Managing Environmental Risk

Pipeline operators can use the regulatory disclosure process to proactively manage risk when operating in these environmentally sensitive areas. This company explains how.

By Russ Krauss

From project permitting through post construction restoration, pipeline companies are perpetually faced with managing a delicate balance of America’s natural resources. On one hand, the oil and natural gas midstream segment transports energy from producing wells to markets, satisfying demand for processing and use at a downstream delivery point.

On the other hand, flow-lines, gathering systems, laterals, and transmission and distribution pipelines are constructed on or through sensitive areas, and will have inevitable, unavoidable environmental impacts. While any such project-related environmental impacts have risks and liabilities, pipeline operators can use the regulatory disclosure process to proactively manage risk when operating in these environmentally sensitive areas.

Midstream company project managers report that environmental costs often have the smallest budget, although they remain a key driver of the timing for the entire project. And many operators don’t have a clear understanding of the details of the environmental permitting process, which is taking an increasing amount of time in crowded shale plays. For many them, environment costs are a “black box” managed by outside consulting firms.

**NEPA PROCESS IN GENERAL**

- **Proposed Agency Permit Action & Public Comment Period**
- **Categorical Exclusion or other Exemption**
- **Agency Permit Action**
- **Environmental Assessment (EA)**
- **Finding of No Significant Impact (FONSI)**
- **Agency Permit Action**
- **Notice of Intent to Prepare Environmental Impact Statement (EIS)**
  - **Scoping Process**
  - **Draft EIS**
  - **Agency Review & Public Comment**
    - **Final EIS**
    - **Record of Decision (ROD)**
    - **Agency Permit Action**

The NEPA process is shown above and can take as long as 24 months.

Source: Resource Environmental Solutions
The Federal Energy Regulatory Commission (FERC), in concert with other federal and state regulatory agencies, oversees the permitting process for new pipeline projects. The procedures require an operator to avoid impact in sensitive areas whenever possible. When this is unavoidable, the procedure is to minimize the impact. And when a new pipeline project does affect an area, federal procedures require the operator to mitigate its effect through one of three alternatives described below. Simultaneously with this process, the National Environmental Policy Act (NEPA) describes the public disclosure for any project, including midstream assets, which goes through the Environmental Protection Agency (EPA).

The FERC can reject a project before its construction has even started if it does not consider it vital to the public. A pipeline operator must first get a Certificate of Public Convenience and Necessity—essentially, a declaration that the project is economically essential—from the FERC before it files for any other permit. To make this determination, the FERC looks at the alternatives to the proposed pipeline, the market it will serve, its source product and the ultimate demand for the product. If a proposed pipeline duplicates one or more other routes and serves no additional markets, there is a good chance it won’t get this certificate. The FERC has established a 20-step pre-filing process for all proposed pipelines to get this certificate. The pre-filing process for many large projects typically begins 12 to 18 months prior to construction.

While interstate transmission lines are clearly under the purview of the FERC, there are a few notable exceptions. Hazardous liquid transmission pipelines, natural gas distribution lines and gathering pipelines are regulated by state agencies and the U.S. Department of Transportation. Those projects also require project disclosures under National Environmental Policy Act, but the permitting process is not managed by any single regulatory body. Instead, pipeline companies typically manage this process themselves.

A case study illustrates the management of environmental risk using a hypothetical natural gas transmission pipeline project sourcing natural gas in the East Texas and Northwest Louisiana Haynesville shale and transporting that gas to downstream markets in the area of Baton Rouge, Louisiana. This case study, the Texas Louisiana Haynesville Delivery Pipeline, is based on actual pipeline construction projects in Texas and Louisiana and the multiple challenges they face.

Many "linear projects"—as pipelines are known in permitting parlance—cross multiple jurisdictions and may have different issues in each jurisdiction. A pipeline may cross multiple Army Corps of Engineers districts and face a wetland issue in one, an archaeological issue in a second and a concerned neighborhood in a third district. Permits for these types of projects are almost always more complex than an application for a project at a single location.

This case focuses on wetlands because they occur in 42 states and pipeline operators occasionally have difficulty getting a permit to build through one of them. Wetlands are a critical natural resource that is difficult to recognize. The U.S. has only 25% of the wetlands that existed in the 1700s. Permitting operations in wetlands do have the visibility as other resource issues such as air quality, noise pollution and coastal marsh impacts.
The regulatory environment

The interstate natural gas transmission pipeline begins in Texas and ends in Louisiana. Therefore it requires a FERC certificate because siting of an interstate natural gas transmission pipeline requires a Certificate of Public Convenience and Necessity. The FERC does not generally grant this certificate until all federal and state agencies grant their respective permits.

FERC's NEPA pre-filing process provides the permit applicant and the public with an opportunity to evaluate and propose pipeline routing and related concerns prior to filing the certificate application with the FERC. This process might take up to two years and usually requires both internal and external resources to deliver the rigorous review expected.

Pipelines which travel from Point A to Point B in a perfectly straight line are exceedingly rare for several reasons. Operators often have the power of eminent domain, but generally try to avoid using it because of its expense and bad public relations. A less direct route might be more cost effective if another pipeline exists nearby and is willing to share its right-of-way. Rivers, streams, wetlands or culturally-sensitive areas may force the operator of a proposed route to change its course. A pipeline right-of-way consultant generally can take a proposed route and look for alternatives that may prove to be less costly even if the route is not as direct.

The operators of most proposed pipelines generally document the expected effects of a given route as well as its possible alternatives. They can discuss these issues in the various resource reports used to file under the requirements of NEPA. The FERC requires the operator of a proposed pipeline to file a series of resource reports prior to the issuance of a Certificate of Public Convenience and Necessity. The 13 different reports cover a variety of subjects, including air and noise, water use and quality, fish, vegetation and wildlife; cultural resources; socioeconomics; geological resources; soils; and land use and recreation. The FERC can also consider the applicant’s record of reliability and safety on other projects before it issues this certificate.

Along the way, multiple state and federal agencies will review the reports before issuing or denying one of multiple permits needed prior to construction. In addition to the FERC, the hypothetical project includes participation of all of the following agencies:

- U.S. Army Corps of Engineers: Fort Worth District, Vicksburg District, New Orleans District
- Texas Louisiana Haynesville Delivery Pipeline
- U.S. Environmental Protection Agency Region 6
- U.S. Fish and Wildlife Service
- U.S. Department of Transportation
- U.S. Department of Agriculture
- U.S. Department of the Interior, National Park Service
- Louisiana Department of Environmental Quality
- Louisiana Department of Wildlife and Fisheries
- Louisiana Natural Heritage Program
- Louisiana Department of Culture, Recreation and Tourism
- Louisiana Department of Transportation and Development
- Texas Commission on Environmental Quality
- Texas Parks and Wildlife Department
- Texas Historical Commission
- Native American Tribal Councils in both Louisiana and Texas

These agencies are required by law to review and comment on project-related impacts in their respective areas of oversight as enabled by the following applicable Federal laws and regulations and many additional state regulations.
- National Environmental Policy Act
- Clean Air Act
- Clean Water Act
- Endangered Species Act
- National Historical Preservation Act
- Farmland Protection Act
- Coastal Zone Management Act
- Wild and Scenic Rivers Act
- Magnuson-Stevens Fishery Conservation and Management Act

The permitting of projects involves evaluation of many resources and potential impacts to and by those resources, milepost by milepost. Project-related impacts to wetland and stream resources, for example, are typically covered in the Water Use and Quality Resource Report. Over time, the pipeline route will be modified in consideration of right-of-way issues and to avoid and minimize any environmental impacts, among other factors.

The remaining unavoidable project-related impacts to waters of the U.S., including wetlands and streams, are regulated by the Clean Water Act and are required to be offset using one of several mitigation approaches. In 2003, the FERC produced a guidebook about this process named Wetland and Waterbody Construction and Mitigation Procedures. This document aids in identifying wetlands and project-related temporary and permanent impacts and outlines best practices, as known then, to recognize, avoid and minimize wetland encroachments.

In 2008, the U.S. Army Corps of Engineers and the EPA published methods and processes for mitigating or offsetting any unavoidable impact on wetland and streams. The "Final Rule," as it is called, was authored jointly by the Army Corps of Engineers and EPA—the ACE administers the Clean Water Act Section 404/Rivers and Harbors Act Section 10 permitting program and the EPA addresses ongoing compliance and enforcement of Sections 404/10.

Permitting in wetlands

Wetlands are difficult to define as they are comprised of physical components located at the intersection of land and water. The Army Corps of Engineers provides detailed instructions in its Wetland Delineation Handbook to help operators determine if a proposed route passes through a wetland.

Operators must get a permit from the Department of the Army if it plans to dredge or fill in waters covered by the Clean Water Act of 1972 or by it the River and Harbors Act of 1899. In this case, the operator would need permits from multiple Army Corps of Engineers districts because it passes through different jurisdictions.

Agencies involved in wetland permitting in northwest Louisiana's Haynesville shale include:
- The Louisiana Department of Environmental Quality (LA DEQ)
- Louisiana Department of Wildlife and Fisheries (LDWF)
- The Environmental Protection Agency (EPA)
- The U.S. Fish and Wildlife Service (FWS)
- State and Tribal Historic Preservation Offices (SHPO/THPO)

To comply with the Executive Order 11990 and other executive orders pertaining to construction in wetlands and floodplains, the Army Corps of Engineers and the EPA reached an interagency agreement to implement a "no net loss" of wetlands program. This agreement mandated a significant reduction of wetland losses through avoidance and minimization and that compensatory mitigation become part of nearly every Army Corps of Engineers permit action, specifically to compensate for the unavoidable loss of wetlands across the U.S.

All Corps permit authorizations must demonstrate that all reasonable and practicable means have been taken to avoid and minimize impacts to jurisdictional areas. Only after avoidance and minimization have been addressed can and will mitigation be considered.

Pipeline projects typically use both nationwide permits 12 and 14 for small impacts and Individual Permits (IPs) for larger impact. These permits are considered both individually and cumulatively for the entirety of the linear project.

Pipelines are considered linear projects by the Corps and often have specific requirements for consideration of individual, location-specific impacts as well as cumulative impacts from the overall project. The Corps often takes a team approach to permitting complex linear projects because they often cross jurisdictions. One Corps district may be the lead with others following—or they may all three work independently.

Offsets used to mitigate unavoidable impacts to wetlands, streams and species are typically comprised of
Wetlands come in many shapes and sizes, and include areas that many would not normally associate as a wetland. This is a palustrine wetland in northwest Louisiana.

Photo courtesy of Resource Environmental Solutions

land-based solutions, often in the form of wetland or stream mitigation banks and habitats preserved for threatened and endangered (T&E) species.

The Corps and other agency members of the project's Interagency Review Team will determine the volume of offsets required for each type of impact. As noted below, there are significant savings to be gained from determination of these offsets very early in the project life cycle.

Benefits of planning and analysis

It is possible to de-risk and potentially accelerate the permitting process through proactive planning and interaction with appropriate regulatory agencies even though all agencies regularly state that they consider mitigation on a permit by permit basis. Agency permit processors are people who manage large workloads and appreciate knowing if a volume of permits or complex, linear project permits are going to be heading their way.

Considering permit-processor's time-to-process, on a per-permit basis, having a ready mitigation solution (credits) located and on-hand will speed up the permit-processing time. Operators benefit from this improved, predictable permit processing time and also can reduce costs by using upfront knowledge of future impacts to proactively source credits from mitigation banks.

Also, environmental economic costs should be explicitly considered. Most projects include a small line item for environmental permitting or execution costs. These costs are often considered external to the core business operation, yet are necessarily borne costs due to permitting requirements prior to commencing field operations.

Economic operational efficiency can occur even with the inclusion of these external costs. Efficiency does not require that all external costs totally disappear, only that they be properly included in overall social-market trade-offs. As such, these costs can and should be internalized. No longer are environmental costs viewed by midstream operators as externalities.

Operational risks from lack of planning

Compliance and enforcement of wetland permits can pose significant risks and liabilities to an operator. The EPA, in their National Enforcement Initiatives for Fiscal Years 2011 to 2013, has targeted the energy industry to ensure compliance with environmental laws. "EPA will develop an initiative to assure that energy extraction activities are complying with federal requirements to prevent pollution of our air, water and land." (EPA, 2010) Both the Army Corps of Engineers and EPA have responsibilities for enforcement and compliance resulting from their joint memoranda.

The Corps is charged with enforcement of the provisions and prohibitions of Section 10 and Section 404. Regulated activities conducted without the proper permit are subject to enforcement actions and various penalties. The Corps is authorized to administratively issue "cease and desist" orders, require removal of constructed facilities, restitution of jurisdictional areas impacted, require after-the-fact permits, and levy fines of up to $25,000 day per violation.

The Corps may also refer cases to the EPA or the U.S. Attorney General's office for civil or criminal prosecution resulting in restitution, fines up to $2 million and jail terms up to 15 years.

The EPA's enforcement responsibilities are defined under the Clean Water Act sections 309(a) Administrative Orders including cease and desist, restoration, after the fact and additional required mitigation and 309(g) Administrative penalties including Class I and Class II penalties. Monetary damages from Class I actions do not exceed $37,500 per incident and Class II actions $177,500 per incident. Any of the section 309 infractions can lead to civil referral to the Department.
of Justice. Most recently, however, the EPA has been enforcing at the criminal level via referral to the Department of Justice through the EPA Criminal Investigation Division.

Timing risk is a real issue for operations requiring permits. The Corps is resource constrained. A backlog of permits can build very quickly, particularly at a single district addressing thousands of permits for drilling and associated infrastructure-related impacts. Upfront planning yields knowledge of where and when impacts are planned; starting early with the permit process minimizes delay.

The other risk related to timing is the cost of mitigation. Over the initial three years of Haynesville play development, the cost of wetland mitigation bank credits rose from $3,500 per credit to $7,500 per credit and was only available from a limited supply of suppliers. Limited supply and rising prices can be addressed by upfront planning.

When in doubt about an impact to a wetland, use the Corps wetland determination methods noted on each district’s website and file a section 404 permit. The best case result of this filing would be a finding of no significant impact. The worst case result will be the need to mitigate for wetland impacts.

Workflow
With the scope and magnitude of the wetlands understood at the play-wide level, analysis can take place at smaller scales to determine localized wetland impacts requiring section 404 permits.

A component of an integrated approach to wetland mitigation, this workflow has been used for analysis of hundreds of thousands of acres to determine the probability and volume of potential wetlands impacts from future projects. Multi-layered geographical information system analysis using footprints of surface impacts (drilling pads, roads, pipelines and their rights-of-way areas, etc.), various reference-base map databases, wetlands databases and vegetation and soil databases are used to calculate impact acreage (spatial extent of impacts).

This data is combined with project plans and operational timetables and used to determine the temporal extent of project impacts. These impacts are then allocated to “watersheds,” a term used by the Corps and regulatory agencies to formalize the functions and values of any given geographic area.

Watersheds for the entire U.S. have been catalogued by the U.S. Geological Survey (USGS) based on hydrologic characteristics, or how water flows, in these areas. The USGS has created a sophisticated watershed numbering system resulting in a database of hydrologic unit codes (HUC).

Following tabulation of impact acreage by watershed and consideration of timing issues, the remaining steps of the workflow address identification of wetland mitigation banks that can deliver the required mitigation to offset the impacted acreage. Mitigation banks are also identified by watershed or HUC and mitigation-bank service areas can be mapped or correlated to impact areas.

Mitigation banks provide mitigation credits as offsets to wetland impacts. Therefore, a conversion of units from impact acres to mitigation credits is required. This step is often quite complex because it involves much more than a simple unit conversion.

The Corps and other agencies require that wetland impacts and their offsets be understood in their environmental and ecological contexts. Land has a baseline value prior to an impact and a different value after an impact. Mitigation bank offsets or mitigation credits also have baseline values (land before wetland restoration) and uplifted values (land after restoration).

Tools provided by the Corps to determine these functional and values are called functional assessment methods. These methods will calculate the number of credits per acre of impact—most often resulting in a ratio different than one to one. Just as there are 39 Corps districts, there are at least as many assessment methods employed by these districts. For example, the Corps’ Vicksburg District uses a functional assessment method called the Charleston Method, based on the Charleston District method, but tailored to the local geography.

Mitigation banks
A mitigation bank is designed to establish wetland credits, in advance, that can be drawn upon over time. Wetlands are restored, enhanced or preserved, thereby generating mitigation credits according to a schedule as defined by the Corps in its contract with the mitigation bank. As development projects in the planning region require mitigation for wetlands impacts, credits are drawn from the mitigation bank.

The bank sponsor sells credits to permittees (those entities with projects that have unavoidable wetland impacts) and keeps a ledger of sales and balances. As such, permitting a mitigation bank requires considerable planning, design and regulatory review and approval before its establishment so values can be ascribed to various wetlands and the credit system can be accepted by the regulatory agencies.

The advantage of buying credits from mitigation banks is the benefit of removing any future regulatory exposure. Once the credits are purchased and the permittee receives approval for a project, the permittee has no further liability from wetland impacts and has no further involvement or requirements to guarantee a mitigation bank’s success.

Russ Krauss is vice president, business development, for Resource Environmental Solutions, LLC.