

FEMA
National Flood Insurance Program

Interim Technical Guidance on Drilling Oil and Gas Wells in Special Flood Hazard Areas (SFHA)

A floodplain development permit from the community is required for drilling oil and gas wells in a Special Flood Hazard Area (SFHA). The application for a permit should include a detailed set of plans and specifications. The following guidance is on National Flood Insurance Program (NFIP) minimum requirements. Some communities may have more restrictive requirements in their floodplain management ordinances.

If the site is in zones A or AE on the community's Flood Insurance Rate Map (FIRM), the community will review the application to determine if the development is compliant with their floodplain management ordinance. For areas designated as zone AE the Flood Insurance Rate Map (FIRM) base flood elevations (BFE) are provided and usually a floodway is mapped. The floodway includes the channel of the river or stream and the adjacent areas of the floodplain, which must be left unobstructed to carry floodwaters. For areas designated as zone A on the FIRM only a floodplain boundary is provided and the community will use whatever flood information is available to determine an elevation to use as the BFE.

Floodways: If the drilling site is in the floodway portion of the floodplain, the developer (i.e. petroleum company) will have to demonstrate through an engineering study that there will be no increase in flood stages during the discharge of the 100-year flood caused by the development. Sometimes actions can be taken to compensate for an increase if one does occur.

Buildings and other Structures: Any buildings and other structures (including fuel storage tanks) in the floodplain will either have to be elevated to above the BFE or floodproofed (made watertight) to that elevation. If the building is floodproofed, a registered engineer or architect will have to certify the design of the floodproofing measures. Any storage tanks and any equipment at the site that could be damaged by floodwaters will have to be elevated above the BFE or made watertight and anchored to resist floatation, collapse and lateral movement. One of the biggest problems after most floods has been the finding and retrieving fuel storage tanks that have been dislodged and floated away during the flood. FEMA guidance on anchoring fuel storage tanks and protecting other mechanical and utility equipment can be found in FEMA 348 *Protecting Building Utilities from Flood Damage* which is available on the FEMA website at www.FEMA.GOV.

Electrical and Mechanical Equipment: Any electrical and mechanical equipment must be elevated or floodproofed to the BFE or movable from the site in case of an imminent flood event.

Hazardous and Explosive Materials: Any material stored on the site that is highly volatile, flammable, explosive, toxic or water reactive should be protected to at least the level of the 500-year flood. If the site will have a slush pit, the berm should be at least 1 foot above BFE, have 3 to 1 side slopes, and be compacted. To determine what maybe hazardous and explosive compared to a propane tank, the local fire marshal's office may need to be contacted.

Other Permits: The community must also ensure that the developer has obtained any other required Federal, state and local permits prior to issuance of a floodplain development permit. This includes a permit from the state agency that regulates oil and gas activities and a Spill Prevention and Counter Measure Plan. The developer may need a Section 404 permit from the U.S. Army Corps of Engineers if the development impacts on a wetland.

Emergency Plan: If a drilling site is located in the floodplain, the developer should have an emergency action plan in place to move all vehicles and movable equipment out of the floodplain and install any floodproofing measures in case of an imminent flood event. The plan should take into account the amount of warning time available prior to flood.