Stormwater Construction Regulations and Best Management Practices

Presented by:
Pima Association of Governments
Claire Zucker
Watershed Planning Manager
Presentation Topics

1) Stormwater Regulations
2) Responsible Parties: Their Roles and Duties
3) Stormwater Pollutants
4) BMPs
5) Additional Information Sources

Answers to Your Concerns
Regulatory Overview

Federal Regulations/EPA

State Regulations/ADEQ

Local Municipality Requirements

Owners Developers Contractors
Federal Regulations/EPA
Clean Water Act of 1977

Section 402 (Pollutant Discharge)
National Pollutant Discharge Elimination System (NPDES)
Delegated to the State (AZPDES)

Other Regulatory Programs
Section 401 (Water Quality - TMDL)
Additional controls when discharges could potentially reach a stream regulated under 401

Section 404  Dredge and Fill, Waters of the U.S.
Municipal Stormwater Management Program Responsibilities

1) Public Education & Outreach
2) Public Participation
3) Construction Site Controls
4) Illicit Discharge Controls
5) Post-Development Controls
6) Municipal Facility Controls
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<thead>
<tr>
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<th>Oro Valley</th>
<th>Marana</th>
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<tbody>
<tr>
<td><strong>Develop and Implement SWPPP?</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td><strong>Submit NOI?</strong></td>
<td>All projects submit to ADEQ</td>
<td>Yes, with grading plan</td>
<td>Yes</td>
<td>Yes, with type 2 and 3 grading permit applications and with type 1 grading permit application for sites &gt;1 acre</td>
<td>Yes, with grading permit application</td>
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<td><strong>Submit NOT?</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td><strong>Submit SWPPP?</strong></td>
<td>If within ¼ mile of impaired or outstanding waters, or Endangered Species Critical Habitat</td>
<td>Yes, with grading plan</td>
<td>No</td>
<td>Yes, with type 2 and 3 grading permit applications and with type 1 grading permit application for sites &gt;1 acre</td>
<td>Yes, with grading permit application</td>
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<td><strong>Acceptance of SWPPP Required for Private Construction?</strong></td>
<td>Yes, if required to submit</td>
<td>Yes, with PE or landscape architect seal</td>
<td>No</td>
<td>Yes. The grading permit applications which contain the SWPPP must have an engineer’s seal</td>
<td>Yes</td>
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<td><strong>Acceptance of SWPPP Required for Municipal CIP?</strong></td>
<td>Yes, if required to submit</td>
<td>Yes, with PE or landscape architect seal</td>
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<td>Yes. The grading permit applications which contain the SWPPP must have an engineer’s seal</td>
<td>Yes</td>
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<td><strong>Engineer (PE) or Landscape Architect seal required when amending day to day changes to temporary BMPs on SWPPP?</strong></td>
<td>No</td>
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<td><strong>Self - Inspection Frequency standards same as ADEQ?</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</table>
Owner/Operator – both responsible

- Anyone with day-to-day operational control of those activities necessary to ensure SWPPP compliance

- Anyone with control over plans/specifications including anyone with the ability to make modifications to plans/specifications

- Often, Both the owner and the operator

- Sometimes subcontractors too!
Owner / Operator Responsibility

- Train your staff
- Develop the SWPPP and modify as necessary
- Submit “NOI” and “NOT” to ADEQ and local municipality
- BMPs
  - Choose appropriately
  - Install correctly
  - Maintain
  - Document
For purposes of this SWPPP, operator means any person who has operational control over construction plans and specification, including the ability to make modifications to those plans and specifications: or the person who has day-to-day operational control of those activities at a project, which are necessary to ensure compliance with the SWPPP.
Enforcement and Penalties

Don’t Worry, Be Happy…….. Unless

Violations = Fines
State + Local
Enforcement and Penalties:

- **STOP WORK ORDER**
  Significant Project Delays

- **FINES**
  Local Jurisdiction / ADEQ / EPA
  State of Arizona: $25,000 per Violation per Day

- **Criminal Penalties**
- **Administrative Orders**
- **Citizen Suits**
  Citizens and environmental groups may sue
Presentation Topics

1) Stormwater Regulations
2) Responsible Parties: Their Roles and Duties
3) Stormwater Pollutants
4) BMPs
5) Sources of Additional Information
Allowable Discharges
Non-Stormwater

- Non-effluent compaction and/or dust control water.
- Non-soapy, building, pavement, and vehicle wash water.
- Potable water line flushing and water well flushing.
- Fire Hydrant flushing and fire fighting activities.
- Uncontaminated groundwater, air conditioning or compressor condensate.
- Construction dewatering operations.
Example Site Pollutants

Need Job Specific Lists, but examples include....

Materials:

- Raw Materials (sheet rock, boards)
- Construction Wastes (concrete waste)
- Asphalt (hot and cold mix)
- Trash and Debris
Example Site Pollutants

Chemicals:

- Concrete Cures & Form Oil
- Vehicle & Equipment Maintenance Fluids (oil, antifreeze)
- Fuel
- Paints and Paint Thinners (dry before disposal)
- Pesticides/Fertilizers
- Detergents

Call for Pick Up
Presentation Topics

1) Stormwater Regulations
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5) Sources of Additional Information
Best Management Practices

Techniques
Processes
Activities
Structures
used to reduce
the amount of pollutants
released to stormwater
Structural/Non-structural
Structural BMPs

A physical device designed and constructed to delay, capture, store, filter, or treat storm water runoff either at the point of generation or at the point of discharge.
Non-Structural BMPs

Preventative actions designed to reduce the amount of storm water and pollution

- Material handling and storage
- Spill prevention and response
- Self-Inspections of site
- Good housekeeping
Selecting BMPs

**BMP Selection for....**

- Each major activity
- On and off-site construction
- Waste and material storage areas
- Support activities (Sub contractors)

**Describe in SWPPP**

- Implementation sequencing for BMPs
- Identify operator responsible
- Describe why BMPs were selected
- Document self inspections and maintenance
Sequencing, Phasing and Implementing

When Sequencing, Remember to...

- Coordinate BMPs with major construction phases and grading
  - Sequence trenching by closing open portions before beginning new trenches
- Stabilize non-active areas ASAP (within 14 days)
  - Stage seeding and revegetation within 14 days of completion
- Apply permanent controls to substantially completed areas
- Amend schedules as needed
### SWPPP BMP Implementation Record

<table>
<thead>
<tr>
<th>Best Management Practices</th>
<th>Responsible Operator/Contractor</th>
<th>Date Completed</th>
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**Erosion and Sediment Controls**

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**Drainage Controls**

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**Tracking Controls**

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Document selected BMPs, the operator or contractor responsible for installation and maintenance and the dates of the BMP implementation. BMP’s utilized should also be on the plans for the site.
Self-Inspection & Maintenance

Specify Self-Inspection Schedule:

- Once per week
- Once per 14 days + within 24 hours of a storm
- Dry season requirements

Maintain BMPs

- Repair or replace nonfunctioning BMPs
- Implement additional BMPs as needed
- Change BMPs if they don’t work
- Remove accumulated sediment
SWPPP Construction and Waste Management Storage Log

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Location</th>
<th>Description of Controls to Reduce Pollutants</th>
<th>Date of Material Storage and Removal</th>
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Document and track all onsite potential pollutant sources, including identification of the material, storage location, and controls used to reduce potential releases.
BMP Examples

1. Erosion Controls
   Including Conveyance

2. Sediment Controls

3. Good housekeeping
Erosion Controls

**BMP Selection**

- Divert flow using conveyance systems - can slow flow using sediment logs, drainage swales, check dams, and catch runoff in sediment basins.
- Preserve existing vegetation
- Stabilize – hydroteen, apply soil stabilizers

**Describe in SWPPP**

- Dates of major grading activities
- Dates when stabilization measures start or are completed
- Dates when construction temporarily or permanently ceases on a portion of the site
Soil Stabilizers

Rolled erosion control products can protect slopes

Spray on soil binders, seeding

If possible, leave soil and vegetation in place
Erosion Controls

Dust Control Measures are not Sufficient for Erosion Control
### SWPPP Record of Grading Activities

<table>
<thead>
<tr>
<th>Location</th>
<th>Interim Stabilization Measures</th>
<th>Grading Start Date</th>
<th>Grading End Date</th>
<th>Date of Final Stabilization and Method</th>
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Document grading activities as they occur, including where in the project area the grading occurs, stabilization methods used both during and following grading and the start and end date of the grading.
Sediment Controls

BMP Selection

- You can utilize both temporary and permanent sediment control measures at any time during your project.
- Place down slope from construction or side slope boundaries (as appropriate).
- Choose your BMP, then... install, inspect, maintain, replace.

- Silt Fence
- Sediment Log
- Sediment Basin
- Straw Bale
- Inlet Protection
- Sediment Trap
- Check Dam
**Sediment Control**

**SILT FENCE**
Consider topography and drainage patterns. Put along same elevation contour

*Install Properly*

*Should not convey water*
Sediment Control

Silt Fence

- Do not use for concentrated flow
- Do not use on slopes (>5 ′ away from toe of slope)
- Limit drainage area to 1 acre per 100 ft. silt fence

- Trench and bury base of fence
- Space stakes appropriately
- Turn fence ends up slope
- Use wire back for long term installations
- Inspect regularly & clean when 1/3 full of sediment
Sediment Control

Sediment Logs

Use sediment logs to prevent sediment from reaching streets
Sediment Control

Sediment Logs

- Trench for installation
- Space stakes appropriately
- Abut the log segments
- Space logs if using for erosion control (slope vs interval)
- Do not drive over logs
- Inspect and clean when 1/3 full
Sediment Control

Straw Bales

- Space stakes appropriately
- Abut the bales
- Inspect regularly maintain and clean out.
Sediment Control

Inlet Protection

- Keep sediment out
- Allow clean water in
- Convey water away from inlet
- Inspect and clean regularly
Sediment Control

Inlet Protection
Sediment traps

- Should not be the primary sediment control
- Difficult to clean
- Limited sediment capacity
- Inspect and clean regularly
Sediment Controls

Stabilized Entrances

Material Selection to prevent tracking

- Aggregate
- Concrete
- Steel plates with ribs (for really muddy sites)

Don’t Use:
- Asphalt
- concrete grindings
Sediment Controls

Stabilized Entrances

What Can You Do to Limit Tracking?

- Design correctly
- Limit Points of entrance
- Limit speed of vehicles
- Keep temporary roadway ditches clear
- Sweep streets, walks, driveways frequently
Site Stabilization

Stabilization measures can be temporary or permanent, and permanent controls may be installed at any time during construction!

- Rip-rap
- Gabions

- Flow dissipation
- Reduce undercutting at interfaces
- Size rip rap for flow
Site Stabilization

- Geotextiles
- Soil Binders
- Hydraulic Mulch

- Prepare the surface
- Don’t disturb after application
- Inspect after rainfall
Site Stabilization

Vegetation

Leave Existing Vegetation

- Vegetative cover and Desert Pavement limits the impact from rainfall
- Cover slows runoff, spreads overland flows, and filters sediment
- Roots hold soil together
- Plants help remove soil moisture through transpiration
Final Site Stabilization

Vegetation

**Revegetate**
- Use native plants
- Save and reuse the existing vegetation along with the top 6 to 12 inches of topsoil
- Uniform perennial vegetative cover with a density of 70% of the native background
Site Stabilization

Basins: Sediment Traps / Final Detention

- Place sediment traps to catch flow and allow time for sediment settle
- May require large surface areas for effective sediment settling
- Design to drain in prescribed time frame
- Safety concerns (fencing)
- Meet engineering specifications appropriate to the type of basin constructed
Housekeeping

Solid Waste Management

- Keep your site clean and utilize dumpsters and trash cans appropriately
- Use water tight dumpsters with covers
- Separate wastes
- If you are storing wastes elevate, divert flow, and store away from streets and drainages
Housekeeping

Material and Fluid Storage

- Designate delivery and storage areas
- Cover and contain materials
- Use secondary containment
- Develop spill response protocols and establish spill stations
## SWPPP Construction and Waste Management Storage Log

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Document and track all onsite potential pollutant sources, including identification of the material, storage location, and controls used to reduce potential releases.
Housekeeping

Concrete Washout

- Use designated areas and Post Signs
- Avoid concrete work during rain events
- Line washouts (30 ml) if groundwater is within 20 ft of ground surface
- Compact soils to >95%
- Clean out areas before full and when slurry is dry
- Setback 50 ft from inlet, drainage or watercourse, 100 ft from water supply well
Housekeeping

Stockpiles

- Use sediment barriers around dirt piles that border streets or are on edge of site.
- Place sediment controls down slope from the stockpile.
- Dirt-free material (rock, gravel), may need fewer protections.

Offsite or on-site, stockpiles are your responsibility.
Housekeeping

Nonstormwater Discharges can carry pollutants too!

- Vehicle/Equipment Cleaning, Fueling, and Maintenance
- Dust Control Water
- Saw Cutting Water
- Illicit Discharges
Spill Response

- Identify and post spill clean-up procedures
- Stop spills at the source
- Berm, if spill might reach the stormdrain
- Cover minor spills with dry absorbent (e.g. kitty litter)
- Dispose of clean-up materials properly
- For major Spills, call 911
- Report hazardous material to ADEQ (602) 771-4466
  FAX (602) 771-4505
If spills occur, modify the SWPPP within 14 days to describe…

- Spill date
- Material released
- Quantity released
- Apparent cause
- Spill response
- Measures to prevent reoccurrence
- Measures to respond to future spills
Presentation Topics

1) Stormwater Regulations
2) Responsible Parties: Their Roles and Duties
3) Stormwater Pollutants
4) BMPs
5) Sources of Additional Information
More Information Is Available:

Guidance

1. SWPPP and regulatory guidance
   – ADEQ SWPPP check list, general permit, NOI and NOT forms, and “Smart NOI” system

2. SWPPP and BMP guidance
   – ADOT guidance manual, construction SWPPP template

3. Site location finders – various web sites

4. BMP and erosion control guidance
   – ADOT, CALTRANS, Maricopa County

5. Native vegetation guidance and water harvesting - University extension
Any Questions? Comments?

Local Jurisdictions
Arizona Department of Environmental Quality
Pima Association of Governments
Your company’s erosion control specialist
Keep Our Stormwater Clean!