

New STRONGER Guidance for State Stormwater/Erosion Control Measures at Oil and Gas Sites

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STRONGER¹

STRONGER is a non-profit corporation established to:

- ❖ educate regulators and the public on state oil and gas environmental regulatory programs;
- ❖ administer the State Review Process; and
- ❖ Recommend improvements for state E&P environmental regulations and processes.

¹ State Review of Oil & Natural Gas Environmental Regulations

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- ❖ STRONGER representatives and Board members come from state O&G agencies, EPA, DOE, industry, consultants, and public interest groups
- ❖ <http://www.strongerinc.org/>

STRONGER History

- ❖ STRONGER grew out of the Interstate Oil and Gas Compact Commission (IOGCC) and EPA-supported state review process, which began in 1988 as a way to evaluate state oil and gas exploration and production waste control regulatory programs.
- ❖ STRONGER took over this review process in 1999, and has since issued many state guidelines.

Why Issue This Guidance?

This STRONGER Stormwater/erosion control guidance originated because:

- ❖ Several states have included stormwater/erosion control guidance or rules in their O&G regulatory programs;
- ❖ EPA proposed an NPDES Phase II one acre stormwater permitting process for oil and gas construction sites, and
- ❖ STRONGER wanted to outline a set of uniform best practices for the industry.

STRONGER Stormwater/Erosion Control General Guidelines

Stormwater in E&P areas can become contaminated from contact with:

- ❖ spilled or stored materials;
- ❖ E&P waste, or from
- ❖ eroding soils.

This guidance is mostly for #3.

General Guidelines, Continued

Stormwater management requirements differ from region to region of the country based on geographical differences in:

- ❖ topography;
- ❖ rainfall (annual average, episodic and seasonal);
- ❖ major soil types;
- ❖ proximity to surface waters, floodplains, seasonal and permanent swamps, wetlands & marshes; and
- ❖ natural vegetative cover.

General Guidelines, Continued

- ❖ STRONGER recommends that states implement programs to minimize potential contamination of surface water from sediment and other E&P stormwater contaminants unless field monitoring data and other

scientific information shows that stormwater runoff in the state does not pose a significant risk to human health and/or the environment.

General Guidelines, Continued

State management programs should:

- ❖ Include compliance evaluation and enforcement capabilities;
- ❖ be applicable to spills and release responses;
- ❖ contain data management capabilities; and
- ❖ provide for outreach and training on stormwater management requirements and practices for operators, landowners and the public.

General Guidelines, Continued

Stormwater requirements should include:

- ❖ a description of the action(s) the operator will take to meet state program goals for the geographic location;
- ❖ specific state requirements, or outline operator- specific plan(s);
- ❖ specific time frames when stormwater control measurements are to be in place; and
- ❖ specify when any state notifications are to occur.

General Guidelines, Continued

- ❖ Oil and gas agency staff should be trained so that they can, as time and staffing allow, provide information and referrals to operators, even if they are not the state's stormwater compliance agency.

General Guidelines, Continued

- ❖ State stormwater management programs should be evaluated periodically, including an analysis of all aspects of the program and procedures for making necessary program changes.

Specific Criteria - Planning

Well site, roadway, pipeline considerations:

- ❖ the area to be disturbed (minimize this);
- ❖ current land uses;
- ❖ site gradient;
- ❖ type of facility to be constructed;
- ❖ springs and seeps, floodways, stream crossings; and
- ❖ facilitating the management of E&P wastes.

Specific Criteria - Planning

Other factors:

- ❖ well density, and the distance between wells;
- ❖ the size needed for each site & its equipment;
- ❖ existing roads – new, temporary or permanent;
- ❖ the availability of vegetative filter strips; and
- ❖ disposal of trees and stumps to be removed during construction.

Specific Criteria - Construction

- ❖ State agencies should develop practices appropriate for the construction of well sites, access roads, pipelines, and crossings of streams, wetland, swamps and marshes to prevent contamination of stormwater and/or adjacent surface waters.
- ❖ Standards or management practices should be appropriate for the region in which the construction activity will occur.

Specific Criteria - Construction

Considerations at each site include:

- ❖ the construction of upgrade diversion channels;
- ❖ collection of construction site runoff;
- ❖ the use of brush, rock, and other barriers;

- ❖ the stockpiling of topsoil and subsoil during clearing and grubbing;

Specific Criteria - Construction

5. road alignment, slope, grade and length;
- ❖ the grading of cut and fill slopes, road embankments, road surfaces (crowned, in-sloping or out-sloping) and roadside ditches; and
 - ❖ The temporary and final covers that will be used, from compacted soil or gravel to paving or re-vegetating.

Specific Criteria - Construction

Requirements should be developed for both temporary and long term stream/swamp crossings, including

- ❖ bridges and culverts;
- ❖ causeways;
- ❖ cofferdams;
- ❖ fords; and
- ❖ bank stabilization.

Specific Criteria - Construction

Stormwater controls needed during construction can include:

- ❖ drainage ditches;
- ❖ basins and sediment traps;
- ❖ berms and sediment barriers;
- ❖ vegetative filter strips, broad-based swales;
- ❖ turnouts, culverts, cross-drains and waterbars;
- ❖ rock filters, straw bale barriers and fabric filter fence.

Specific Criteria - Construction

Pipelines construction may include:

- ❖ ditchline barriers;

- ❖ varying the timing of backfilling;
- ❖ varying the materials used for trench backfill;
- ❖ stream diversions;
- ❖ planning the location of staging areas; and
- ❖ the use of trench plugs.

Specific Criteria - Construction

- ❖ If crossing fragile soil, wetland or marshy areas is necessary, laying construction mats, board roads or geotextiles should be considered.

Specific Criteria - Construction

Temporary stabilization practices may be necessary at sites where quick permanent closure is not possible, including:

- ❖ mulching;
- ❖ seeding with annual grasses;
- ❖ compacting soil to reduce erosion or installing a temporary gravel cover; or
- ❖ seed/filter fabric combinations.

Specific Criteria - Construction

Permanent stabilization can include:

- ❖ the application of sufficient rock and/or gravel to well sites and roads;
- ❖ paving; and/or
- ❖ achieving adequate growth of (or sodding with) permanent vegetation.

Specific Criteria - Construction

Factors considered during revegetation include:

- ❖ calculation of acreage;

- ❖ soil types and distribution;
- ❖ seed bed preparation, seed mixtures;
- ❖ soil amendments; and
- ❖ mulching and anchoring.

Criteria - Operation and Maintenance

- ❖ Stormwater control measures have to be operated and maintained in a manner that will assure their effectiveness.
- ❖ This includes preventing E&P waste and spills as well as controlling sediment.
- ❖ The frequency and type of inspection(s) needed, preventative maintenance, and repairs should be considered.

Criteria – Site Remediation

Sites may have to be repaired or remediated following a spill. This can include:

- ❖ removing damaged equipment;
- ❖ digging up damaged pipelines;
- ❖ removing or soil farming contaminated soil, and
- ❖ installing monitoring wells and remediation equipment.

Criteria – Site Restoration

Restoration is necessary when a site is shut down or plugged and abandoned. Activities include:

- ❖ removal of equipment;
- ❖ restoration of pits;
- ❖ disconnection & abandonment of pipelines;
- ❖ backfilling and grading; and
- ❖ access road reclamation.

Criteria – Site Restoration

- ❖ Erosion prevention and stormwater management similar to that during construction has to be incorporated into planning for these site restoration activities.

Summary

- ❖ Considerations for stormwater management and erosion prevention practices are necessary at every stage of oil and gas field exploration and production activities, from initial site preparation to final closure.
- ❖ State and other regulatory agencies need to have well understood rules and/or standard operating procedures in place to ensure proper procedures are followed.