESCP
authority, EPA,
MS4 operator,
local
government

Public

SWPPP



SWPPP

1. General information

- Signed copy of registration statement (if required)

Registration Statement
General VPDES Permit for Discharges of Stormwater from Construction Activities (VAR10)

(Please Type or Print All Information)

1. **Construction Activity Operator:** *(General permit coverage will be issued to this operator. The Certification in Item #12 must be signed by the appropriate person associated with this operator.)*

Name: _____

Contact: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____ Phone: _____

Email address (if available): _____

Indicate if DEQ may transmit general permit correspondence electronically: Yes No

2. **Existing General Permit Registration Number (for renewals only):** _____

3. **Name and Location of the Construction Activity:**

Name: _____

Address (if available): _____

City: _____ State: _____ Zip: _____

County (if not located within a City): _____

Latitude (decimal degrees): _____ Longitude (decimal degrees): _____

Name and Location of all Off-site Support Activities to be covered under the general permit:

Name: _____

Address (if available): _____

SWPPP

1. General information

- Copy of the notice of coverage letter



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4020
1-800-592-5482

July 1, 2014

To: Any Operator constructing a Single-Family Detached Residential Structure

Re: Coverage under the VPDES Construction General Permit (VAR10)
Construction of a Single-Family Detached Residential Structure
Various locations throughout the Commonwealth of Virginia

Dear Permittee:

Any operator with a stormwater discharge associated with the construction of a single-family detached

SWPPP

1. General information

Copy of the Construction GP

General Permit No.: VAR10

Effective Date: July 1, 2014

Expiration Date: June 30, 2019

GENERAL VPDES PERMIT FOR DISCHARGES OF STORMWATER FROM CONSTRUCTION ACTIVITIES

AUTHORIZATION TO DISCHARGE UNDER THE VIRGINIA STORMWATER MANAGEMENT PROGRAM AND THE VIRGINIA STORMWATER MANAGEMENT ACT

In compliance with the provisions of the Clean Water Act, as amended, and pursuant to the Virginia Stormwater Management Act and regulations adopted pursuant thereto, operators of construction activities are authorized to discharge to surface waters within the boundaries of the Commonwealth of Virginia, except those specifically named in State Water Control Board regulations that prohibit such discharges.

The authorized discharge shall be in accordance with this cover page, Part I - Discharge Authorization and Special Conditions, Part II - Stormwater Pollution Prevention Plan, and Part III - Conditions Applicable to All VPDES Permits as set forth herein.

PART I

SWPPP

1. General information

- Narrative description of the nature of the construction activity

1 Project Description

T & L Commercial Development is proposing to develop a 6.7 acre vacant lot. The lot is located in Small County at 1111 Landry Lane. The project includes the construction of one 20,000 SF office building. Two travel lanes connect two separate parking lots, one on either side of the office building to Landry Lane. An employee picnic area is located at the rear of the office building and connected to the western parking lot. The McMcCutcheon Pedestrian plaza and outdoor walkways connect various entrances to the building and parking lots. The parking lots provide a total of 70 parking spaces. The total traffic average daily trips to the site is estimated to be 100.

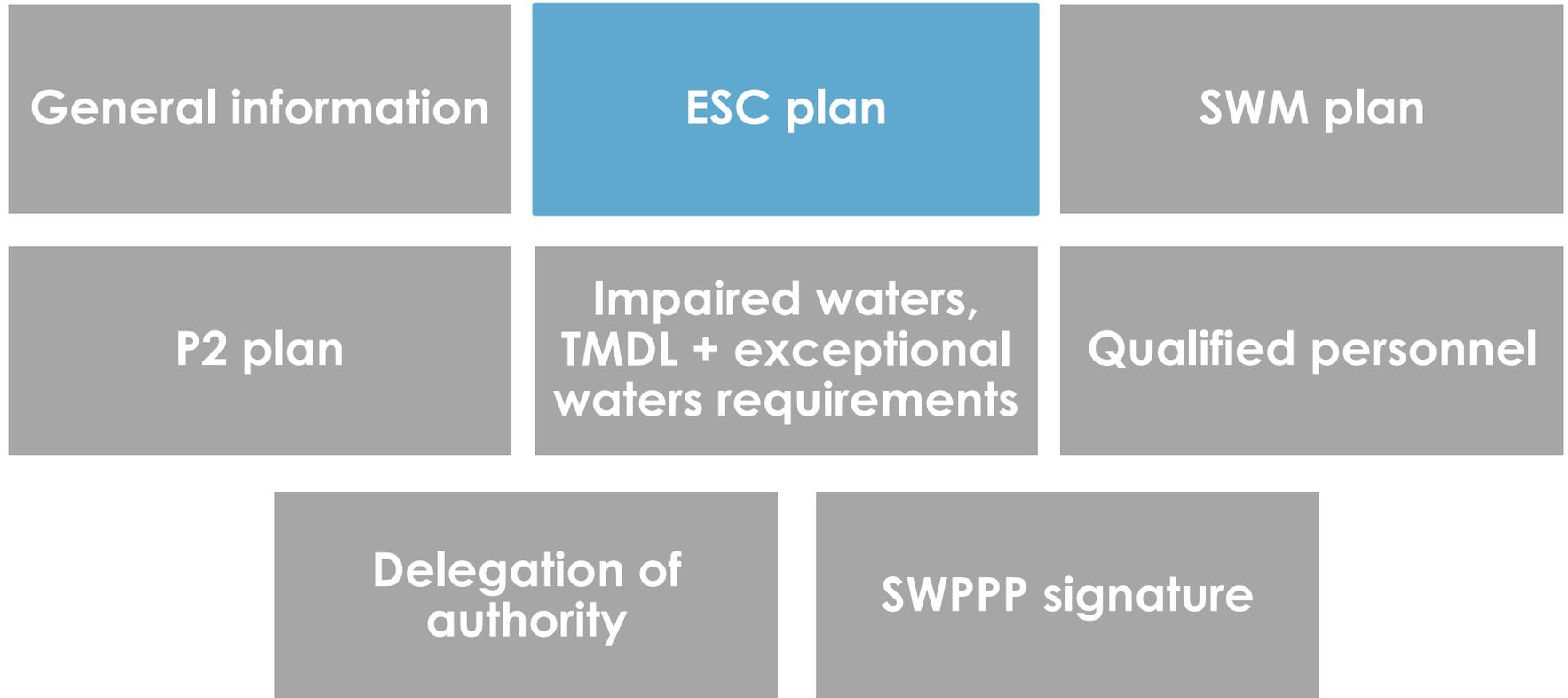
The office park is intended to meet the needs of a functioning business while also offering

SWPPP

1. General information

- Legible site plan

SWPPP

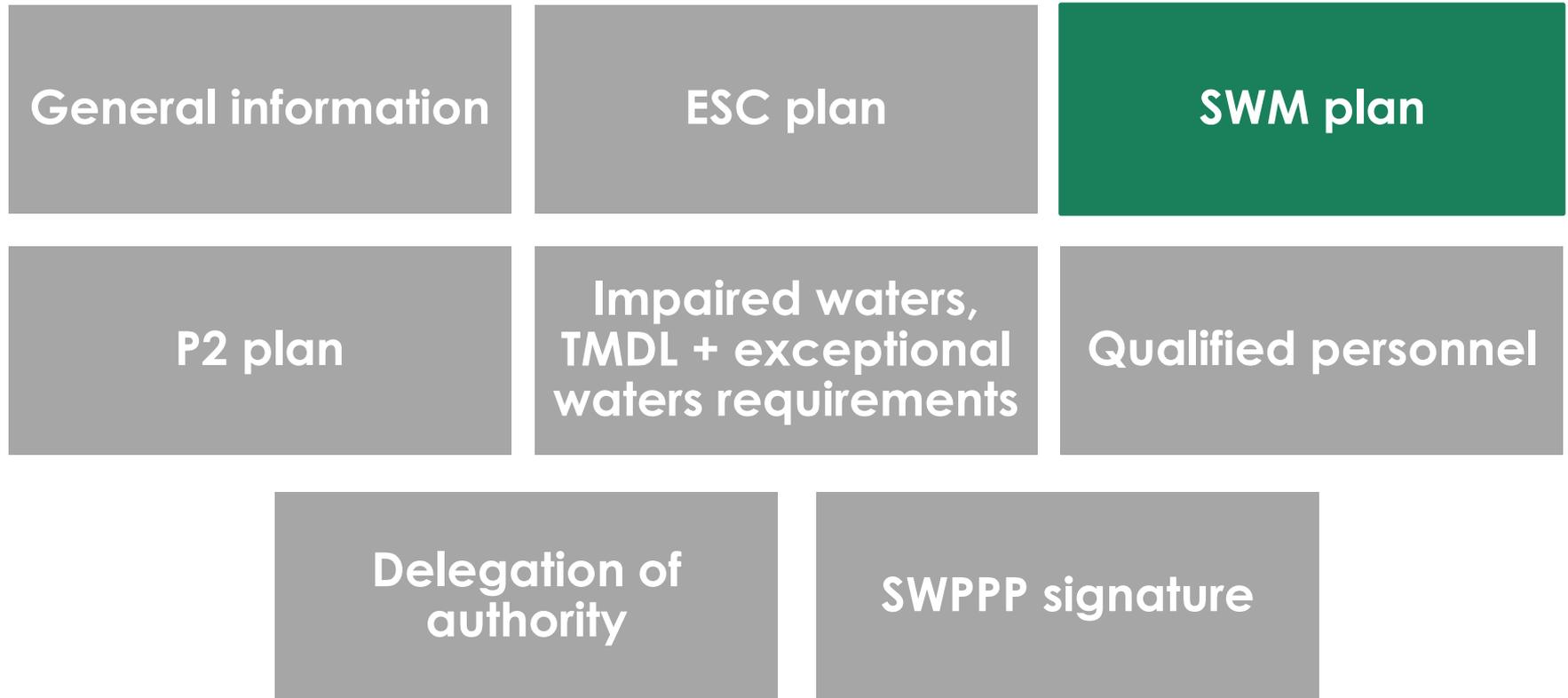


SWPPP

2. Erosion and sediment control plan

- Approved ESC plan, agreement in lieu of a plan, or ESC plan prepared in accordance with DEQ approved annual standards and specifications

SWPPP



SWPPP

3. Stormwater management plan

New construction

- Approved SWM plan
- Agreement in lieu of a plan
- SWM plan developed in accordance with DEQ approved annual standards and specifications

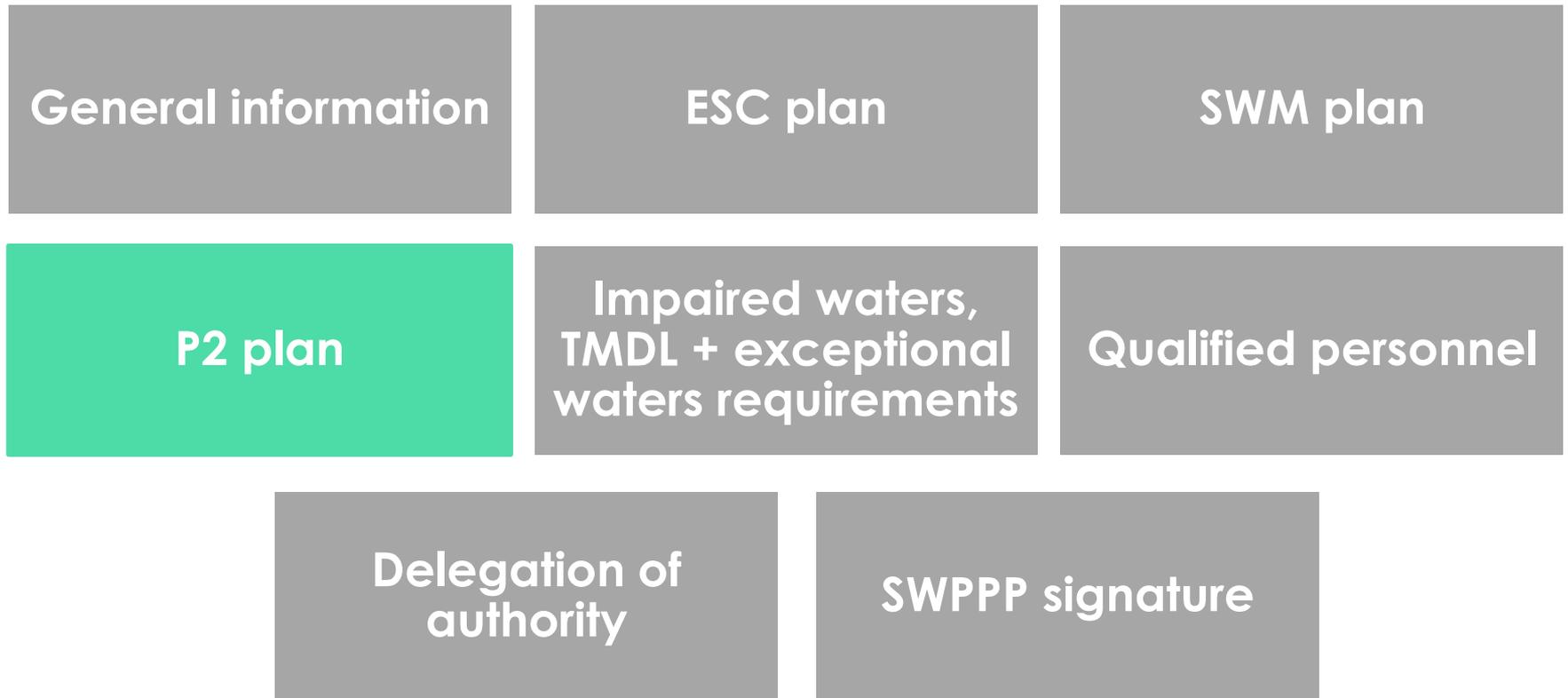
SWPPP

3. Stormwater management plan

Existing construction

- Description post-construction stormwater management
- Calculations supporting post-construction stormwater management

SWPPP



SWPPP

4. Pollution prevention plan

- Identifies potential pollutant-generating activities
- Describes location of potential pollutant-generating activities
- Identifies all nonstormwater discharges that are or will be commingled with stormwater discharges from the construction activity
- Identifies the person responsible for implementing P2 practices if other than qualified personnel

SWPPP

4. Pollution prevention plan

- Describes P2 practices and procedures to:
 1. **Prevent and respond** to leaks, spills, and other releases including (i) procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases; and (ii) procedures for reporting leaks, spills, and other releases in accordance with Part III G

**PAMPERS Y
SPILL DRY
USADOS**

First Transit

**PAMPERS Y
SPILL DRY
USADOS**

First Transit

**FI
A
US**

First Transit

SWPPP

4. Pollution prevention plan

- Describes P2 practices and procedures to:
 2. **Prevent** the discharge of spilled and leaked fuels and chemicals from vehicle fueling and maintenance activities (e.g., providing secondary containment such as spill berms, decks, spill containment pallets, providing cover where appropriate, and having spill kits readily available)



SWPPP

4. Pollution prevention plan

□ Describes P2 practices and procedures to:

3. **Prevent** the discharge of soaps, solvents, detergents, and wash water from construction materials, including the clean-up of stucco, paint, form release oils, and curing compounds (e.g., providing (i) cover (e.g., plastic sheeting or temporary roofs) to prevent contact with stormwater; (ii) collection and proper disposal in a manner to prevent contact with stormwater; and (iii) a similarly effective means designed to prevent discharge of these pollutants)



*Paint Washout
Only*

SWPPP

4. Pollution prevention plan

□ Describes P2 practices and procedures to:

4. **Minimize** the discharge of pollutants from vehicle and equipment washing, wheel wash water, and other types of washing (e.g., locating activities away from surface waters and stormwater inlets or conveyance and directing wash waters to sediment basins or traps, using filtration devices such as filter bags or sand filters, or using similarly effective controls)



SWPPP

4. Pollution prevention plan

Describes P2 practices and procedures to:

5. **Direct** concrete wash water into a leak-proof container or leak-proof settling basin. The container or basin shall be designed so that no overflows can occur due to inadequate sizing or precipitation. Hardened concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wastes. Liquid concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wash waters and shall not be discharged to surface waters



SWPPP

4. Pollution prevention plan

□ Describes P2 practices and procedures to:

6. **Minimize** the discharge of pollutants from storage, handling, and disposal of construction products, materials, and wastes including (i) building products such as asphalt sealants, copper flashing, roofing materials, adhesives, and concrete admixtures; (ii) pesticides, herbicides, insecticides, fertilizers, and landscape materials; and (iii) construction and domestic wastes such as packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, Styrofoam, concrete, and other trash or building materials



SWPPP

4. Pollution prevention plan

Describes P2 practices and procedures to:

7. **Prevent** the discharge of fuels, oils, and other petroleum products, hazardous or toxic wastes, and sanitary wastes

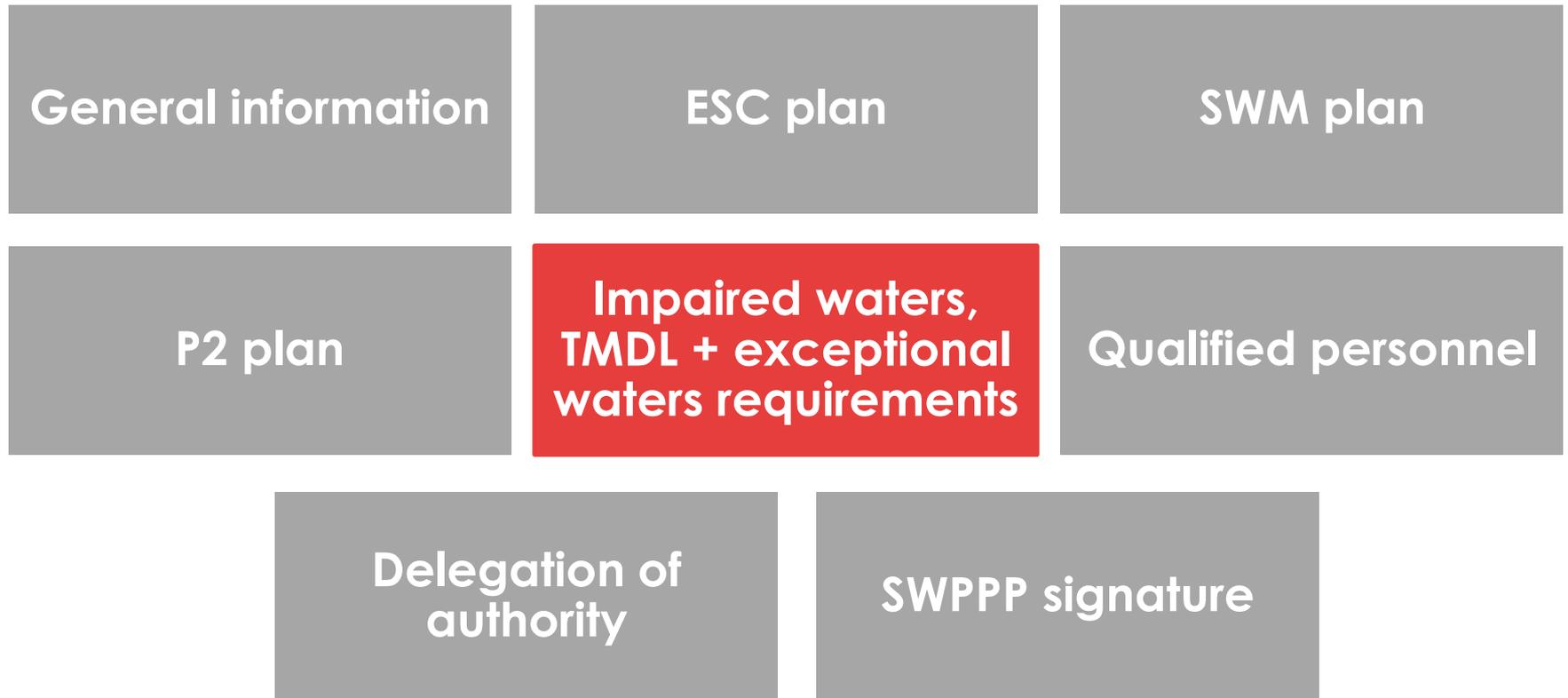


SWPPP

4. Pollution prevention plan

- Describes P2 practices and procedures to:
 8. Address any other discharge from the potential pollutant-generating activities not addressed above

SWPPP



SWPPP

5. Requirements for discharges to impaired waters, surface waters with applicable TMDL and exceptional waterways
 - Identifies impaired water(s), approved TMDL(s), pollutant(s) or concern, and exceptional waters

SWPPP

5. Requirements for discharges to impaired waters, surface waters with applicable TMDL and exceptional waterways

Provides clear direction that:

1. Permanent or temporary soil stabilization must be applied to denuded areas within **seven days after final grade is reached on any portion of the site**

SWPPP

5. Requirements for discharges to impaired waters, surface waters with applicable TMDL and exceptional waterways

Provides clear direction that:

2. Nutrients must be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and must not be applied during rainfall events

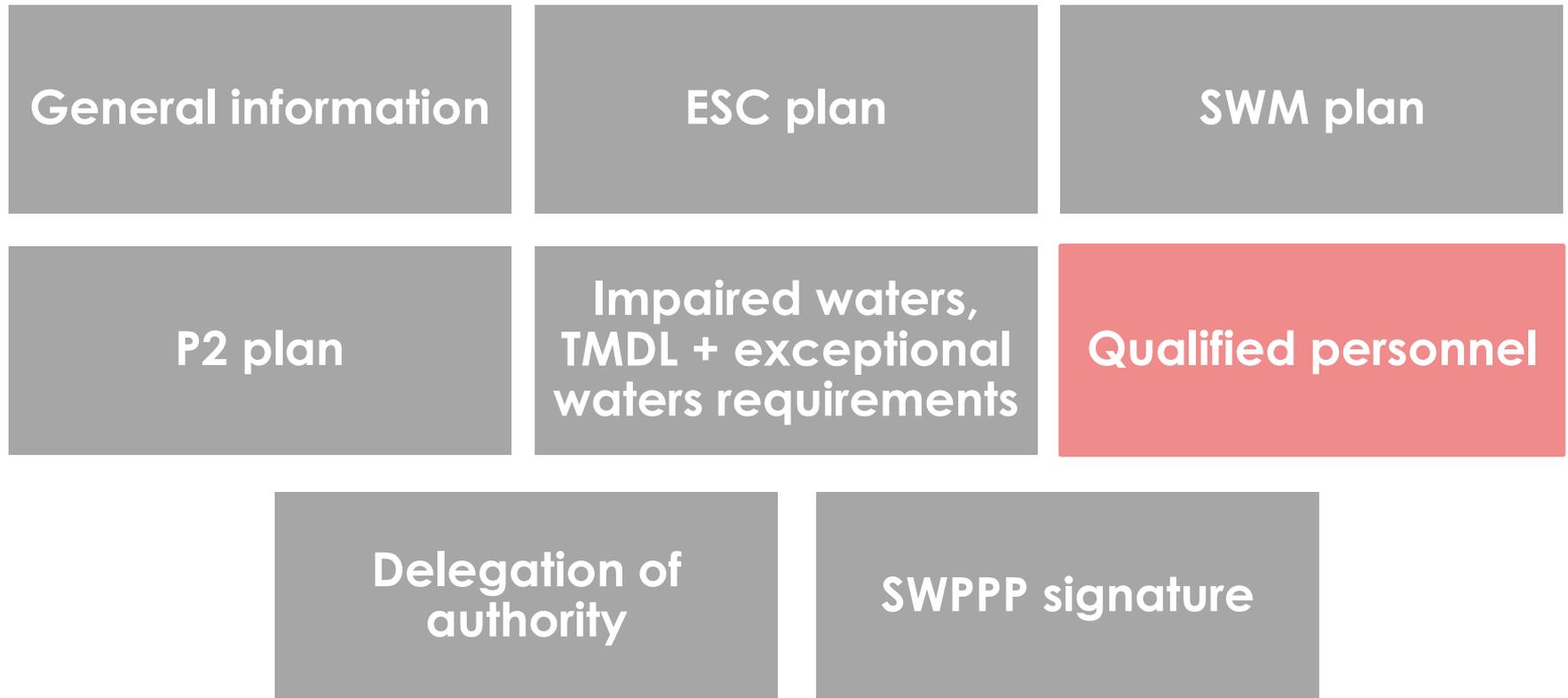
SWPPP

5. Requirements for discharges to impaired waters, surface waters with applicable TMDL and exceptional waterways

Provides clear direction that:

3. A modified SWPPP inspection schedule is implemented

SWPPP



SWPPP

6. Qualified personnel

- Lists name, phone number and qualifications

SWPPP

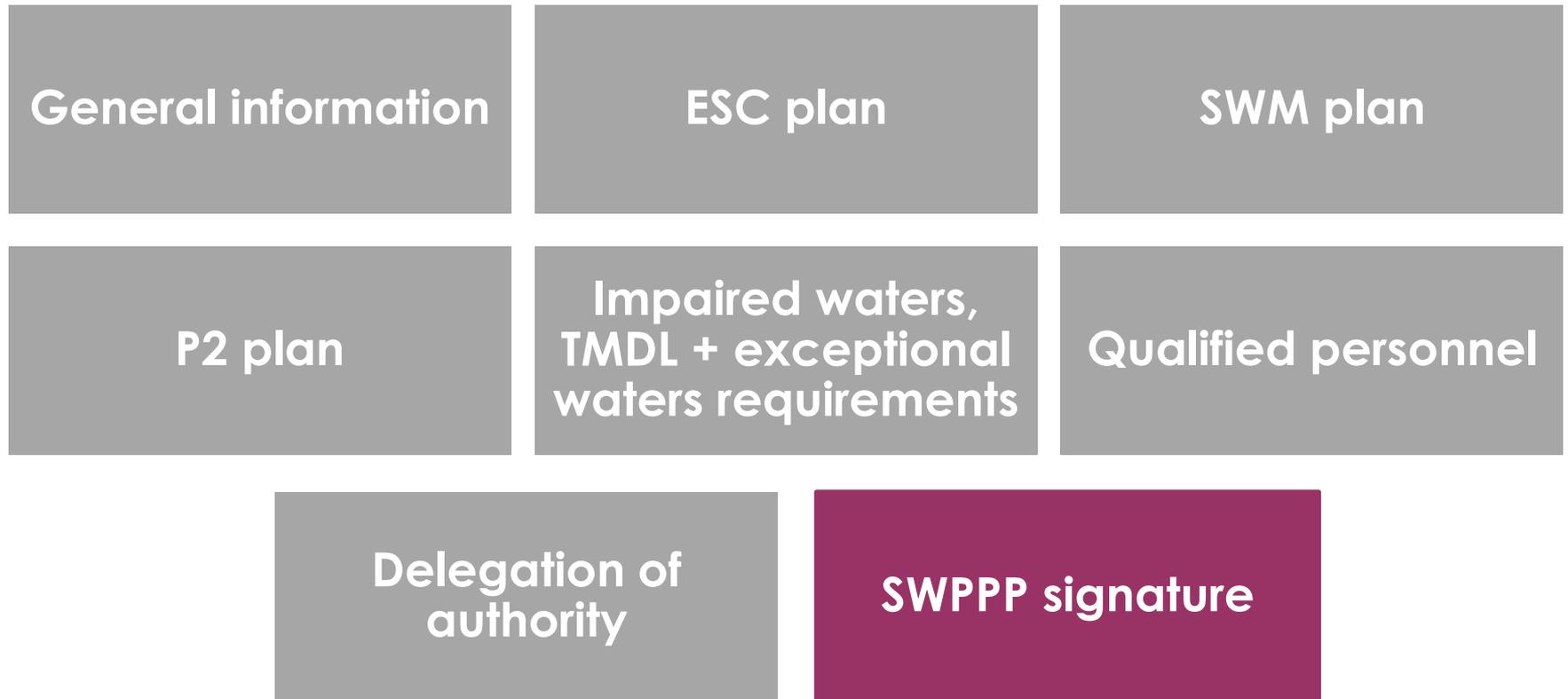


SWPPP

7. Delegation of authority

- Lists individuals or positions able to sign inspection reports to modify the SWPPP

SWPPP



SWPPP

8. SWPPP signature

- Signed and dated by operator or duly authorized representative

SWPPP

- SWPPP amendments, modifications, and updates
 - SWPPP must be amended if:
 - Change in the design, construction, operation, or maintenance that has significant effect on the discharge of pollutants to surface waters and that was not previously addressed in SWPPP

SWPPP

- SWPPP amendments, modifications, and updates
 - SWPPP must be amended if:
 - Inspections or investigations by the qualified personnel, or local, state, or federal officials, determined that the existing control measures are ineffective in minimizing pollutants in discharges from construction activity

SWPPP

- SWPPP amendments, modifications, and updates
 - Revisions must include additional or modified control measures designed and implemented to correct problems
 - If approval needed, SWPPP revisions must be made within **7 days** of approval

SWPPP

- SWPPP amendments, modifications, and updates
 - SWPPP must be amended if:
 - There is a new contractor that will implement and maintain a control measure

SWPPP

- SWPPP amendments, modifications, and updates
 - Modifications and updates
 - SWPPP must be updated within **7 days** following any modification to its implementation

SWPPP

- SWPPP amendments, modifications, and updates
 - Modifications and updates
 - Must include:
 - Record of dates when:
 1. Major grading activities occurred
 2. Construction activities temporarily or permanently cease on a portion of the site
 3. Stabilization measures are initiated

SWPPP

- SWPPP amendments, modifications, and updates
 - Modifications and updates
 - Must include:
 - Documentation of replaced or modified controls where periodic inspections or other information have indicated that the controls have been used inappropriately or incorrectly and where modified as soon as possible

SWPPP

- SWPPP amendments, modifications, and updates
 - Modifications and updates
 - Must include:
 - Areas that have reached final stabilization and where no further SWPPP or inspection requirements apply

SWPPP

- SWPPP amendments, modifications, and updates
 - Modifications and updates
 - Must include:
 - All properties that are no longer under legal control of the operator and the dates on which the operator no longer had legal control over each property

SWPPP

- SWPPP amendments, modifications, and updates
 - Modifications and updates
 - Must include:
 - Date of any prohibited discharge, volume released, actions taken to minimize impact of release

SWPPP

- SWPPP amendments, modifications, and updates
 - Modifications and updates
 - Must include:
 - Measures taken to prevent the reoccurrence of any prohibited discharge
 - Measures taken to address any evidence identified as a result of a qualified person's SWPPP inspections

SWPPP



- Amendments, modifications, or updates to the SWPPP must be signed and dated by the operator or a duly authorized representative

SWPPP



- Any operator who discharges or causes or allows a discharge of sewage, industrial waste, other waste or any noxious or deleterious substance or a hazardous substance or oil into or upon surface waters or that may reasonably be expected to enter surface waters must notify DEQ immediately upon discovery of the discharge, but in no case later than within **24 hours of discovery**. A written report of the unauthorized discharge must be submitted to DEQ and the VSMP authority within five days of discovery.
- A discharge of oil does not have to be reported if the discharge is **less than 25 gallons, does not reach state waters, is cleaned up immediately** and the **recordkeeping requirements** of § 62.1-44.34:19.2 have been satisfied.

SWPPP Inspections

Look for:



- SWPPP inspections, including offsite support activities, completed at correct frequency
- SWPPP inspection requirements and documentation met

SWPPP Inspections

SWPPP inspection schedule

Discharges to impaired waters, surface waters with an applicable TMDL wasteload allocation and exceptional waters

Discharges to waterways without limitations

- At least once every **4** business days
OR
- At least once every **5** business days and no later than **48 hours** following a measurable storm event

- At least once every **5** business days
OR
- At least once every **10** business days and no later than **48 hours** following a measurable storm event

SWPPP Inspections

SWPPP inspection schedule

Discharges to impaired waters, surface waters with an applicable TMDL wasteload allocation and exceptional waters

Discharges to waterways without limitations

- Where areas have been temporarily stabilized or land-disturbing activities will be suspended due to continuous frozen ground conditions and stormwater discharges are unlikely, the inspection frequency may be reduced to **once per month**
- If weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, the operator shall immediately resume the regular inspection frequency

SWPPP Inspections

Linear construction SWPPP inspection schedule

Discharges to impaired waters, surface waters with an applicable TMDL wasteload allocation and exceptional waters

Discharges to waterways without limitations

- Inspect all outfalls discharging to surface waters identified as impaired or for which a TMDL wasteload allocation has been established and approved prior to the term of this Construction GP

- Representative inspections may be utilized for utility line installation, pipeline construction, or other similar linear construction activities

SWPPP Inspections



Look for:

- All required information recorded in SWPPP inspection report
- Date and signature of the qualified personnel and the operator or its duly authorized representative on SWPPP inspection report

SWPPP



- Operator must retain inspection reports for 3 years from date of permit termination or expiration

SWPPP



- Where an inspection report does not identify any incidents of noncompliance, the report shall contain a certification that the construction activity is in compliance with the SWPPP and the Construction GP. The report shall be signed by the operator or duly authorized representative

SWPPP Inspections

- Corrective actions
 - Operator must implement **as soon as practicable but no later than 7 days after discovery**
 - VSMP/VESCP authority may authorize longer
 - Additional control measures be use implemented to minimize pollutants in stormwater until approval from authority

SWPPP Inspections

Look for:



- Corrective actions being implemented
- Timeframe that corrective actions are implemented

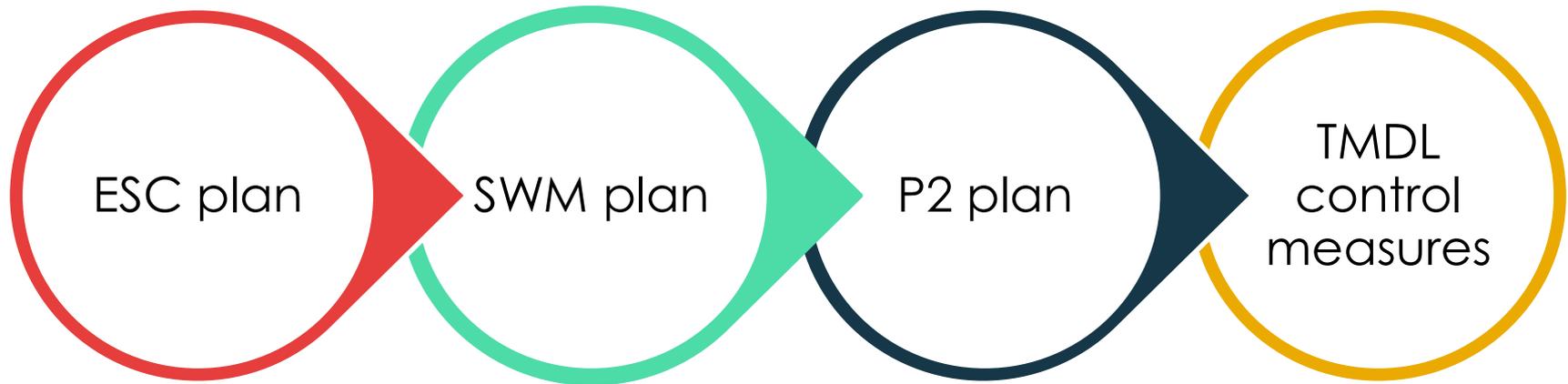
SWPPP Inspections

- Operator may have to remove sediment from outside construction activity
 - Notify VSMP authority and DEQ
 - Obtain authorization, approvals and permits before removing sediment from surface waters including wetlands!

Module 4e.

Site Inspection

Site Inspection



Site Inspection

- ESC practices

Perimeter controls

Soil stabilization

Slope protection

**Inlets, outlets and
channel
protection**

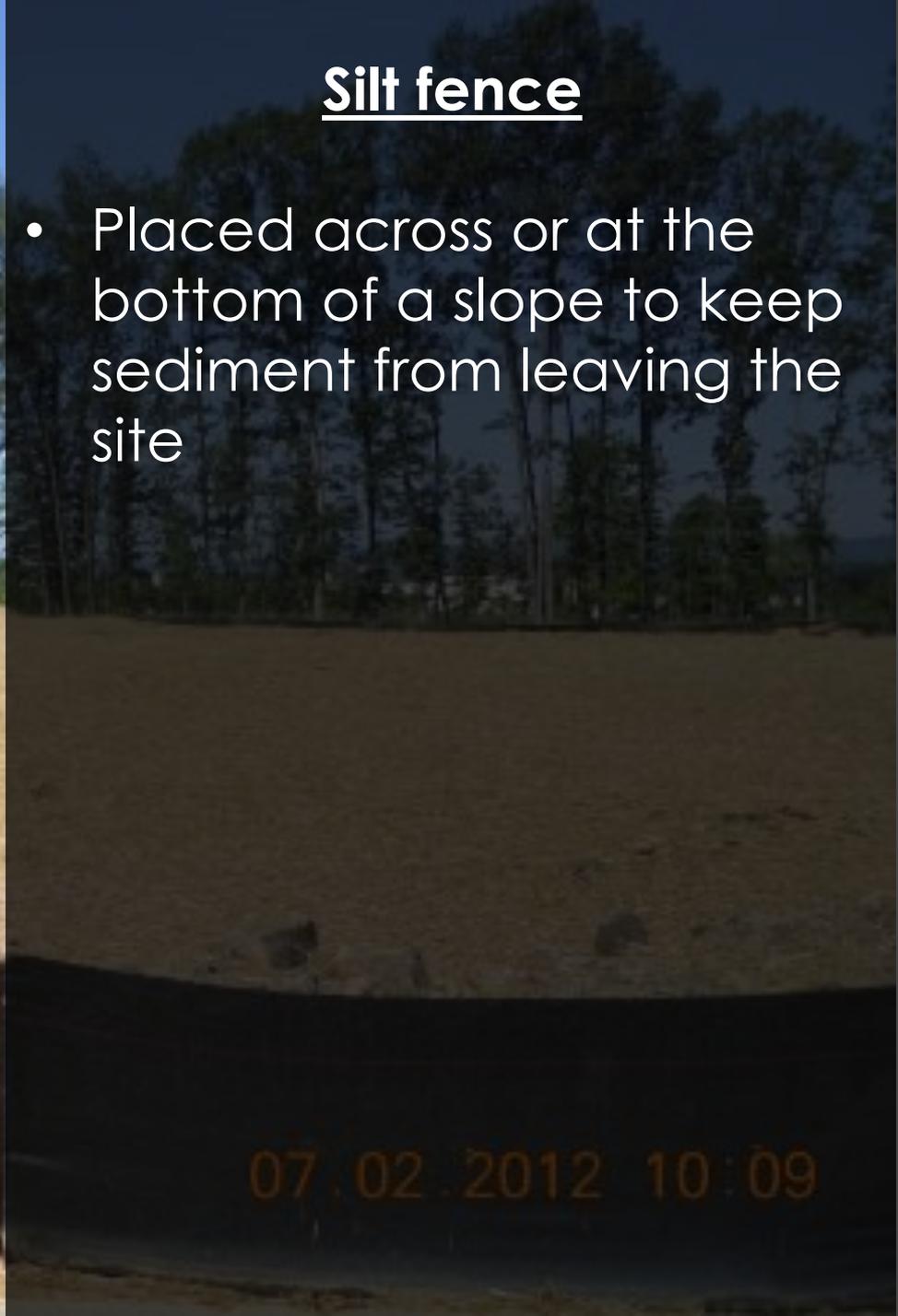
Site Inspection

- Perimeter controls
 - Keep sediment on the site
 - Protect neighboring properties
 - Must be installed **before** upslope land disturbance occurs



Silt fence

- Placed across or at the bottom of a slope to keep sediment from leaving the site



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Construction entrance

- Stabilized stone pad with a filter fabric underliner
- Located where vehicles enter and leave a construction site
- Reduces amount of sediment tracked onto paved roads

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Sediment trap

- Collects sediment-laden runoff from areas that are less than 3 acres





Sediment basin

- Collects sediment-laden runoff from areas that are 3 acres or larger

JUN 24 2003

Site Inspection

- Soil stabilization
 - The most effective form of erosion control



Stabilization of earthen structures

- Completed earthen structures, such as dams, dikes, ditches, and diversions must be immediately stabilized



Stockpiles and borrow areas

- Soil stockpiles and borrow areas must be stabilized or protected with a sediment trapping measures
- Also applies to offsite areas



Stabilization for dormant areas

- Temporary stabilization must be applied within 7 days to bare areas that may not be at final grade but will remain dormant for longer than 14 days



Stabilization for areas at final grade

- Permanent or temporary soil stabilization must be applied to bare areas within 7 days after final grade is reached on any portion of the site

Site Inspection

- Slope protection
 - Slopes erode easily and must be protected during construction



Cut and fill slopes

- Cut and fill slopes must be re-stabilized if found eroding within one year of permanent stabilization being added



Conveyance of stormwater down slopes

- To protect slopes from eroding, use a channel, flue, or slope drain to convey runoff down cut and fill slopes

Site Inspection

- Inlets, outlets and channels
 - Keep sediment out of storm inlets
 - Outlets and channels must be protected to prevent erosion



Inlets

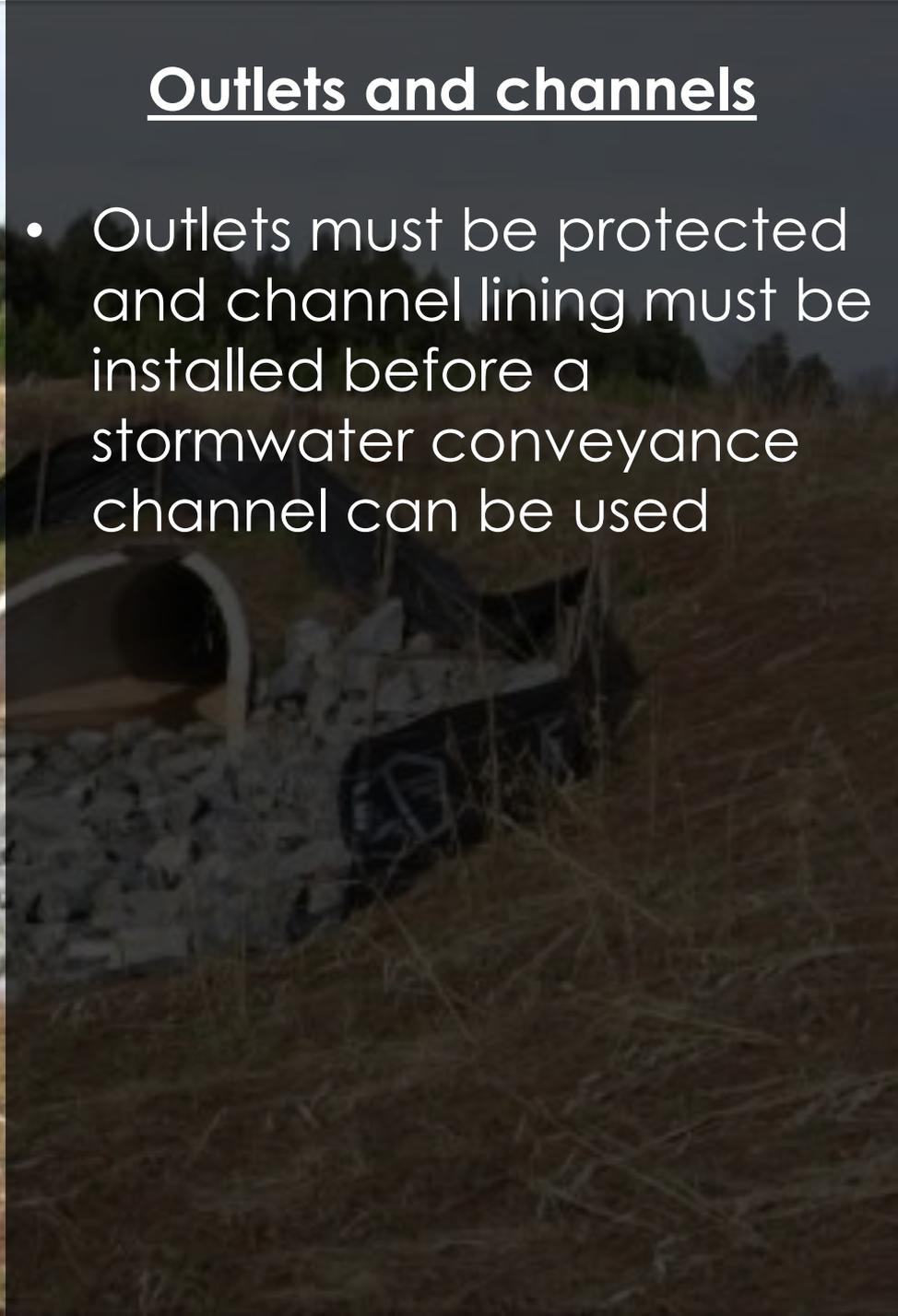
- Inlets made operable during construction must be protected so sediment will be filtered out before water enters





Outlets and channels

- Outlets must be protected and channel lining must be installed before a stormwater conveyance channel can be used



Site Inspection

- Working in watercourses



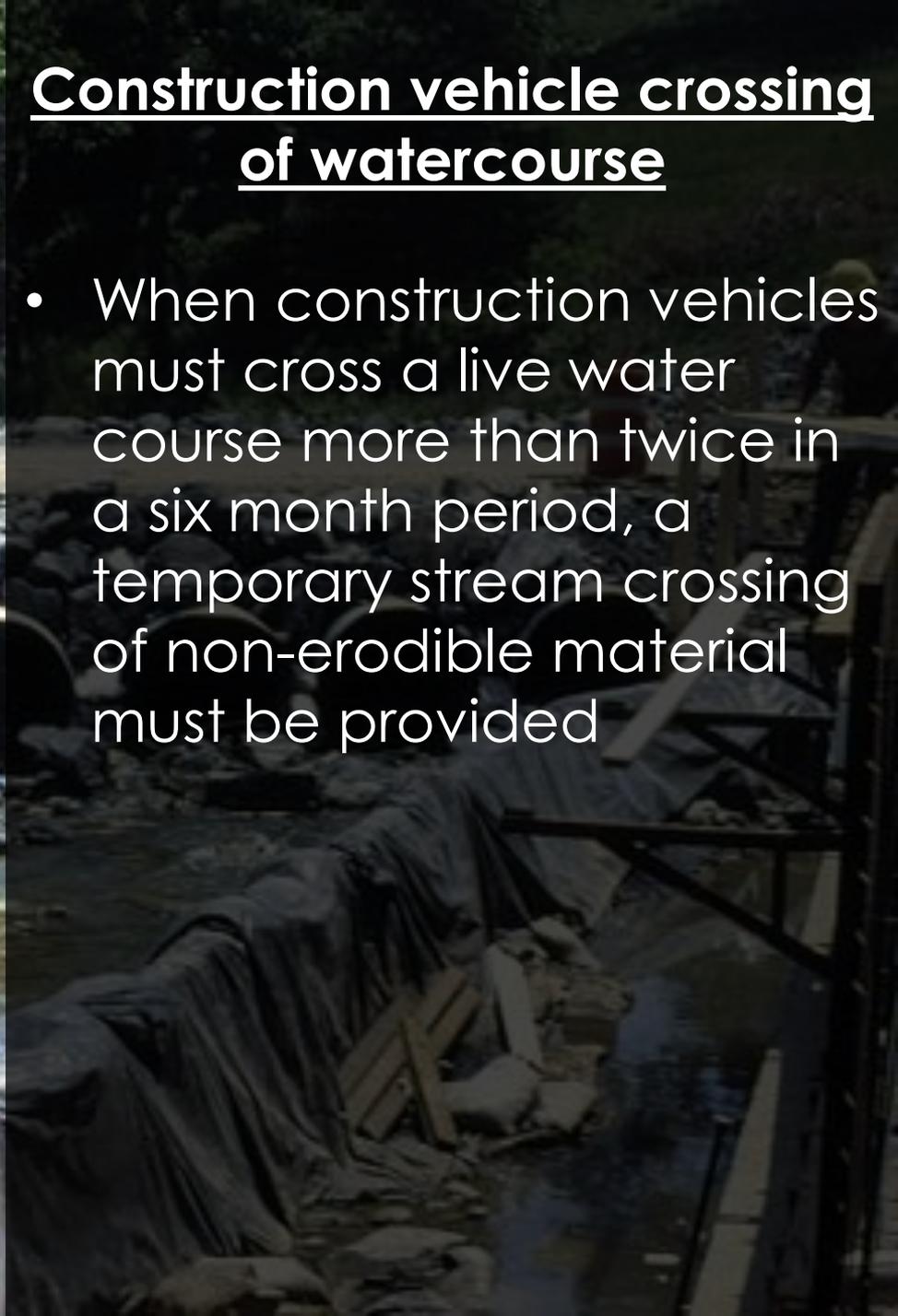
Minimize encroachments to live watercourses

- Non-erodible materials shall be used for construction causeways and coffer dams; earthen material may be used if armored by non-erodible material



Construction vehicle crossing of watercourse

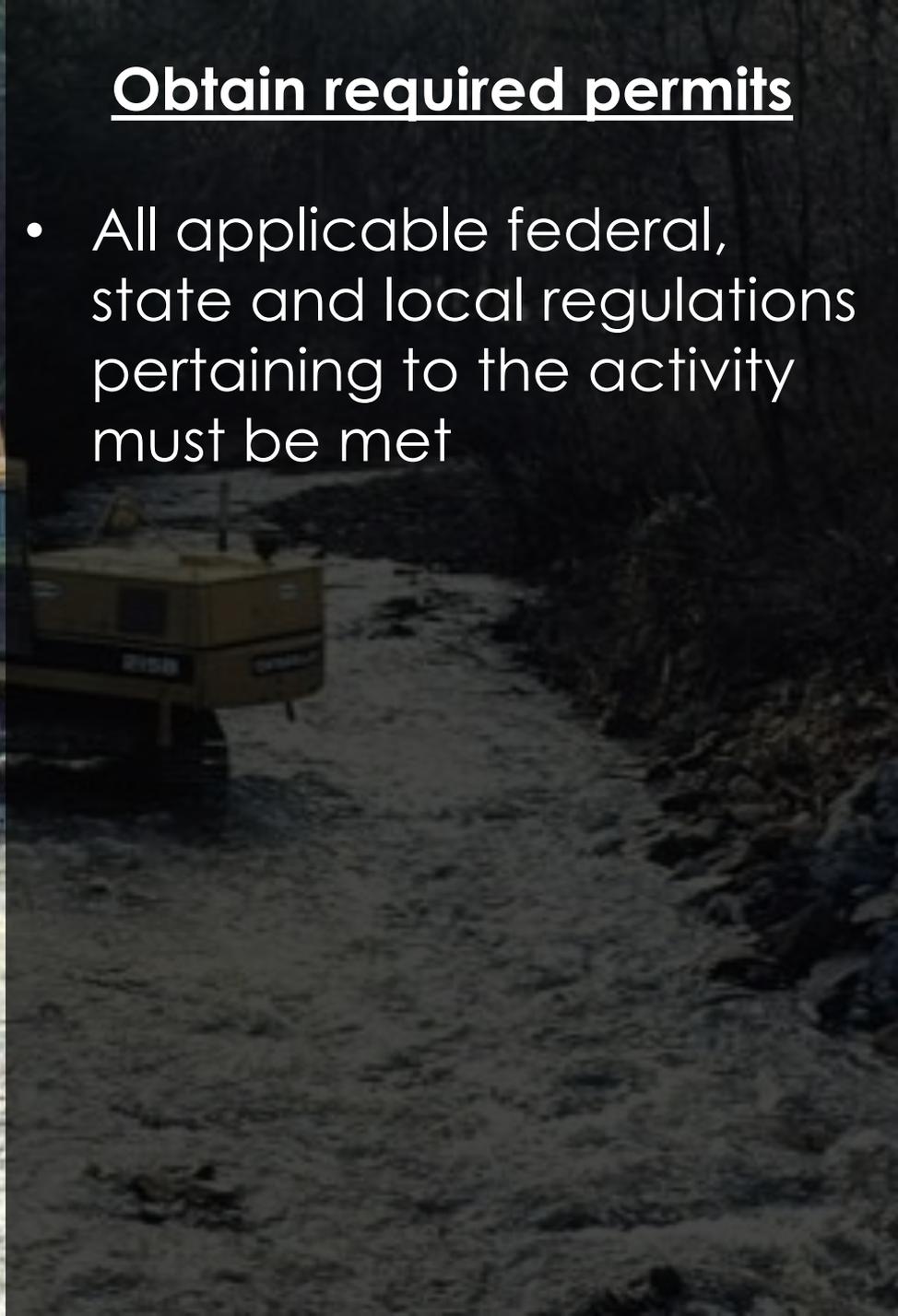
- When construction vehicles must cross a live water course more than twice in a six month period, a temporary stream crossing of non-erodible material must be provided





Obtain required permits

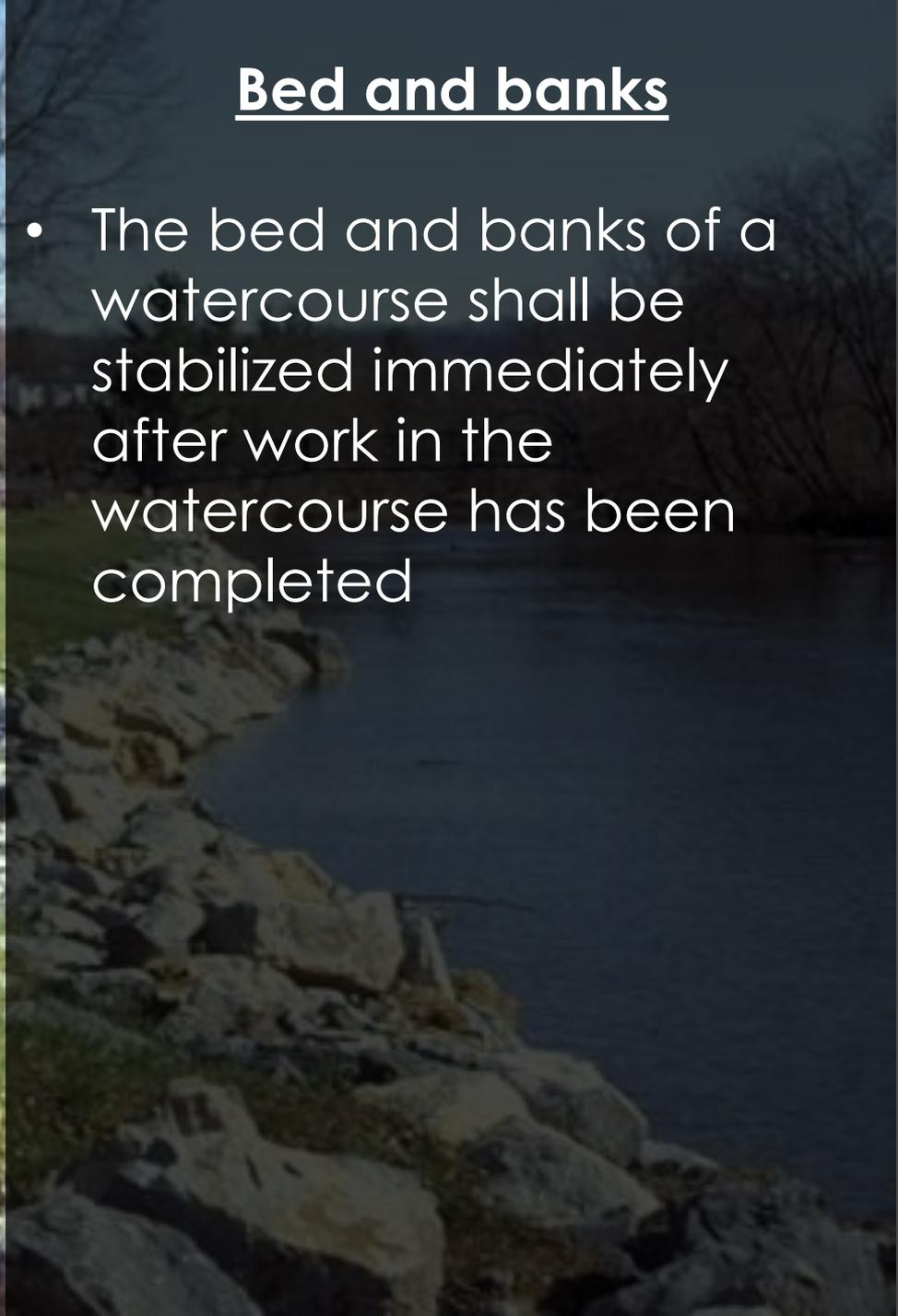
- All applicable federal, state and local regulations pertaining to the activity must be met





Bed and banks

- The bed and banks of a watercourse shall be stabilized immediately after work in the watercourse has been completed

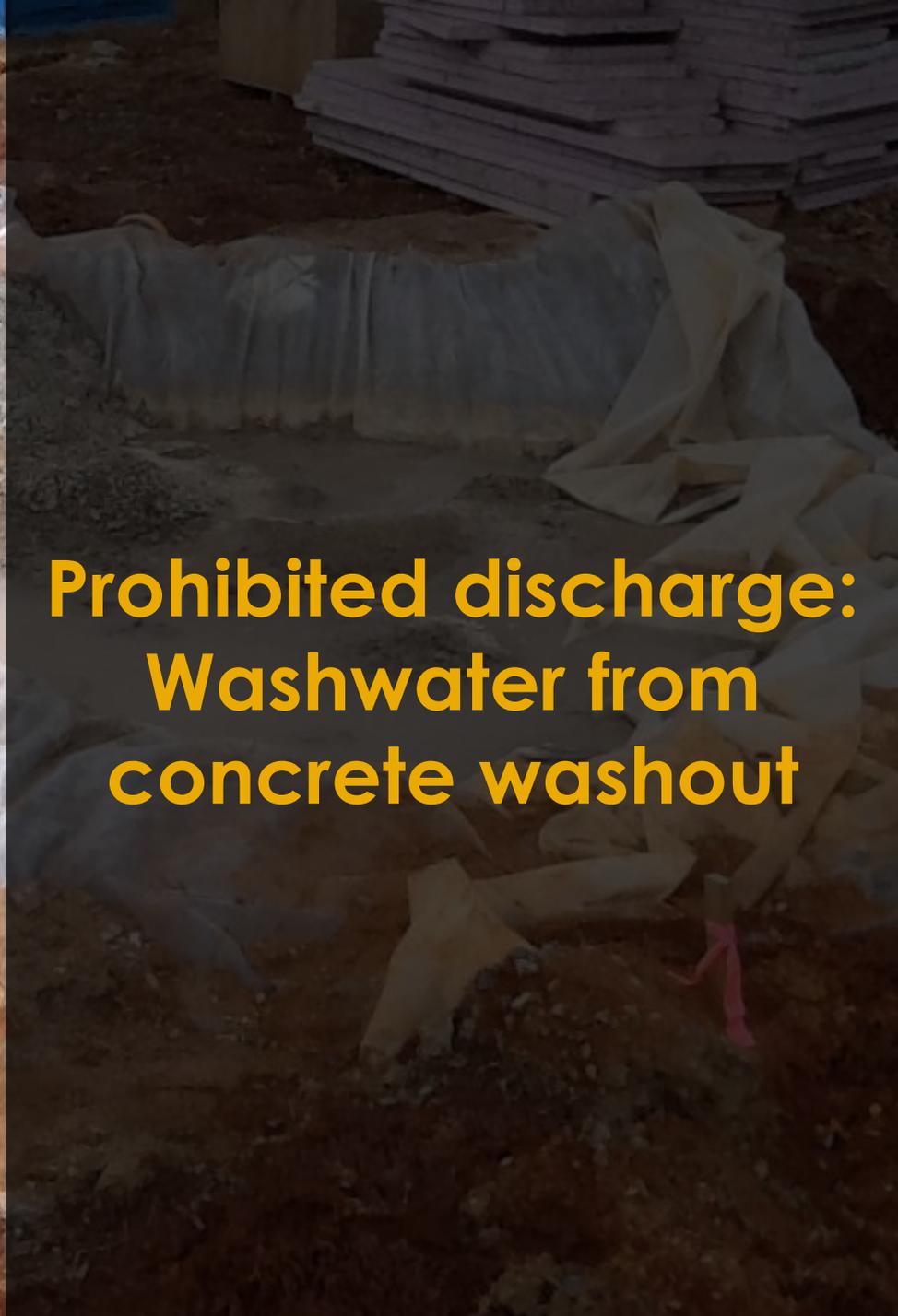


Site Inspection

- Pollution prevention measures
 - Look out for the following **prohibited discharges**



**Prohibited discharge:
Washwater from
concrete washout**





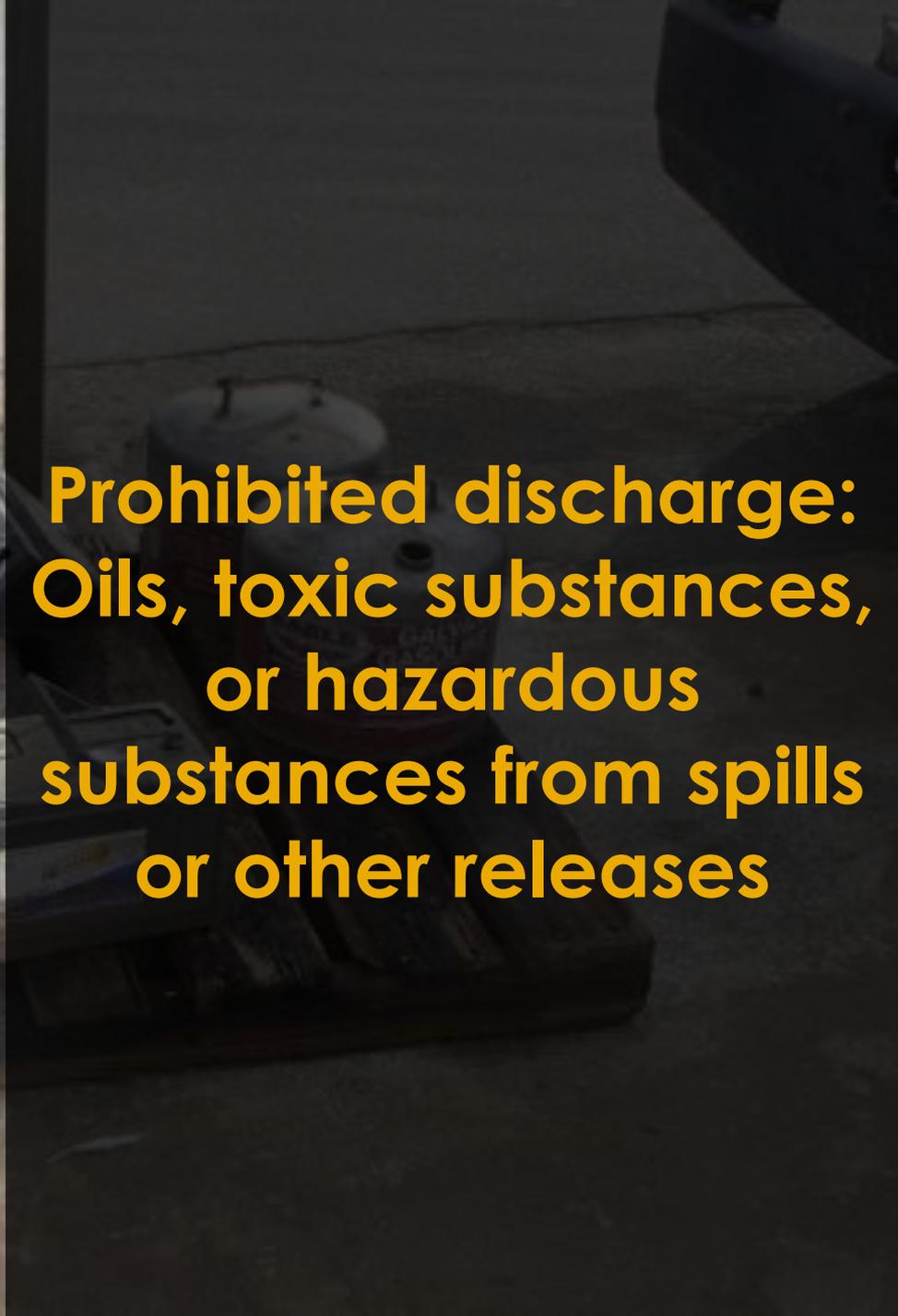
**Prohibited discharge:
Washwater from the
washout and
cleanout of stucco,
pain, form release
oils, curing
compounds, and
other construction
material**



**Prohibited discharge:
Fuels, oils, or other
pollutants used in
vehicle and
equipment operation
and maintenance**



**Prohibited discharge:
Oils, toxic substances,
or hazardous
substances from spills
or other releases**





**Prohibited discharge:
Soaps, solvents, or
detergents used in
equipment and
vehicle washing**



Site Inspection

- Pollution prevention practices and procedures



Concrete washout

- Concrete wash water **must** be directed into a leak-proof container or leak-proof settling basin
- Container or basin **cannot** overflow
- Hardened and liquid concrete waste **must** be removed and properly disposed



Washout and cleanout of construction materials

Examples

- Area is covered (plastic sheeting or temporary roofs) to prevent contact with stormwater
- Adequate containment is provided for the amount of wash water used
- Disposal of waste solids and liquids is contract with a hazardous waste disposal firm



Vehicle fueling and maintenance

Examples

- Secondary containment (spill berms, decks, spill containment pallets) is provided
- Cover is provided where appropriate
- Spill kits are readily available



Leak and spill prevention and response plan

- Procedures must be in place for quickly stopping, containing, and cleaning up spills, leaks, and other releases
- Procedures must be in place for reporting leaks, spills, and other releases



Vehicle and equipment washing

Examples

- Washing activities located away from surface waters and stormwater inlets or conveyance and directing wash waters to sediment basins or traps
- Use of filtration devices such as filter bags or sand filters, or another similarly effective control



Construction products, materials, and waste

Examples

- Litter and debris cleaned up daily
- Waste collection is located away from streets, gutters, waterways, and storm drains
- Secondary containment is provided
- Waste collection area is signed



Fuels, oils, other petroleum products, hazardous or toxic wastes, and sanitary wastes

Examples for sanitary facilities

- Located away from waterways and storm drains
- Inspected for leaks
- Maintained and cleaned

Module 4f.

Inspection Report

Inspection Report

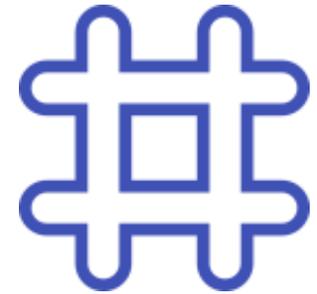
- Inspection reports must be retained by VSMP authority for 3 years after permit termination

Inspection Report



- Critical aspects of an inspection report
 - Accurate, relevant, comprehensive, and objective
 - Information that is certain, factual, and material
 - Draw conclusions based on observed facts
 - Include site maps or provide a good description of problem area locations that can be followed by any person reviewing the report
 - Include observed weather conditions at time of inspection

Inspection Report



- Critical aspects of an inspection report
 - Cite permit section numbers for all descriptions of potential violations

Inspection Report



- Critical aspects of an inspection report
 - Photo documentation
 - Quality is key
 - Turn on time/date stamp
 - Label pictures and incorporate into inspection report

Inspection Report



- Critical aspects of an inspection report
 - Include corrective actions and deadlines

Questions?