Clean Water Act

Introduction

The purpose of the Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The CWA established the following general or target water quality goals:

Provide for the protection and propagation of fish, shellfish, and wildlife
Provide for recreation in and on the water, and
Eliminate (regulate) the discharge of pollutants into the nation's waters with the intention to encourage industrial recycling and promote upgrading of wastewater treatment facilities.

Regulatory Summary

In order to protect "navigable waters" of the United States, defined essentially as any surface water body, including interconnected tributaries and wetlands the CWA established four programs to regulate the following discharges from point sources, which are any discernible, confined, and discrete conveyance from which pollutants are or may be discharged: direct discharges of process or wastewater, storm water runoff from facilities, indirect discharges through publicly owned treatment works (POTWs), oil and hazardous substance use and storage, and construction in wetlands and rivers or streams. The four regulatory programs concerned with point source discharges are:

National Pollutant Discharge Elimination System (NPDES) Permit Program (direct discharges),
NPDES stormwater runoff permits and POTW agreements (indirect discharges)
Spill Prevention, Control, and Countermeasure (SPCC) plans (oil and hazardous substance spills), and
Dredge and Fill permits (wetlands and waterbodies)

NPDES

The NPDES Permit Program regulates all industrial wastewater discharges into waters of the U.S. including any navigable waters and territorial seas that connect to or impact interstate waters or commerce. The program may require locations discharging from wastewater treatment systems, sanitary systems, storm water runoffs and hydrostatic test sites to obtain an NPDES permit.

In addition to direct discharges and storm water runoff to surface water bodies, the NPDES covers discharges of wastewater to POTWs. Industries with direct discharges into POTWs must comply with pre-treatment standards to prevent pollutants from passing through the system without treatment.

SPCC

The CWA prohibits spills, leaks or other discharges of oil or hazardous substances into the waters of the U.S. in quantities that may be harmful. Although there are some exemptions for Department of Transportation (DOT) regulated transmission facilities, facilities that reasonably are expected to discharge oil in harmful quantities should prepare an SPCC plan, which typically identifies the company or contractor parties' responsibilities, describes the precautionary measures taken to reduce the likelihood of spills, and describes the spill response and reporting procedures in the event of a spill.

Dredge and Fill Permits

The CWA requires a permit to discharge dredged or fill material into the U.S. waters. Dredged material is that which is excavated from U.S. waters. Fill material is any material used for replacing an aquatic area with dry land or for changing the bottom elevation of a water body. Applications must be filed to the U.S. Army Corps of Engineers (USACE), which is the lead agency that issues a majority of the dredge or fill permits or filed jointly with state agencies that are responsible for issuing the remainder of the permits.

Natural Gas Industry

The CWA has far-reaching application to the natural gas industry, affecting permitting and compliance activities for the operation

of natural gas transmission, storage, exploration and production, and processing facilities. The CWA also applies to the siting and construction of new facilities, as well as replacement projects.

Natural gas industry facilities might be required to obtain NPDES permits for direct discharges or process or wastewater, storm water runoff, indirect discharges through POTW, or construction dewatering or hydrostatic testing. Under the CWA, natural gas facilities may also be required to develop SPCC plans to prevent and control oil and hazardous waste spills. In addition, state water quality certifications and dredge and fill permits may be required for construction in waters of the U.S. Under the CWA, the EPA may authorize implementation of state programs instead of the federal program, as long as the state programs are at least as stringent as the federal program. In general, many of these permits are obtained directly from the state's department of environmental quality/protection.

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NPDES Program

Introduction

The NPDES permit program was authorized by the Clean Water Act, Section 402(b) with a purpose of controlling water pollution by regulating point sources that discharge pollutants into waters of the U.S., allowing people to swim and fish in our nation's waters and enjoy neighboring wetlands. Since program inception, the quality of rivers, lakes, and bays has improved, increasing the number of water bodies that are safe for fishing and swimming. In addition, the program has helped reduce the amount of soil lost due to agricultural runoff and decrease phosphorus and nitrogen levels in water sources.

Regulatory Summary

NPDES-regulated point sources are discrete conveyances such as pipes or man-made ditches from which pollutants may be discharged. Individual homes that either connect to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit. However, industrial, municipal, and other facilities such as compressor stations, processing plants, terminals, and pipelines must obtain permits iftheir discharges drain to surface waters and, in some circumstances, to POTWs.

NPDES permits for direct discharges, such as a hydrostatic test water discharge, commonly require a Notice of Intent, description of hydrostatic testing and discharge activities (pipe characteristics, rate, volume), methods for slowing down the release ofwater potentially through an erosion control/dewatering structure, and a list of test water sources and discharge locations.

The NPDES permits may be general or site-specific depending on the nature of the site and site activities. Those for storm water discharge from industrial facilities or construction activities generally require a Notice of Intent, a list of water bodies that may receive storm water draining offsite, and implementation of an approved Storm Water Pollution Prevention Plan (SWPPP). General requirements for an SWPPP include, but are not limited to:

Owner/operator information,
Site description, including size and nature of activities,
Plot plan or other location maps or drawings,
Assessment of storm water contamination potential
Identification of BMPs for storm water pollution control
Implementation of storm water measures and controls
Employee training, and
Evaluation of SWPPP procedures (compliance inspections, record keeping)

For new transmission or pipeline replacement projects, the Federal Energy Regulatory Commission (FERC) has adopted the Upland Erosion Control, Revegetation, and Maintenance Plan, which includes commonly accepted practices that can be augmented with a company's procedures and site specific plans to write a facility SWPPP. The FERC typically encourages or requires companies to adopt the Plan and to identify individual exceptions or variances depending upon the nature of the project and its implementation is generally accepted as meeting SWPPP requirements.

Because the NPDES and SWPPP state requirements vary and may be more detailed and stringent than federal requirements, it is recommended that owners/operators consult with the appropriate state permitting agencies prior to mailing the application and to ensure that their facility complies with state and federal laws.

Natural Gas Industry

Natural gas industry facilities may be required to obtain NPDES permits to discharge wastewater, including hydrostatic test water released during the testing of new and existing pipeline systems, into the U.S. waters (creeks, streams, lakes). Permits may also be required for storm water runoff and other discharges that originate from facility yards. All currently non-permitted water discharges from gas transmission or production facilities should be evaluated to determine if a permit might be required. Water producing activities that may require discharge permits include:

Sanitary sewer treatment systems,
Water treatment or water purification systems,
Oil/water separators,
Vehicle washing, and
Hydrostatic tests

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Spill Prevention Plans

Introduction

The purpose of the Spill Prevention, Control and Countermeasures (SPCC) regulation is to prevent discharge of oil and hazardous substances into navigable waters or adjoining shorelines of the United States from onshore, non-transportation facilities. Section 311 of the CWA gave the EPA jurisdiction over this program. To determine whether your facility is required to prepare and update SPCC plans, you must meet the following criteria:

The facility must be non-transportation related
The facility must have an aboveground storage capacity of greater than 660 gallons in a single container or an aggregate storage capacity greater than 1,320 gallons or a total underground storage capacity greater than 42,000 gallons
There must be a reasonable expectation that a discharge to waters of the United States or adjoining shorelines could occur.

Facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, or consuming oil in these harmful quantities must prepare an SPCC plan. The objective is to prevent spills through (1) employee training, (2) inspections, and (3) secondary containment. The SPCC regulations administered by the EPA are contained in 40 CFR 112.

Definitions

As described earlier, navigable waters are defined as "all waters of the United States," which EPA regulations further define as waters used in interstate commerce, interstate waters, intrastate lakes, rivers, streams, wetlands, etc.., impoundment's and tributaries to the above-mentioned water bodies, and wetlands adjacent to waters within these categories.

The term "non-transportation" essentially includes oil storage, processing, and distribution. Related facilities are facilities not regulated by the DOT, Office of Pipeline Safety (OPS) under 40 CFR 194 and 40 CFR 195.

Oil is defined as "oil of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse and oil mixed with wastes other than dredged spoil and oily mixtures."

Regulatory Summary

If your facility meets the three criteria (non-transportation related, have or exceed the specified storage capacity, and could reasonably discharge to waters of the United States), you may be required to develop an SPCC plan and have it signed by a registered Professional Engineer to ensure that the plan has been prepared specifically for the facility using good engineering practices. Specific to each facility and requiring management approval to commit the necessary resources and training, the plan must be prepared within six months and implemented within twelve months of facility start up. Most companies have existing or standard SPCC plans that can be routinely adapted to specific projects. A copy of the plan must be located at the facility and be available to the EPA and state regulators for inspection during normal working hours. It must be reviewed/updated every three years and amended whenever there are design, operation, or maintenance changes.

In general, the following elements must be included:

Any spill history,
Spill predictions,
Compliance with minimal prevention standards and other applicable guidelines,
Facility drainage,
Bulk storage tanks,
Transfer operations,
Loading/unloading rack area for tank car and tank trucks,
Oil production facilities,
Oil drilling/production facilities,
Inspections and records,
Security, and
Personnel, training, and spill prevention procedures.

The SPCC plan describes the steps the facility will take to prevent a spill and to minimize the impacts on human health and the environment in the event of a spill. Trained personnel, along with a well developed plan, enable a spill to be cleaned up

efficiently. As a result, the clean up effort will be conducted in a manner that minimizes danger to workers, reduces impacts to sensitive environments, and reduces the cost of cleanup.

Please also be aware that some transportation facilities, termed "complex facilities", might have bulk oil storage and processing and pipeline related product breakout tanks where both the EPA and the DOT have jurisdiction. In a Memorandum of Understanding (MOU) entered into by the EPA and the DOT in early 2000, the agencies are working to better coordinate this over-lapping jurisdiction. Companies with complex facilities should keep apprised of these developments in reviewing and updating SPCC plans and periodically consult with the agencies.

Natural Gas Industry

The natural gas industry often has aboveground storage tanks containing lubrication oils and pipeline hydrocarbon condensate, which may require an SPCC plan. As summarized above, the company may also have bulk oil storage tanks associated with transportation facilities that are also subject to the EPA requirements for SPCC plans. Facilities may have product (breakout) tanks from its pipeline system and storage, in which case a facility becomes a complex facility with joint EPA/DOT OPS jurisdiction.

While not discussed above under the regulatory summary, there is an additional practical application for developing and implementing SPCC plans. For new transportation construction projects and systems expansion, the FERC, in its environmental review and certification, requires the company to provide an SPCC plan to address potential spills of hydrocarbon products or other hazardous substances during construction.

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Oil Pollution Act

Introduction

The Oil Pollution Act (OPA) was enacted in response to the 11 million gallon spill from the Exxon Valdez tanker in March 1989. The OPA established increased liability and compensation systems for oil spills, improved contingency planning and preparedness, increased penalties for spills, improved tanker specifications, increased navigation safety, and expanded oil spill effects and cleanup method research. In effect, it expanded Section 311 of the CWA to offshore facilities and transportation.

Regulatory Summary

Liability and Compensation (Title I)

A federal liability and compensation system was established to provide prompt compensation for cleanup costs and damages from oil spills. Responsible parties (RPs) are liable for cleanup costs and damages up to specified liability limits but, in certain circumstances, their liability is unlimited. If full compensation is unavailable from the RP, additional compensation for cleanup costs and damages will be available from a federal oil spill liability fund, which is supported by a 5-cent-per-barrel tax on oil. Immunity from removal liability costs and damages are provided to people involved in cleanup activities, such as industry cooperatives or response organizations.

Prevention (Title IV, Subtitle A)

In an attempt to prevent oil-related spills, the OPA set provisions that in Title IV, Subtitle A require installation of double hulls on all new oil tankers and barges operating in waters subject to U.S. jurisdiction, excluding vessels used only to respond to a discharge of oil or hazardous substances. Measures were also taken by the OPA to prevent oil spills due to use of alcohol or drugs by ship personnel and to incorporate a vessel traffic service system for tankers/barges.

Removal (Title IV, Subtitle B)

The OPA Title IV, Subtitle B requires the effective and immediate removal of an oil or hazardous substance spill. Owners or operators of tank vessels, offshore facilities and most onshore facilities must prepare plans for responding, to the maximum extent practical, to a worst-case discharge. The plan must be submitted to and approved by the appropriate federal agency. Vessels carrying oil or hazardous substances in bulk are required to carry cleanup equipment which must be periodically inspected, consisting of the best technology economically feasible and compatible with safe operation of the vessel.

Research and Development (Titles V and VII)

The OPA Titles V and VII established the Prince William Sound Oil Spill Recovery Institute to conduct oil spill research and educational and demonstration projects directly related to the Exxon Valdez spill and authorized appropriations from the oil spill trust fund. An Interagency Coordinating Committee on Oil Pollution Research coordinates additional research and development programs and related efforts by federal agencies, industry, universities, research institutions, states, and other nations.

Natural Gas Industry

Natural gas companies that own or operate tanks, vessels, or offshore facilities are affected by several regulatory requirements under the OPA. It not only covers the transportation of oil but also addresses transportation of hazardous substances that could jeopardize the waterways. Therefore, natural gas companies that operate a liquefied natural gas (LNG) facility where LNG tankers are utilized are regulated by OPA. In addition, the natural gas condensate generated on offshore platforms is considered an oil product and requires facilities to meet applicable requirements of the OPA.

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Wetlands and Water Bodies

Introduction

Wetlands are areas that are saturated by surface or groundwater long enough to promote and support vegetation typically adapted to life in saturated soils. They vary in appearance and conditions and generally include marshes, swamps, bogs and fens. Marshes are characterized by open water and emergent soft-stemmed vegetation. Nontidal marshes include wet meadows, prairie potholes, vernal pools, and playa lakes. Swamps are dominated by woody plants such as bottomland hardwoods or mangroves. Bogs are defined by spongy peat deposits, acidic waters, and a floor covered by a thick carpet of sphagnum moss. Fens are similar to bogs but are less acidic and have higher nutrient levels.

Wetlands are important to people because they play a major role in natural functions such as:

- Cleaning up polluted water before it reaches lakes, streams, or groundwater,
- Slowing and storing flood waters, reducing damage to crops and buildings,
- Providing habitat for fish, birds, amphibians, etc..,
- Protecting and anchoring shorelines from erosion, and
- In some settings, recharging groundwater supplies.

About half of the original wetlands in the United States were lost to agricultural drainage, urbanization, and other human activities. Therefore, to preserve their value to us and to future generations, several environmental laws and local land use ordinances were enacted to protect natural resources and the public interest by discouraging the use of sensitive natural areas for new development.

Surface water bodies are also important to people and natural ecosystems. Perennial streams, lakes, ponds, and even intermittent and ephemeral washes provide valuable habitat to plants and wildlife. Water bodies are also critical to the fishery industry and provide opportunities for recreation, education, and research.

Regulatory Summary

The primary regulation protecting construction in wetlands and water bodies is Section 404 of the CWA, which was established to regulate the discharge of dredged and fill material in U.S. waters (including wetlands and jurisdictional water bodies) and is managed by the U.S. Army Corps of Engineers (USACE). Construction in wetlands and water bodies is also regulated and reviewed by:

- The Environmental Protection Agency (EPA),
- The Fish & Wildlife Service (FWS),
- The Natural Resource Conservation Service (NRCS),
- State and local conservation departments,
- The FERC, and
- State public service commissions/public utilities commissions.

The Section 404, or Dredge and Fill Permit program, is one of the most critical components of project development and involves consideration of the following:

- Schedule/lead times,
- Siting,
- Certification and permit applications,
- Pre-construction survey and report requirements,
- Design and construction (including special techniques such as HDD), and
- Costs, including compensatory mitigation.

Section 10 of the U.S. Rivers and Harbors Act of 1899 is also applicable where the project crosses navigable waterways, particularly at rivers maintained for commercial navigation, and requires a permit. Typically, this review is done in conjunction with the CWA 404 permitting process.

Determination

The definition and delineation of "wetlands" are based on the environmental characteristics of a potential wetland that are divided into three categories: soils, vegetation, and hydrology. The USACE Wetlands Determination Manual (1987) contains criteria for each category, and an area that meets the criteria is defined as a wetland.

Based on a recent Supreme Court ruling in 2001 where developers challenged jurisdiction of some wetland areas created by past activities such as gravel mining, some wetlands that otherwise would meet the USACE definition of a wetland may not be federally regulated if they are isolated from other waters. In reviewing a project, some USACE districts might have to perform additional review to determine which wetlands are jurisdictional, whereas previously it was practically assumed that all wetlands were jurisdictional. From a pipeline construction and restoration standpoint, however, industry is typically treating wetlands similarly, which is probably the best practical guidance to avoid delays in permits or approvals.

Permitting

As mentioned above, a federal permit is required to discharge dredged or fill material into wetlands and other waters of the U.S. A permit application must show that steps have been taken to avoid wetland impacts where practicable, potential impacts to wetlands have been minimized, and compensation is provided for any remaining unavoidable impacts through activities to restore or create wetlands. Depending upon the project's scope, either a nationwide or individual permit will be required. An individual permit is usually required for potentially significant impacts. However, for most discharges that will have only minimal impacts, the USACE often grants up-front general permits on a nationwide, regional, or state basis. In some parts of the country, the nationwide permit has been replaced by a Programmatic General Permit (PGP), in which specific requirements are set to determine the level of permit required. Pipeline projects generally qualify for a nationwide permit 12, allowing "utility line backfill and bedding", which was re-authorized in January 2002, subject to meeting a number of terms which are effectively best management practices to minimize disturbance and restore the areas. State and local wetland approvals might also be required for some projects, and a Water Quality Certificate from the state might be required under the CWA Section 401.

The operative goal of the USACE is to have no net loss of wetlands. Nevertheless, siting of aboveground facilities might not preclude jurisdictional wetland areas in some parts of the country such as the Southeast. For pipeline rights-of-way, there is generally no net loss, although wetland vegetation types may change with respect to conversion of forested wetlands to non-forested wetlands. The USACE policy is to avoid, minimize, and mitigate in order of priority.

Guidelines for Project Planning

In order to determine if a project impacts wetlands, National Wetlands Inventory maps, NRCS soil survey maps, aerial photographs, and site-specific information regarding vegetation, soil and hydrology should be reviewed. Precautions must be taken to protect wetlands during projects, such as pipeline construction, including delineating the wetland boundaries along pipeline right-of-way and establishing buffer zones, storing excavated topsoil separately and replacing it last, and minimizing the amount of disturbance to the wetland areas by preserving as much of the native vegetation as possible. After completion of a project, the affected wetland areas must be restored to original grade and revegetated with native wetlands species. Refer to the FERC *Wetland and Water Body Construction and Mitigation Procedures* or equivalent procedures to develop practical construction and restoration plans.

It is recommended that owners/operators include the FERC Plan and Procedure as part of contractor bid documents. Owners/operators might also negotiate reasonable compensatory mitigation as necessary and conduct inspection and post-construction monitoring. Note that compensatory mitigation (mitigation banking or in-lieu fees) is more common in some states or regions than other forms of mitigation. In addition, the Section 401 Water Quality Certificate may require a separate application, letter request, or review and approval in conjunction with NPDES permits or 404 Joint Applications. USACE districts vary from region to region; therefore, early contact with agencies is recommended.

Natural Gas Industry

Due to the permitting process, wetlands have become a major concern for both transmission and distribution companies in the natural gas industry. Wetland determination should be made on any project, especially when clearing of vegetation is required. It is important to recognize and understand how to deal with wetlands. These requirements can extend to replacement or maintenance work where rights-of-way of facility areas predated the CWA; however, new disturbance in any wetland can be subject to current requirements.

Pipeline projects are typically covered under a nationwide permit or by a PGP. Prior to construction, it is advisable to request a permit determination from the USACE to confirm in-house evaluations. If an individual permit is required for the project, a

lengthy and complex permitting process involving federal and state agencies can ensue where wetlands compensation is involved. Natural gas transmission and distribution companies should use the USACE Wetlands Determination Manual as a primary guide for determining whether the project(s) will be affected by wetlands. The FERC's Wetland and Waterbody Construction and Mitigation Procedures is also a good reference in design, construction, restoration, and maintenance.

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Endangered Species Act

Introduction

The Endangered Species Act (ESA) was enacted in 1973 to provide for the conservation and protection of species determined to be endangered or threatened. Under the ESA, federal agencies are required to ensure that their actions, such as building dams or granting construction permits to private companies, do not jeopardize endangered or threatened species or harm their critical habitat. In 1988, the 1973 ESA was extended to provide additional new protections for endangered species.

Currently, the Act protects some 1,035 species, including 320 mammals, 231 birds, 106 reptiles, 203 plants, 88 fish, 32 clams, 17 amphibians, 17 insects, 9 snails, 9 crustaceans, and 3 arachnids. The listings change rather frequently as new species are added or removed.

Regulatory Summary

Determination

In identifying specifications for determining whether a species is listed as an endangered or threatened species, the ESA considers the following factors:

- The present or threatened destruction, modification, or curtailment of its habitat or range,
- Over-utilization for commercial, recreational, scientific, or educational purposes,
- Diseases or predation,
- The inadequacy of existing regulatory mechanisms, and
- Other natural or man-made factors affecting its continued existence.

The Fish and Wildlife Service (FWS) monitors the status and the candidates for listing under the ESA. The FWS has the responsibility for determining the extent of monitoring that is required.

Every five years, all species on the list are reviewed to determine if a species should be either removed from the list, changed in status from an endangered to a threatened species, or changed in status from a threatened to an endangered species.

Recovery Plans

The FWS and the National Marine Fisheries Service (NMFS) allocate their resources to establish recovery actions/plans for listed endangered or threatened species. The FWS is required to monitor the "recovered" species for five years after a species is removed from the list.

Compliance

Section 7 of the ESA requires project review by the FWS and NMFS. Similar state regulations may also request review by state departments of natural resources and/or environmental protection/quality. For all projects that are identified as having the potential to affect threatened or endangered species significantly, the FWS must evaluate the project and issue a Biological Opinion. Approval can only be obtained with appropriate mitigation measures designed into the project. Mitigation measures that can be implemented to offset impacts include:

- Facility siting or expansion,
- Seasonal construction,
- Permits and approvals for incidental take,
- Species relocation,
- Off-site mitigation,
- In-lieu compensation, and
- Habitat presentation.

Compliance with the ESA is often required for all projects seeking a CWA Section 404 permit and is a general condition of the USACE Nationwide Permit 12 or Individual Permits.

Natural Gas Industry

During the planning stage of natural gas industry construction projects, project managers work with federal agencies to obtain construction permits related to the project. Consultation with state and local agencies may also be required. During the preplanning stage of the construction project, companies should identify endangered species habitats in the project's vicinity and determine the potential impact of the project as presented. Federal and state agencies review submitted permit applications from various environmental perspectives, which notably includes endangered species. One of these perspectives addresses the project's proximity to endangered species habitat and/or individual species and potential effects of construction and operation activities. Companies should consider what project changes might be necessary and evaluate the lead times and costs in addressing ESA requirements. It is noted here, just as for wetlands under the CWA, that requirements for pipeline replacement and, in some cases maintenance activities on the rights-of-way or facilities pre-dating the ESA, can now include ESA compliance.

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Safe Drinking Water Act

Introduction

The Safe Drinking Water Act (SDWA), passed in 1974 and revised in 1986 and 1996, requires the EPA to regulate contaminants that pose health risks when present in public drinking water supplies. Under the SDWA, the EPA sets limits on the levels of those contaminants in drinking water called "Maximum Contaminant Levels" (MCLs). Currently, 83 contaminants are regulated under the SDWA. Periodic testing schedules and methods for the water systems must be followed to prevent health risks associated with drinking the water. Standard techniques for treating contaminated water have been established. Each state can set and enforce their own drinking water standards, if the standards are at least as stringent as the federal standards.

Regulatory Summary

The SDWA was implemented in several phases. In 1974, the SDWA established the National Primary Drinking Water Standards to regulate contaminants that may cause adverse health effects and set Secondary Standards for odor and appearance of drinking water. The 1986 amendments identified MCLs for Priority Contaminants, established a testing schedule for the presence of contaminants in water systems, and provided treatment methods for the removal of those contaminants. During the phased implementation period, the EPA continued to gather, update and analyze information on the presence of contaminants in drinking water as it relates to health effects. SDWA amendments also strengthened enforcement provisions.

The SDWA expanded groundwater protection provisions to include the sole-source aquifer program, which provides greater protection to aquifers that are the primary provider of drinking water in an area and groundwater monitoring regulations for hazardous waste inspection.

The SDWA also increased surface water protections. Drinking water systems that use surface water (rivers, lakes, and reservoirs) as a source must conduct more sampling than is required for groundwater and aquifer water sources. Because surface water is particularly susceptible to contamination from sewage treatment plant discharges and runoff from storm water and snowmelt, additional sampling helps ensure adequate protection of drinking water. The 1986 amendments also mandated filtration treatment for water supplies from surface water sources and disinfection for other systems. Filtration removes larger microorganisms, while disinfection is used to prevent disease caused by biological contaminants.
There are a variety of bacteria, parasites and viruses that cause immediate (though rarely serious) health problems when humans ingest them in drinking water. The SDWA regulates any presence of coliform bacteria (Total Coliform Rule) in drinking water. The coliforms are a broad class of bacteria that live in the digestive tracts of humans and many animals. The Coliform Rule also details the type and frequency of testing required for water systems.

Lead and copper are two naturally occurring metals that can contaminate drinking water. They are typically introduced when water reacts with the metals in the pipes. This is particularly likely to happen when water sits in a pipe for more than a few hours. Due to these reasons, the EPA has established the Lead and Copper Rule. When the level of lead or copper in the water system reaches the limit, certain water treatment procedures must be implemented.

The *1996* amendments to the SDWA increased protection of public drinking water supplies by adding the Community Right-to-Know notification requirements. SDWA requires community water systems to notify users of any contaminants above the regulatory limits. Systems serving more than 10,000 people must provide the information by mail, systems serving between 500 and 10,000 people must publish the information in newspapers, and systems serving fewer than 500 people simply have to make the information available. Explanations about health effects must be included in the notifications.

Further revisions to the SDWA included source water protection, revised requirements for radon and arsenic, and funding for infrastructure improvements. It is important to keep updated with the SDWA requirements as there are frequent changes in standards for specific contaminants (e.g., arsenic and lead) and in some regions, naturally occurring concentrations in wells may exceed the SDWA standards.

Natural Gas Industry

If a natural gas facility draws drinking water from a municipal drinking water source, the municipality is responsible for compliance with the SDWA. However, natural gas facilities are generally located near small rural communities and may use on-site drinking water sources (i.e., a water well) instead of a municipal water source. In such cases, the facility is required to manage and maintain the on-site drinking water sources, including periodic sampling for compliance with the SDWA.

All on-site wells must be tested to ensure the water is potable and safe for persons to consume while on the premises. The parameters or substances for which you are sampling and the frequency of sampling are primarily dependent on the number of people at the work site. The SDWA only applies to water sources that serve 25 or more people. However, OSHA requires that all work sites have potable water available for employee use. In addition, many state and local agencies have issued their own regulations regarding drinking water, which may be more stringent than the federal guidelines. In practice, the **SDWA** has limited application to the industry unless a company develops its own water source to serve 25 or more people. Nevertheless, the company should otherwise assure that its water supply is safe.

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Hydrostatic Test Waters

Introduction

The purpose of NPDES permits for hydrostatic test water discharges is to "insure that the test medium is disposed of in a manner that will minimize the damage to the environment" (49 CFR 192.51).

Regulatory Summary

The U.S. Department of Transportation (DOT) is the primary governing body that regulates integrity testing of pipelines. State water quality agencies are also concerned with the discharge of potentially contaminated test water in surface waters and are therefore also likely to be involved in the permitting of hydrostatic testing. In addition, the FERC requires hydrostatic test plans for natural gas pipelines in its environmental review for new projects or system expansions.

There is wide variation in the regulation of hydrostatic test water handling. Regulatory requirements for a particular pipeline project can depend upon the state in which the pipeline is located, age of the pipeline (i.e. new or existing), method of water disposal (i.e., hauling to a POTW, direct discharge to land, discharge to surface waters, discharge to an evaporative pond, discharge through a treatment unit, etc..), discharge volume, flow rate, and other site-specific conditions. Permitting requirements range from authorization letters to acquire coverage under a general NPDES permit to applications for coverage under an individual NPDES permit.

Discharges from test water may be released to the original surface waters where test waters are withdrawn, through a POTW, on land, to an evaporation pond, and sometimes through a fixed or portable treating unit. Monitoring for various chemical properties and/or aquatic toxicity may be required for both fill and discharge water. Some commonly required test parameters include:

- PH,
- Oil and grease (O&G),
- Total dissolved solids (TDS),
- Conductivity,
- Chlorides,
- Dissolved oxygen (DO),
- Iron,
- Biochemical oxygen demand (BOD),
- Chemical oxygen demand (COD),
- Total organic carbon (TOC),
- Metals/trace elements, and
- Volatile/semi-volatile organics such as benzene and BTEX.

Testing requirements and parameters vary by state and region and by the particular surface water body receiving the discharge, if applicable. If monitoring is required for either obtaining data or compliance with stipulated discharge limits, it may be appropriate to obtain samples at the beginning, middle, and end of discharge. Flow values may be most appropriately obtained by using an ultrasonic device.

In addition, the testing of new versus existing pipe can pose different permitting questions. While contaminants generally are not a major concern with clean, new noniron pipe, old pipe or iron pipe may pose special concerns due to the potential presence of other compounds in the pipe, including volatile organics. Sedimentation with or without chemical coagulants, aeration using diffused air, and carbon absorption using activated carbon might be appropriate for removal of suspended materials and iron, volatile organics, and organic constituents, respectively, which may be present in existing pipes. In addition, filtering discharge water through a temporary flow structure such as a structure containing an oil absorbent boom may be an appropriate treatment method that removes pollutants while simultaneously increasing the dissolved oxygen levels. The dewatering structure can also serve to control rates of release, acting as an energy dissipater or temporary, secondary flow control (such as straw bale barriers or other sediment control fabrics).

To acquire the appropriate test water discharge permit, the owner/operator should begin by identifying hydrostatic test needs, sources, and discharges as part of the design phase. Other recommended steps are presented below:

- Consult with states on specific project permit needs
- Identify schedules

- Acquire permits, including construction bid documents
- Conduct compliance inspections
- Prepare monitoring reports

It is also recommended that owners/operators keep apprised of current regulations and standards in the facility area. For example, more recent rulemaking has sought to set more stringent standards for organics such as benzene that may be present in existing pipe. State water quality standards also vary and are subject to revision.

Natural Gas Industry

Natural gas pipeline companies commonly use hydrostatic testing to test the integrity of pipeline systems. The test waters must be handled in accordance with any applicable environmental regulations and typically require state notifications and general or project-specific permits or authorizations. The state lead agency should be contacted in advance of finalizing hydrostatic test plans and schedules. Pigging pipelines (i.e. scraper pigs), especially on older pipelines that have been in operation, can significantly reduce the level of contaminants in the discharged test water and reduce treatment and disposal costs.

Please note this manual was not designed to provide compliance and/or legal advice on specific situations, and many companies have specific policies and procedures that should be followed. Furthermore, environmental regulations are constantly changing and the information provided in this manual may not be accurate.

If you have specific questions related to an environmental issue, please contact your company environmental staff and/or an environmental consultant.