14. Water Resources

Water resources are surface waters and groundwater that are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. Surface water, groundwater, floodplains, and wetlands do not function as separate and isolated components of the watershed, but rather as a single, integrated natural system. Disruption of any one part of this system can have consequences to the functioning of the entire system. The analysis should include potential disruption of the system as well as potential impacts to the quality of the water resources. Because of the close and integrated relationship of these resources, their analysis is conducted under the all-encompassing impact category of water resources. Wild and Scenic Rivers are included because impacts to these rivers can result from obstructing or altering the free-flowing water of a designated river. This chapter covers the following main topics: Wetlands (Section 14.1), Floodplains (Section 14.2), Surface Waters (Section 14.3), Groundwater (Section 14.4), and Wild and Scenic Rivers (Section 14.5).

14.1. Wetlands

For regulatory purposes under the Clean Water Act (CWA), the term wetlands means areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Areas covered with water for such a short time that there is no effect on moist-soil vegetation are not considered wetlands, nor are the waters of streams, reservoirs, and deep lakes. Wetlands provide many benefits to the human, biological, and hydrological environment, including habitat for fish and wildlife, water quality improvement, flood storage, and opportunities for recreation.

14.1.1. Regulatory Setting

Exhibit 14-1 lists the statutes, regulations, Executive Orders, and other requirements related to wetlands. See Appendix B.10.1 for more detailed information about these requirements.

Exhibit 14-1. Statutes, Regulations, Executive Orders, and Other Requirements Related to the Protection of Wetlands

Statute or Executive Order	Location in U.S. Code or *Federal Register*	Implementing Regulation(s)	Oversight Agency[a]	Summary[a]
Clean Water Act	33 U.S.C. §§ 1251-1387	33 CFR parts 320-332 40 CFR parts 230-233	USACE; EPA	The CWA establishes the basic structure for regulating the discharge of pollutants into waters of the United States which include wetlands. The two primary sections of the CWA relating to wetland impacts and permitting are Section 404 and Section 401. Section 404 establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Section 401 requires that a Water Quality Certificate for a project to ensure it does not violate State or Tribal water quality standards. Section 401 certifications are generally issued by the state or tribe with jurisdictional authority.
Fish and Wildlife Coordination Act	16 U.S.C. § 661-667d	Final regulations never issued	USFWS	Requires federal agencies to consult with the USFWS, NMFS (in some instances), and appropriate state fish and wildlife agencies regarding the conservation of wildlife resources when proposed federal or applicants' projects may result in control or modification of the water of any stream or other water body (including wetlands).
Executive Order 11990, *Protection of Wetlands*	42 *Federal Register* 26961, (May 24, 1977)	Not applicable	DOT	Requires federal agencies to "avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative." The stated purpose of this Executive Order is to "minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands."
DOT Order 5660.1A, Preservation of the Nation's Wetlands	Not applicable	Not applicable	DOT	Implements the guidelines set forth in Executive Order 11990. Transportation facilities should be planned, constructed, and operated in order to assure the protection and enhancement of wetlands to the fullest extent practicable.

Statute or Executive Order	Location in U.S. Code or *Federal Register*	Implementing Regulation(s)	Oversight Agency[a]	Summary[a]
State statutes protecting wetlands	Not applicable	Not applicable	Applicable state	In addition to the federal requirements discussed above, there may be additional state and local wetland statutes and regulations that apply to the proposed project. This should be determined on a case-by-case basis by contacting relevant state and local regulatory agencies in the early stages of project planning.

[a] CFR = Code of Federal Regulations; CWA = Clean Water Act; DOT = U.S. Department of Transportation; EPA = U.S. Environmental Protection Agency; NMFS = National Marine Fisheries Service; U.S.C. = United States Code; USACE = U.S. Army Corps of Engineers; USFWS = U.S. Fish and Wildlife Service.

A water of the United States is considered a jurisdictional surface water or wetland under the CWA; the regulatory definition is found at 33 CFR § 328.3(a), and further guidance is found in the U.S. Environmental Protection Agency (EPA)/U.S. Army Corps of Engineers (USACE) Memorandum "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*". Any surface water not meeting this definition is considered non-jurisdictional, and therefore has no statutory protection under the CWA[1]. It is important to note that not all surface waters are considered jurisdictional under the CWA. This determination is made on a case-by-case basis by the USACE; as a result, the Federal Aviation Administration (FAA) should consult with the USACE to determine the jurisdictional status of any surface water that may be affected by a proposed action or alternative(s). Non-jurisdictional wetlands are protected under Executive Order 11990.

14.1.1.1. Consultations, Permits, and Other Approvals

Early coordination of the proposed action and alternative(s) will be conducted with agencies having special interest in wetlands. Such agencies include state and local natural resource and wildlife agencies, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), the U.S. Coast Guard (USCG), the USACE, the U.S. Department of Agriculture (USDA) Wildlife Services, and the EPA, as appropriate. This coordination should be combined as much as possible with state and local officials. Specific consultation is required under the Fish and Wildlife Coordination Act with the USFWS and the state agency having administration over the wildlife resources.

If there is uncertainty about whether an area is a wetland, the local district office of the USACE or a wetland delineation specialist (or the USDA Natural Resources Conservation Service (NRCS) to delineate wetlands on agricultural lands) must be contacted for a delineation determination.

[1] The scope of "Waters of the United States" protected under the CWA was more precisely defined and clarified under the Clean Water Rule (effective August 28, 2015). However, due to pending litigation the USACE is not implementing the Clean Water Rule and instead is currently following the 1986 regulations and applicable guidance (e.g., USACE 1987 Wetland Delineation Manual) for jurisdictional determinations. In addition, the EPA and the USACE published a proposed rule in the *Federal Register* to rescind the 2015 definition (82 *Federal Register 34899* [July 27, 2017]). As this process continues and a definition for jurisdictional waters is finalized, this Desk Reference will be updated.

Early coordination among the FAA or applicant, the USFWS, NMFS, and the USACE may assist the FAA in addressing wetland issues or conflicts early in the National Environmental Policy Act (NEPA) process and in developing ways to resolve them. If a proposed project would have an unavoidable impact to a wetland that is determined to be jurisdictional by the USACE under the CWA, the following permit and certification will be required. Likewise, a proposed project's unavoidable impacts to non-jurisdictional wetlands must be assessed per Executive Order 11990 and DOT Order 5660.1A, even if no permit or certification is needed.

Section 404 Permit

Section 404 of the CWA authorizes the USACE to issue permits, after the notice and opportunity for public hearing, for the discharge of dredged or fill material into the waters of the United States.

Under Section 404, no discharge of dredged or fill material can be permitted if a practicable alternative exists that avoids or minimizes wetland impacts. Therefore, when the FAA or applicant applies for a permit it must show and explain that it has:

- taken steps to avoid wetland impacts where practicable;
- minimized potential impacts to wetlands; and
- provided compensation for any remaining, unavoidable impacts through activities to restore or create wetlands.

For many discharges that have minimal impacts, the USACE can grant *general permits*. General permits are issued on a nationwide, regional, or state basis for particular categories of activities (e.g., minor road crossings, culvert replacement) as a means to expedite the permitting process. General permits typically cover multiple facilities within that specific category and offer a cost-effective option for the USACE because of the large number of facilities that can be covered under a single permit. By definition, general permits have already been issued and have gone through the NEPA process. A common and widely used general permit is the *Nationwide Permit*, which is a permit that has already been issued nationwide for certain specified activities. Nationwide Permits are reviewed and revised every five years by the USACE, and the current Nationwide Permits became effective on March 19, 2017. If a proposed project would have unavoidable wetland impacts, it would benefit the FAA or applicant to design a project to meet the conditions of a Nationwide Permit.

For projects with potentially significant adverse wetland impacts or those exceeding the criteria for a general permit, an *individual permit* is usually required. The time to process an individual permit varies depending on the complexity of a project and the USACE district issuing the permit. The amount of impact to waters of the U.S. will determine the level of environmental analysis and permitting required, and the involvement of permitting agencies, as necessary. Compliance with the Endangered Species Act (ESA) and/or Section 106 of the National Historic Preservation Act may also be required before a Section 404 permit can be issued. Standard individual permits typically require a 30-day agency and public review, and can then take 60 to 120 days or more to process and issue the permit. As a result, the preparation of a Section 404 permit application package should begin in the early stages of project planning. Exhibit 14-2 presents a summary of the Section 404 permit process.

Exhibit 14-2. Process for Obtaining a Section 404 Permit

Step	Action
1	The FAA or applicant determines if the proposed project would discharge dredged or fill material into the waters of the United States, including wetlands. If not, a Section 404 permit is not required. If so, contact the USACE district office to schedule a pre-application consultation meeting. One or several meetings are scheduled for consultation between the FAA or applicant, USACE district staff, interested resource agencies (federal, state, tribal, or local), and sometimes the interested public. The basic purpose of the meeting(s) is to provide for informal discussions about the pros and cons of a proposal before an applicant makes irreversible commitments of resources (funds, detailed designs, etc.). The process is designed to provide the applicant with an assessment of the viability of some of the more obvious alternatives available to accomplish a project purpose, to discuss measures for reducing the impacts of a project, and to inform the applicant of the factors the USACE must consider in its decision-making process.
2	If it is determined that the USACE has jurisdiction and a permit is needed, the FAA or applicant submits a permit application.
3	Once a complete application is received, the formal review process begins. USACE districts operate under what is called a project manager system, where one individual is responsible for handling an application from receipt to final decision. The USACE project manager prepares a public notice including the proposed activity, its location, and potential environmental impacts. The public notice invites comments within a specified time (typically **15 to 30 days** depending on the proposed activity).
4	The application and comments are reviewed by the USACE and other interested federal, state, and tribal agencies, organizations, and individuals. The USACE negotiates necessary modifications of a project if required, and drafts or oversees drafting of appropriate documentation to support a recommended permit decision.
5	The USACE issues a permit decision document that includes a discussion of the environmental impacts of a project, the findings of the public interest review process, and any special evaluation required by the type of activity. No permit is granted if the proposal is found to be contrary to the public interest.

In the MOA between DOT and the Department of the Army on Section 404 permit processing,[2] there is a provision for elevating permit applications with the Department of the Army. When an Army District Engineer proposes to deny a permit or condition one that would cause substantial, unacceptable conditions to the DOT agency, the responsible FAA official will advise the appropriate FAA program office in Washington, D.C. That office will provide whatever follow-up action may be necessary at the Headquarters level to resolve the differences.

[2] MOA issued by DOT, U.S. Environmental Protection Agency (EPA) and the Department of the Army entitled *Implementation of the Intermodal Surface Transportation Efficiency Act* (May 1, 1992). This MOA made the 1985 document entitled "Applying the Section 404 Permit Process to Federal-aid Highway Projects" better known as the "Red Book" official policy for DOT, EPA, and U.S. Army Corps of Engineers (USACE). The Red Book was reissued in 2015 as a new document titled "Synchronizing Environmental Reviews for Transportation and Other Infrastructure Projects: 2015 Red Book." The Red Book can be accessed at the following link: https://www.environment.fhwa.dot.gov/Pubs_resources_tools/publications/RedBook_2015.aspx.

Integrating Section 404 Compliance and NEPA

Note that it is not necessary to complete the Section 404 permit process to complete the NEPA process.[3] Additionally, completing the permit process does not mean the NEPA process is complete. Sometimes the FAA or applicant applies for a Section 404 permit for projects requiring dredge or fill activities in jurisdictional wetlands after the NEPA document has been approved. There are benefits, however, to developing the permit application earlier in the process. Time savings and reduced controversy may outweigh the extra effort required to address Section 404 considerations as an integral part of the NEPA process. When the two processes are integrated effectively, the USACE's approval of the permit can be concurrent with or closely follow the FAA's approval. The USACE can be made a cooperating agency or the USACE may adopt the FAA's final NEPA document when making a 404 permit decision, thereby avoiding the need to prepare additional NEPA documents. For further information, see the CWA Regulations at 33 CFR parts 320 and 325 and the Council on Environmental Quality (CEQ) Regulations at 40 CFR § 1500.2.

Section 401 Water Quality Certification

Before the USACE can issue a Section 404 permit, a Section 401 water quality certification must first be obtained from the State in which the proposed action is to occur. In most cases, Section 401 certification reviews are conducted at the same time as Section 404 permit reviews, as many states have established joint permit processes to ensure this occurs.

State and Local Permits and Certifications

In addition to the federal requirements, there may be additional state and local wetland statutes and regulations that apply to the proposed project. This should be determined on a case-by-case basis by contacting relevant state and local regulatory agencies in the early stages of project planning. Some states may have a joint application process with the USACE for wetland permitting.

Executive Order 11990, Protection of Wetlands, and DOT Order 5660.1A, Preservation of the Nation's Wetlands

Section 2(a) of the Executive Order states "each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors." This finding must be made in the Finding of No Significant Impact (FONSI) or Record of Decision (ROD) and documentation necessary to support the finding must be contained in the NEPA document.

[3] Note that the "One Federal Decision" approach calls for federal agencies to agree to a permitting timetable, including Section 404 permits, where applicable. Updated information on "One Federal Decision" is available through DOT's Infrastructure Permitting Improvement Center, available at: https://www.transportation.gov/PermittingImprovementCenter.

For projects involving leases, easements, rights-of-way, or disposal of federally-owned wetlands or portions of them, to a non-federal public or private party, the following should be done to comply with Paragraph 7.e of DOT Order 5660.1A:

- Ensure the conveyance references those uses restricted by identified federal, state, or local wetland regulations;
- attach any appropriate restrictions on how the grantee or property purchaser and any successor may use the properties, except where prohibited by law; or
- withhold the properties from disposal.

Executive Order 11990 and DOT Order 5660.1A also direct agencies to provide the public an opportunity for early public review of any plan or proposal that would involve new construction in a wetland.

Executive Order 11990 and DOT Order 5660.1A do not apply to the issuance by federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-federal property.

14.1.2. Affected Environment

The wetland study area should be defined as the area with the potential to be either directly or indirectly affected by the proposed project. For example, construction of a new facility can directly impact wetlands through direct loss of wetland area and function within the construction footprint of an alternative. Construction of a facility upstream from a wetland along a stream could also indirectly affect the wetland by changing the quantity or quality of water that flows downstream to the wetland area.

If there is uncertainty about whether an area is a wetland, the local district office of the USACE or a wetland delineation specialist must be contacted for a delineation determination (or the USDA NRCS to delineate wetlands on agricultural lands). The NEPA document should include information on the location, types, and extent of wetland areas that might be affected by the proposed action and alternative(s). This information can be obtained from federal, state, or local natural resource agencies.

Desktop information may be used to determine the likelihood of wetlands being present on a property. Publicly available Geographic Information System (GIS) data and maps can be helpful when determining the potential presence of wetlands in the study area. In particular, the USFWS National Wetlands Inventory (NWI) is a national mapping database of wetland types and locations. However, these maps can be inaccurate and are not as reliable as a field delineation conducted to determine the presence of wetlands. For airport development projects, the region or ADO should be contacted to determine what level of documentation of wetlands is adequate for NEPA documentation. Resources such as soils survey maps from the NRCS can also provide information about a site by showing areas of hydric (wetland) soils. In addition, state and local agencies may also have wetland maps that can be used as a supplemental source to the NWI maps. The appropriate agency (USFWS or USACE) may be consulted for guidance on identifying potential wetlands in the study area. NWI data can be obtained from the USFWS website at: http://www.fws.gov/wetlands. Soils survey information may be obtained from the NRCS website at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

The presence of wetlands is best determined by visiting a project site. This site visit can be done to confirm information from the NWI, soils surveys and other desktop information. A site visit is also useful to determine approximate acreages and types of wetland that might be impacted by a project. In order to obtain a permit or to more precisely determine the limits of wetlands, a field delineation is often necessary. Field delineations should be conducted by a qualified wetland delineation specialist who can evaluate the proposed site's physical, hydrologic, and biological characteristics to determine if any areas present in the affected environment meet the regulatory definition of a wetland. Such delineations should follow the *Corps of Engineers Wetland Delineation Manual* (Technical Report Y-87-1), which is the standard used by the USACE for purposes of determining the presence of wetlands as defined by USACE CWA implementing regulations.[4,5] If, by using the NWI, or other desktop resources, consulting with state or local agencies, or using a qualified wetland delineator, it is determined that wetlands are present in the study area, a map should be included in the NEPA document that shows the wetland area(s) in relation to the location of the proposed project along with a description of the methods used to identify the limits of wetlands.

14.1.3. Environmental Consequences

After the affected environment has been adequately described, evaluate the potential environmental consequences of the alternatives on all wetlands identified within the study area.

If the proposed action and alternative(s) are not within the limits of or would not affect a wetland, a statement to that effect should be made and no further analysis is needed. If the only practicable alternative would impact wetland areas, then further environmental analysis is needed. Begin by characterizing any fill, excavation, or construction of structures that would have the potential to affect wetlands and wetland function.

Wetland functions are the processes that take place within a wetland. Functions wetlands provide can include:

- Flood storage and protection,
- Water quality improvement,
- Shoreline stabilization,
- Groundwater recharge, and
- Fish and wildlife habitat.

These processes have value for the wetland itself, for surrounding ecosystems, and for people.

Functions can be grouped broadly as habitat, hydrologic, or water quality functions.

For unavoidable wetland impacts, different types of impacts to wetlands should be considered, including any direct and indirect impacts that would result from the construction and operation of the proposed project. Wetland impacts can result from draining, dredging, channelizing, filling, diking, impounding, or related activities conducted for the construction of structures or facilities. All areas where permanent infrastructure would be built, and locations where temporary construction-related activity might occur (such as equipment lay-down, staging, and building of

[4] The USACE delineation manual requires that positive indicators of a wetland be present for the following three parameters to meet the definition of a wetland: 1) hydrophytic vegetation, 2) hydric soil, and 3) hydrology.

[5] It should be noted that some federal agencies, including USFWS and the National Park Service, define wetlands on lands under their jurisdiction more broadly than the definition and delineation manual used by the USACE of Engineers for CWA Section 404 purposes. Therefore, wetlands on these federal lands may not always be subject to the CWA, but are subject to wetland protection orders, directives, and regulations of that agency.

temporary access roads) must be considered for potential direct construction-related impacts to wetlands. In particular, when considering unavoidable impacts to wetlands, any impact that would affect or alter the physical condition or function of a wetland should be considered (see text box), including the action's overall effect on the survival and quality of the remaining wetlands after project implementation.

Various wetland functional assessments have been developed to describe how a wetland's hydrology, vegetation, and soil perform functions related to water quality, hydrology, and habitat. For example, construction within a wetland could lead to loss of a wetland function such as natural flood control, resulting in increased flooding in the vicinity of the proposed project. Alternatively, the creation of a new impermeable surface such as a runway could lead to increased runoff, which could affect water quality in nearby wetlands. In turn, an alteration in water quality could affect the habitat and wildlife that use the wetland. As a result, the impact analysis should consider the variety of indirect impacts that could result from losses in wetland function.

If the action would affect wetlands and there is a practicable alternative that avoids the wetland, this alternative becomes the environmentally preferred alternative, provided there are no other overriding environmental impacts. The NEPA document should state that the original project would have affected wetlands, but selection of the practicable alternative enabled the applicant to avoid the wetlands.

If the proposed action or alternative(s) would affect wetlands and there is no practicable alternative, all practical means should be employed to minimize the wetland impacts due to runoff, construction, sedimentation, land use, or other reasons. The NEPA document must contain a description of proposed mitigation measures, with the understanding that a detailed mitigation plan must be developed to the satisfaction of the 404 permitting agency in consultation with those agencies having an interest in the affected wetland.

For any action which entails new construction located in wetlands and to which, Executive Order 11990 and DOT Order 5660.1A apply, the FAA must make a specific *finding* (see Section 14.1.1). Also, it should be determined if wetland impacts would fall under the terms and conditions of a Section 404 general permit, such as a Nationwide Permit. These pre-approved permits have already gone through the NEPA process and have been determined to not have significant adverse impacts to jurisdictional wetlands.

14.1.3.1. Significance Determination

Exhibit 4-1 of FAA Order 1050.1F provides the FAA's significance threshold for wetlands. A significant impact would occur when:

The action would:

1. Adversely affect a wetland's function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers;
2. Substantially alter the hydrology needed to sustain the affected wetland system's values and functions or those of a wetland to which it is connected;
3. Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public);

4. Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands;
5. Promote development of secondary activities or services that would cause the circumstances listed above to occur; or
6. Be inconsistent with applicable state wetland strategies.

Other agencies having expertise in wetland impacts may provide information and expertise for the FAA to use when it determines whether unavoidable wetland impacts are significant. As a result, appropriate agencies such as the USACE, EPA, USFWS, NMFS, NRCS (if wetlands are on agricultural lands), and state and local natural resource or wildlife agencies should be coordinated with in the early stages of project planning. If wetland impact occurs on tribal lands, consultation with tribal natural resource and wildlife representatives should occur before making a significance determination.

14.1.4. Mitigation

Some possible measures to mitigate impacts to wetlands include avoidance and minimization and compensatory mitigation, as discussed below.

14.1.4.1. Avoidance and Minimization

- Changes in the design, construction, or operation of the proposed project to avoid wetland impacts;
- Construction of a runoff collection system to prevent direct discharges to sensitive wetland areas;
- Use of infrastructure to treat or store waste materials; or
- Use of special construction controls, such as culverts, that help to maintain water flow.

Steps to avoid or minimize wetland impacts must be taken prior to proposing compensatory mitigation. If avoidance and minimization efforts are not sufficient to eliminate wetland impacts, compensatory mitigation may be necessary.

14.1.4.2. Compensatory Mitigation

The FAA also promotes wetland banking as a mitigation tool for projects that must occur in wetlands. Wetland banking provides a way to mitigate wetland impacts before they occur, by allowing the FAA or applicant to purchase wetland bank credits from an approved wetland mitigation bank.[6] The purchase of wetland bank credits serves as a payment to the wetland banker for the wetland mitigation services that the bank provides.

The purchase of credits from an approved bank can typically be used to satisfy the permit-required mitigation obligations needed to proceed with a proposed project that would have unavoidable wetland impacts. If the FAA or applicant and the relevant permitting agency agree that wetland banking is suitable mitigation for unavoidable wetland impacts, the NEPA document

[6] However, before approving use of a wetland bank for FAA projects, the FAA must ensure the bank would not cause or enhance wildlife hazards to aviation.

should contain a copy of any agreement related to the use of a wetland bank.[7] This agreement should verify the following facts about the specific number of credits bought in the bank[8]:

1. The bank will meet defined wetland success criteria;
2. A specific number of credits will be withdrawn from the bank's total credit allotment to compensate for action-related impacts;
3. The applicant's purchase of these credits satisfies some or all of its wetland mitigation requirements for the proposed project; and
4. The mitigation will not create or worsen wildlife hazards to aviation.

If a wetland bank is not feasible for compensation of unavoidable wetland loss, wetland impacts should be mitigated by another method, such as wetland restoration, enhancement, establishment, or preservation. Under CWA implementing regulations, the preferred method by the USACE and EPA is wetland restoration, because the likelihood of mitigation success is much greater. For additional information on USACE and EPA regulations that govern compensatory mitigation for impacts to jurisdictional wetlands, see *Compensatory Mitigation Losses for Aquatic Resources*, 73 *Federal Register* 19594-19705, (April 10, 2008) at: https://www.federalregister.gov/documents/2008/04/10/E8-6918/compensatory-mitigation-for-losses-of-aquatic-resources.

To see the complete text of FAA's wetland mitigation banking strategy, see FAA Airports Environmental Program: Environmental Policy and Guidance Resources website at: https://www.faa.gov/airports/environmental/policy_guidance/media/wetland-banking.pdf. The 2003 MOA between the FAA and the U.S. Air Force, U.S. Army, EPA, USFWS, and the USDA improves agency cooperation on wetland mitigation that may increase the risk of aircraft-wildlife strikes. The MOA can be found at: https://www.faa.gov/airports/environmental/media/wildlife-hazard-mou-2003.pdf.

14.2. Floodplains

Floodplains are lowland areas adjoining inland and coastal waters which are periodically inundated by flood waters, including flood-prone areas of offshore islands. Floodplains are often discussed in terms of the *100-year flood*. The 100-year flood is a flood having a 1 percent chance of occurring in any given year. The 100-year flood is also known as the *base flood*. Floodplains are valued for their natural flood and erosion control, enhancement of biological productivity, and socioeconomic benefits and functions.

When property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-federal public or private entities, the FAA must, in accordance with Executive Order 11988, *Floodplain Management*: (1) reference in the conveyance those uses that are restricted under identified federal, state, or local floodplain regulations; (2) attach other appropriate restrictions to

[7] For further information about mitigation banking, see the Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, 60 *Federal Register* 58605, (November 28, 1995).

[8] The U.S. Army Corps/EPA joint regulations on compensatory mitigation include mitigation banking, as well as other forms of compensatory mitigation. See EPA website on *Compensatory Mitigation* available at: http://water.epa.gov/lawsregs/guidance/wetlands/wetlandsmitigation_index.cfm#regs (last updated: March 7, 2018; Accessed: September 7, 2018).

uses of properties by the grantee or purchaser and any successors, except where prohibited by law; or (3) withhold such properties from conveyance.

14.2.1. Regulatory Setting

Exhibit 14-3 lists the statutes, regulations, Executive Orders, and other requirements that may be relevant to floodplains. See Appendix B.10.2 for more detailed information about these requirements.

Exhibit 14-3. Statutes, Regulations, Executive Orders, and Other Requirements Related to the Protection of Floodplains

Statute or Executive Order	Location in U.S. Code or *Federal Register*	Implementing Regulation(s)	Oversight Agency[a]	Summary[a]
National Flood Insurance Act	42 U.S.C. § 4001 et seq.	44 CFR part 60	FEMA	Established the NFIP, a voluntary floodplain management program for communities (cities, towns, or counties), and implemented by FEMA. Any action within a FEMA-mapped floodplain in a participating community must follow the community's FEMA-approved floodplain management regulations.
Executive Order 11988, *Floodplain Management*	42 *Federal Register* 26951, (May 25, 1977)	Not applicable	DOT	Requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of 100-year floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.
DOT Order 5650.2, Floodplain Management and Protection	Not applicable	Not applicable	DOT	Implements the guidelines set forth in Executive Order 11988, *Floodplain Management*, 42 *Federal Register* 26951, (May 25, 1977). States that DOT agencies should ensure that proper consideration is given to avoid and mitigate adverse floodplain impacts in agency actions, planning programs, and budget requests.
State and local statutes protecting floodplains	Not applicable	Not applicable	Applicable states and municipalities	In addition to the federal requirements discussed above, there may be additional state and local floodplain statutes and regulations that apply to the proposed project. This should be determined on a case-by-case basis by contacting relevant state and local regulatory agencies in the early stages of project planning.

[a] CFR = Code of Federal Regulations; DOT = U.S. Department of Transportation; FEMA = Federal Emergency Management Agency; NFIP = National Flood Insurance Program; U.S.C. = United States Code.

14.2.1.1. Consultations, Permits, and Other Approvals

Any proposed project taking place in a FEMA-mapped floodplain must follow the participating community's FEMA approved floodplain management plan, if such a plan exists. Early consultation with FEMA, USACE, or the National Flood Insurance Program (NFIP) participating community may assist the FAA in addressing floodplain issues or conflicts early in the NEPA process and in developing ways to resolve them.

Executive Order 11988 and DOT Order 5650.2 Requirements

To comply with Executive Order 11988, *Floodplain Management*, 42 *Federal Register* 26951, (May 25, 1977) and DOT Order 5650.2, *Floodplain Management and Protection*, all FAA actions must avoid floodplains if a practicable alternative exists; if no practicable alternative exists, actions in a floodplain must be designed to minimize adverse impacts to the floodplain's natural and beneficial values. If the proposed action or alternative(s) involves a *significant encroachment* in a floodplain, the FAA should issue a written *finding* that the proposed significant encroachment is the only practicable alternative. As defined in DOT Order 5650.2, significant encroachment is an encroachment in a floodplain that results in one or more of the following construction or flood-related impacts: 1) considerable probability of loss of human life, 2) likely future damage associated with the encroachment that could be substantial in cost or extent, including interruption of service on or loss of a vital transportation facility, and 3) a notable adverse impact on "natural and beneficial floodplain values". The FAA must provide the finding within or together with a NEPA document.

Executive Order 11988 and DOT Order 5650.2 also direct agencies to provide the public an opportunity for early public review of any plan or proposal that would encroach on the base floodplain. This ensures the public has an early opportunity to review a proposal in the base floodplain, even if the proposal does not require an Environmental Impact Statement (EIS). The FAA may use the NEPA process to meet the public notification requirements for an action encroaching on a floodplain.

14.2.2. Affected Environment

The study area for floodplains should be defined as the entire geographic area with the potential to be either directly or indirectly affected by the proposed project, and not merely the area immediately adjacent to the action. For example, construction of a new facility can directly impact a floodplain through direct loss of floodplain area within the construction footprint of the proposed project. Construction of a facility in a floodplain could also reduce floodplain capacity in a system, indirectly affecting upstream and downstream flood flow volumes or raising flood elevations.

As part of the NFIP, FEMA established a mapping system to delineate floodplain areas within the United States. To determine if there are floodplains in the study area, first determine if a FEMA Flood Insurance Rate Map (FIRM) is available for the study area (see FEMA publication No. 258, *How to Use a Flood Map to Determine Flood Risk for a Property* for additional information on interpreting FIRMs). If a FIRM is not available, a FEMA Flood Hazard Boundary Map (FHBM), Flood Insurance Study, can also be used or the USACE, FEMA, or state or local floodplain management agencies can be contacted for help in determining the

presence of floodplains in the study area. Please see FEMA's Map Service Center website at: https://www.fema.gov/msc-theme-template-v1 to find a FIRM or FHBM in the study area.

If floodplains are identified in the study area, a map should be included which shows the locations of the floodplain(s) in relation to the location of the proposed project.

If the proposed action and alternative(s) are not within the limits of, or on land adjacent to, a floodplain, a statement to that effect should be made and no further analysis is needed.

14.2.3. Environmental Consequences

After the study area has been adequately described, the potential environmental consequences of the proposed action and alternative(s) on all floodplains identified within the study area should be evaluated.

Impacts to floodplains must be considered, including any direct and indirect impacts that result from the construction and operation of the proposed project. Activities such as building an airport, commercial space launch site, or any modification such as grading of the land, could have an impact on floodplains. All areas where permanent infrastructure would be built, and locations where temporary construction-related activity might occur (such as equipment lay-down, staging, and building of temporary access roads) must be considered for potential direct construction-related impacts. Additionally, all indirect impacts on floodplains within the study area should be identified. Actions outside a base floodplain may also adversely affect natural and beneficial floodplain resources. Consider impacts on natural and beneficial floodplain values, water pollution, increased runoff from impermeable surfaces, changes in hydrologic patterns, or induced development, where appropriate.

If the only practicable alternative requires siting in the base floodplain, a floodplain encroachment would occur and further environmental analysis is needed, as specified in DOT Order 5650.2. Any action located in the base floodplain constitutes a floodplain encroachment. If a floodplain encroachment does occur then the FAA must determine if it is a significant floodplain encroachment as detailed below.

14.2.3.1. Floodplain Encroachment

1. NEPA documents must cover the items below for all alternatives involving encroachments:
    a. Any risk to, or resulting from, the transportation action;
    b. The impacts on natural and beneficial floodplain values; and
    c. The degree to which the action provides direct or indirect support for development within the base floodplain.
2. NEPA documents must also include sufficient discussion to permit an initial review of the adequacy of methods proposed to minimize harm, and, where practicable, to restore and preserve the natural floodplain values affected. In most cases, conceptual design should be sufficient to help establish the adequacy of mitigation measures. Commitments to later compliance with special flood-related design criteria or the imposition, in advance, of protective conditions may be warranted in some situations.

3. Final NEPA documents identifying a preferred alternative must clearly identify the floodplain concerns and impacts associated with that alternative and cover the items listed above.

14.2.3.2. Significant Floodplain Encroachment under DOT Order 5650.2

If the proposed action or alternative(s) includes an encroachment in a floodplain, the responsible FAA official must determine whether there would be significant floodplain encroachment based on the intensity of the encroachment and its impacts on the floodplain's natural and beneficial values. A significant floodplain encroachment under DOT Order 5650.2 is defined as an encroachment resulting in one or more of the following construction or flood related impacts: (1) a considerable probability of loss of human life; (2) likely future damage associated with the encroachment that could be substantial in cost or extent, including interruption of service on or loss of a vital transportation facility; and (3) a notable adverse impact on "natural and beneficial floodplain values." A significant floodplain encroachment is not necessarily a significant environmental impact under NEPA, as explained below.

a. Assessing impacts on human life and transportation facilities. Part of the significant encroachment definition in DOT Order 5650.2 includes impacts on human life and substantial encroachment-related costs or damage. This includes interruption of service on or loss of a vital transportation facility (e.g., runway, taxiway, air navigation facilities (NAVAID) damage, etc.). These factors should seriously be weighed as part of a project consideration; however, they alone do not trigger a significant environmental impact for NEPA purposes. The CEQ Regulations at 40 CFR § 1508.14 state that "…economic or social effects, are not intended by themselves to require preparation of an environmental impact statement". The FAA need not prepare an EIS for an action that does not have significant *environmental* impacts. When a significant encroachment involves a high likelihood of loss of human life or substantial encroachment-related costs or damage, the responsible FAA official should ensure the environmental evaluation includes specific information addressing the proposed action's floodplain aspects. The document should include information showing that the approving FAA official has thoroughly considered the impacts on human life and substantial encroachment-related costs and damage that would occur due to the proposed action's floodplain location. The document should answer questions such as:

   1. Would flooding affect airport or facility access roads thereby preventing people from entering or exiting the area;
   2. Would flooding affect aviation safety and the airport or facility's use? To make this determination, address the loss or temporary shutdown of a facility (e.g., lighting, hangars, runways, taxiways, NAVAIDS, etc.). This discussion might address flood impacts on the airport or facility's ability to serve regional or national aviation demands, and the economic well-being of aviation-related businesses. For example, flood-induced closing of or damage to a runway at a major hub could disrupt regional passenger or cargo movements and adversely affect the area's economy; and
   3. Would flooding cause flood-induced spills of hazardous material stored at the airport or facility and their impacts on human populations?

b. Impacts to a floodplain's natural and beneficial values. Floodplains often support important ecological values benefiting the human and natural environment. Examples include a floodplain's capacity to: carry and store floodwaters; sustain agriculture, aquaculture, or aquatic or terrestrial organisms; provide for groundwater recharge; provide recreation opportunities; or maintain water quality. Note that indirect impacts on floodplains (such as an increase in the amount of impervious surface in the watershed) could also substantially reduce the floodplain's capacity to sustain these values.

c. Factors to consider when assessing impacts on a floodplain's natural and beneficial values. The responsible FAA official should use the following information in conjunction with other information in the NEPA document addressing specific resources when determining the intensity of impacts.

1. Agricultural activities: Floodplains are often valued due to their level topography and their fertile substrates. Would the proposed action or alternative(s) erode or contaminate floodplain substrate, thereby reducing the floodplain's agricultural value?
2. Aquacultural activities: Due to their need for constant water supplies and specific water quality requirements, aquacultural activities often occur in or near floodplains. Would the proposed action or alternative(s) disrupt any of these activities?
3. Aquatic or terrestrial organisms: Numerous aquatic and terrestrial species occupy floodplains due to their food, cover, and water. Would the proposed action or alternative(s) disrupt the floodplain's ability to provide needed food, cover, or water requirements needed to sustain the organisms?
4. Flood control: Due to their expanse and obstructions, floodplains often slow flows or retain water, thereby lessening the probability of upstream or downstream flooding. Would the proposed action or alternative(s) cause flow alterations that result in unacceptable upstream or downstream flooding?
5. Groundwater recharge: Waters flowing through floodplains often flow more slowly allowing water to seep through surface cracks and recharge aquifers. Would the proposed action or alternative(s) adversely affect aquifer recharge capabilities?
6. Water quality: The natural flow of water over rough surfaces, through vegetation, and the natural biological and chemical processes found in floodplains reduce pollutant loads helping to maintain water quality. Would the proposed action or alternative(s) disrupt the floodplain's capacity to maintain desired water quality standards?

The analysis should discuss any risk to, or resulting from, the proposed action and alternative(s), the impacts on natural and beneficial floodplain values, the degree to which the proposed action and alternative(s) provide direct or indirect support for development in the floodplain, and measures to minimize harm or to restore or preserve the natural and beneficial floodplain values affected by a project. In addition, to ensure FAA compliance with DOT Order 5650.2, the FAA should ensure that all practicable alternatives outside the base floodplain are evaluated.

14.2.3.3. Floodplain Finding

The FAA may not select or approve a preferred alternative involving a significant floodplain encroachment, unless the responsible FAA official can make a written finding that:

- there is no practicable alternative to placing a project in the floodplain and that all measures to minimize harm will be included in a project;
- the proposed action must be located in the floodplain, including a discussion of the alternative(s) and why they were not practicable; and
- the action conforms to applicable state and/or local floodplain protection standards.

The NEPA document must contain a discussion of the factors and alternatives considered in reaching this finding. The NEPA document should explain that the FAA analyzed other alternatives and why locating the action in the floodplain is the only practicable alternative. A determination that a given action outside of a floodplain is or is not practicable requires a careful balancing and application of individual judgment. While such balancing should include the full range of environmental, social, economic, and engineering considerations, special weight should be given to floodplain management concerns. The responsible FAA official should support this finding with the following information in the NEPA document's floodplain section:

- A description of why the proposed action must be located in the floodplain, including a discussion of the alternative(s) and why they were not practicable;
- Each alternative considered, important factors the FAA considered regarding the only practicable alternative, and factors that make other alternatives impractical;
- Measures to minimize potential floodplain harm; and
- If NFIP criteria (44 CFR § 60.3) are applicable to the action.

The FAA must provide the above finding, within or together with a final NEPA document prepared for the proposed action, to state and area-wide clearinghouses and other interested parties.

14.2.3.4. Public Review

Section 2(a)(4) of Executive Order 11988 and Paragraph 7 of DOT Order 5650.2 require agencies to provide the public an opportunity for early public review of *any* plan or proposal that would encroach on the base floodplain. The FAA must provide the public with an opportunity to review the encroachment through its public involvement process. The FAA may use the NEPA process to meet the public notification requirements for an action encroaching on a floodplain. Any public notices, notices of opportunity for public hearing, public hearing notices, and notices of NEPA document availability must state that an encroachment is anticipated. If the encroachment is a significant floodplain encroachment that must be clearly indicated in these public involvement processes. The FAA's Notice of Availability (NOA) of a FONSI or notice of an EIS will include appropriate floodplain encroachment notification.

14.2.3.5. Significance Determination

Exhibit 4-1 of FAA Order 1050.1F provides the FAA's significance threshold for floodplains. Floodplain impacts would be significant if: *The action would cause notable adverse impacts on*

natural and beneficial floodplain values. Natural and beneficial floodplain values are defined in Paragraph 4.k of DOT Order 5650.2, *Floodplain Management and Protection*.

14.2.4. Mitigation

If no practicable alternative avoids floodplains, the FAA or applicant must incorporate mitigation measures into the proposed project in order to minimize potential harm to or within floodplains.

Mitigation measures may include:

- elevating facilities above the base flood elevation;
- minimizing fill placed in floodplains;
- construction controls to minimize erosion and sedimentation;
- designing the facility to allow adequate flow circulation and preserve free, natural drainage;
- committing to comply with special flood-related design criteria;
- using pervious surfaces where practicable;
- controlling runoff, while ensuring the runoff control measure does not attract wildlife hazardous to aviation; or
- controlling waste and spoils disposal to prevent contaminating ground and surface water, while not attracting wildlife hazardous to aviation (e.g., controlling the use of pesticides and herbicides, maintaining vegetative buffers to reduce sedimentation and delivery of chemical pollutants to the water body).

14.3. Surface Waters

Surface waters include streams, rivers, lakes, ponds, estuaries, and oceans. Note that this section discusses how to conduct the analysis for surface waters that is not otherwise captured in the Wetlands, Floodplains, Groundwater, or Wild and Scenic Rivers sections.

14.3.1. Regulatory Setting

Exhibit 14-4 lists the statutes, regulations, and other requirements that may be relevant to surface water impacts. See Appendix B.10.3 for more detailed information about these requirements.

Exhibit 14-4. Statutes, Regulations, and Other Requirements Related to the Protection of Surface Waters

Statute	Location in U.S. Code	Implementing Regulation(s)	Oversight Agency[a]	Summary[a]
Clean Water Act	33 U.S.C. §§ 1251-1387	40 CFR parts 110-112, 116, 117, 122, 125, 129, 130, 131,136, and 403	EPA, state, and tribal Water Quality Agencies	Establishes the basic structure for regulating the discharge of pollutants into waters of the United States.[9] The sections of the CWA relating to waters of the United States are Section 303(d), Section 404, Section 401, and Section 402, which establishes the NPDES permit program.
Fish and Wildlife Coordination Act	16 U.S.C. §§ 661-667d	Final regulations have not been issued	USFWS	Requires federal agencies to consult with the USFWS, NMFS (in some instances), and appropriate state fish and wildlife agencies regarding the conservation of wildlife resources when proposed federal or applicant projects may result in control or modification of the water of any stream or other water body (including wetlands).
Rivers and Harbors Act	33 U.S.C. § 401 and 403	33 CFR parts 320-332 33 CFR parts 114-118	USACE; USCG	Established to protect the navigability of waters used for commerce in the United States.
Safe Drinking Water Act	42 U.S.C. §§ 300(f)-300j-26	40 CFR parts 141-149	EPA	Prohibits federal agencies from funding actions that would contaminate an EPA-designated sole source aquifer or its recharge area.
State statutes protecting surface waters	Not applicable	Not applicable	Applicable state	In addition to the federal requirements discussed above, there may be additional state and local surface water statutes and regulations that apply to the proposed project. This should be determined on a case-by-case basis by contacting relevant state and local regulatory agencies in the early stages of project planning.

[a] CFR = Code of Federal Regulations; CWA = Clean Water Act; EPA = U.S. Environmental Protection Agency; NMFS = National Marine Fisheries Service; NPDES = National Pollutant Discharge Elimination System; U.S.C. = United States Code; USACE = U.S. Army Corps of Engineers; USCG = U.S. Coast Guard; USFWS = U.S. Fish and Wildlife Service.

9 The scope of "Waters of the United States" protected under the CWA was more precisely defined and clarified under the Clean Water Rule (80 FR 37054, June 29, 2015). However, due to pending litigation the USACE is not implementing the Clean Water Rule and is following the 1986 regulations and applicable guidance (e.g., USACE 1987 Wetland Delineation Manual) for jurisdictional determinations. In addition, on July 27, 2017, the EPA and the USACE published a proposed rule in the *Federal Register* to rescind the 2015 definition (82 FR 34904, July 27, 2017).

14.3.1.1. Consultations, Permits, and Other Approvals

Early coordination among the FAA, USFWS, EPA, and the USACE may assist the FAA in addressing surface water issues or conflicts early in the NEPA process and in developing ways to resolve them. If an alternative would impact a surface water that is determined to be jurisdictional by the USACE under the CWA and/or the Rivers and Harbors Act, the following permits and certification may be required depending on the type of activity.

Section 404 Permit and 401 Certification

For discussion of the Section 404 permit and 401 certification processes, see Section 14.1.1.1 above. The process for jurisdictional wetlands and surface waters is the same.

Section 402 NPDES Permit

If the proposed action or alternative(s) has the potential to discharge pollutants into waters of the United States through a point source, a National Pollutant Discharge Elimination System (NPDES) permit will likely need to be obtained.

There are two basic types of NPDES permits: individual and general permits. An *individual permit* is a permit specifically tailored to an individual facility, and would typically be required for point source discharges. Once a facility submits the appropriate application(s), the permitting authority develops a permit for that particular facility based on the information contained in the permit application (e.g., type of activity, nature of discharge, receiving water quality, etc.). The permit authority issues the permit to the facility for a specific time period (not to exceed five years) with a requirement that the facility reapply prior to the expiration date. A *general permit* covers multiple facilities within a specific category and may be written to cover categories of point sources having common elements such as stormwater sources or facilities that involve the same or substantially similar types of operations.

A requirement of NPDES permits, for both operations and construction activities, is development of a Storm Water Pollution Prevention Plan (SWPPP). A SWPPP outlines how stormwater runoff, erosion, and sediment will be controlled in order to minimize polluted stormwater runoff into nearby waters. For guidance on developing a SWPPP refer to EPA's "*Developing your Stormwater Pollution Prevention Plan: A Guide for Construction Sites*" located on the EPA website at: https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf.

The NPDES Construction General Permit is a type of general permit that is required if construction activities would disturb 1 acre (43,560 ft^2) or more of land. Under this permit, construction refers to any actions that result in disturbance of the land, including clearing, grading, and other similar activities. It also includes construction-related activities, which occur in areas that support the construction project such as stockpiles, borrow areas, concrete truck washouts, fueling areas, material storage areas, and equipment storage areas.

The EPA published an effluent guidelines rule for airport de-icing activities (see *Effluent Limitations Guidelines and New Source Performance Standards for the Airport Deicing Category*, 77 *Federal Register* 29168, [May 16, 2012]). Airport de-icing is considered an industrial activity that requires coverage under an NPDES permit (see 40 CFR § 122.26(b)(viii)). For more information on airport de-icing activities and NPDES see http://water.epa.gov/scitech/wastetech/guide/airport/.

For guidance on NPDES permits, refer to the EPA's NPDES website at: http://water.epa.gov/polwaste/npdes/.

Section 10 Permit

A Section 10 permit may be required under the Rivers and Harbors Act for any construction in, over, or under a navigable water. The USACE administers the Section 10 permit and Section 404 permit together, if applicable, and the USACE typically issues a joint permit since navigable waters are subsumed by waters of the United States. For construction of new bridges or causeways, or for the reconstruction or modification of existing bridges or causeways over navigable waters, a Section 9 bridge permit must be obtained from the USCG.

For information on the USCG's Section 9 Bridge Permit process refer to: http://www.dco.uscg.mil/Portals/9/DCO%20Documents/5pw/Office%20of%20Bridge%20Programs/COAST%20GUARD%20BRIDGE%20PERMITTING_August2016.pdf?ver=2017-06-23-123008-217.

For information on the USACE's Section 10 permit program refer to: https://www.spl.usace.army.mil/Missions/Regulatory/Jurisdictional-Determination/Section-10-of-the-Rivers-Harbors-Act/.

State and Local Permits and Certifications

In addition to the federal requirements, there may be additional state and local surface water statutes and regulations that apply to the proposed project. This should be determined on a case-by-case basis by contacting relevant state and local regulatory agencies in the early stages of project planning.

14.3.2. Affected Environment

The surface water study area should be defined as the entire geographic area with the potential to be either directly or indirectly impacted by the proposed project, and not merely the area immediately adjacent to the action. Examples of direct impacts to surface waters include any in-water work resulting from expansion of an existing FAA facility adjacent to surface waters, or a withdrawal of water from a surface water for construction or operations. Indirect impacts could include sedimentation from nearby construction activities that could reach surface waters and cause impacts to water quality.

Publicly available GIS data and maps can be helpful when determining the potential presence of surface waters in the study area. Some sources that may be particularly useful in gathering information regarding surface waters in the study area include:

- The U.S. Geologic Survey's (USGS) Surface Water website at: https://www.usgs.gov/mission-areas/water-resources provides general information regarding surface water in addition to maps and data regarding water conditions. In addition, the USGS' *National Map Viewer* at: http://viewer.nationalmap.gov/viewer/ is a web based GIS mapper that provides data visualization and download for national data sets, including surface water data;

- The USACE's website of USACE Regions throughout the United States at: http://www.usace.army.mil/Locations.aspx allows users to select a specific region and view the navigable waters in the region. Some USACE district websites provide the list of navigable waters in their district, while other districts do not. In these instances, consider calling the USACE district and requesting a list of navigable waters of the United States; and
- The EPA's website allows users to select a specific region and view a list of Section 303d impaired waters in that region: https://www.epa.gov/tmdl/impaired-waters-and-tmdls-program-your-epa-region-state-or-tribal-land.

Ordinary High Water Mark – the line on the non-tidal shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR § 329.11(a)(1)).

Mean High Water Line – the line on the tidal shore established by the average of all high tides (33 CFR § 329.12(a)(2)).

In addition, state and local agencies may also have surface water maps and data available for review.

The presence of surface waters is best determined by visiting the study area to conduct a field delineation to determine if surface waters are present. Field delineations should be conducted by a specialist who can evaluate the proposed site's physical and hydrologic characteristics to determine if any surface waters are present in the study area and if those surface waters potentially meet the regulatory definition of a water of the United States. In non-tidal and non-wetland surface waters, the USACE jurisdiction under CWA extends to the *ordinary high water mark*; in tidal waters the USACE jurisdiction under CWA extends to the *mean high water line* (see text box above).

If, by using available surface water maps and data, consulting with state or local agencies, or using a qualified expert, surface waters are determined to be present in the affected environment, a map should be included in the NEPA document which shows the surface waters in relation to the location of the proposed project.

14.3.3. Environmental Consequences

After the study area of the proposed project has been adequately described, the potential environmental consequences on all surface waters identified within the study area should be evaluated.

All areas where permanent infrastructure would be built, and locations where temporary construction-related activity might occur (such as equipment lay-down, staging, and building of temporary access roads) should be considered for potential direct construction-related impacts to water resources. Additionally, all areas where indirect impacts could occur within the study area should be identified. Indirect impacts could include sedimentation or petro-chemical spills from nearby construction activities that could reach surface waters and cause water quality issues.

The extent to which operation activities may affect surface waters should also be considered. For example, increased runoff from new impermeable surfaces or changes in hydrologic patterns could affect water quality and hydrology in nearby surface waters. Begin by characterizing any fill, excavation, or construction of structures that would have the potential to affect surface waters. It should also be determined if the proposed project's surface water impacts would fall under the terms and conditions of a Section 404 general permit, such as a Nationwide Permit. These pre-approved permits have already gone through the NEPA process and have been determined to not have significant adverse impacts to jurisdictional surface waters.

14.3.3.1. Significance Determination

Exhibit 4-1 of FAA Order 1050.1F provides the FAA's significance threshold for surface waters. A significant impact exists if:

The action would:

1. Exceed water quality standards established by federal, state, local, and tribal regulatory agencies; or
2. Contaminate public drinking water supply such that public health may be adversely affected.

In addition to the threshold above, Exhibit 4-1 of FAA Order 1050.1F provides additional factors to consider when evaluating the context and intensity of potential environmental impacts for surface waters. Please note that these factors are not intended to be thresholds. If these factors exist, there is not necessarily a significant impact; rather, the FAA must evaluate these factors in light of context and intensity to determine if there are significant impacts. Factors to consider that may be applicable to surface waters include, but are not limited to, situations in which the proposed action or alternative(s) would have the potential to:

- Adversely affect natural and beneficial water resource values to a degree that substantially diminishes or destroys such values;
- Adversely affect surface waters such that the beneficial uses and values of such waters are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or
- Present difficulties based on water quality impacts when obtaining a permit or authorization.

14.3.4. Mitigation

Some examples of potential measures to mitigate impacts to surface waters include:

- limiting ground disturbance to the areas necessary for project-related construction;
- employing erosion control measures to minimize sedimentation of surface waters;
- restoring vegetation on disturbed areas to prevent soil erosion following project completion;
- developing oil response plans designed to contain any potential spills of oil or oil-based products associated with the proposed action and alternative(s); or

- including Section 404 and 401 permit terms and conditions for minimizing and compensating for impacts to surface waters or Section 402 permit terms and conditions for minimizing the discharge of pollutants into surface waters.

For proposed projects that would impact surface waters through dredged or fill material (e.g., rerouting a stream), mitigation will be required under the CWA as part of the Section 404 permit process. For additional information on USACE and EPA regulations that govern mitigation for impacts to jurisdictional surface waters, see *Compensatory Mitigation Losses for Aquatic Resources*, 73 *Federal Register* 19594-19705, (April 10, 2008).

14.4. Groundwater

Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. The term aquifer is used to describe the geologic layers that store or transmit groundwater to wells, springs, and other water sources.

14.4.1. Regulatory Setting

Exhibit 14-5 lists the statutes and other requirements that may be relevant to ground water impacts. Federal activities affecting groundwater are primarily governed by the Safe Drinking Water Act (SDWA). The SDWA may not be applicable to every proposed project, and should only be included when relevant.

Exhibit 14-5. Statutes and Other Requirements Related to the Protection of Groundwater

Statute	Location in U.S. Code	Implementing Regulation	Oversight Agency[a]	Summary[a]
Safe Drinking Water Act	42 U.S.C. §§ 300(f)-300j-26	40 CFR parts 141-149	EPA	Prohibits federal agencies from funding actions that would contaminate an EPA-designated sole source aquifer or its recharge area.
State statutes protecting groundwater	Not applicable	Not applicable	States	There may be additional state and local groundwater statutes and regulations that apply to the proposed project. This should be determined on a case-by-case basis by contacting relevant state and local regulatory agencies in the early stages of project planning.

[a] CFR = Code of Federal Regulations; EPA = U.S. Environmental Protection Agency; U.S.C. = United States Code.

14.4.1.1. Consultations, Permits, and Other Approvals

Early coordination with EPA may assist the FAA in addressing groundwater issues or conflicts early in the NEPA process and in developing ways to resolve them. If there is the potential for contamination of an aquifer designated as an EPA-designated sole source aquifer for the area, the FAA must consult with the EPA regional office as required by Section 1424(e) of the SDWA.

14.4.2. Affected Environment

The groundwater study area should be defined as the entire geographic area with the potential to be either directly or indirectly impacted by the proposed project, and not merely the area

immediately adjacent to the action. Examples of direct impacts to groundwater could include withdrawal of groundwater for operational purposes, or reduction of infiltration or recharge area due to new impervious surfaces.

Publicly available GIS data and maps can be helpful when determining the potential presence of groundwater in the study area. Some sources that may be particularly useful in gathering information regarding groundwater in the study area include:

- The USGS groundwater website at: https://www.usgs.gov/mission-areas/water-resources/science/types-water provides general information regarding groundwater in addition to maps and data; and
- The EPA provides a website on the EPA-designated sole source aquifer program at: http://water.epa.gov/infrastructure/drinkingwater/sourcewater/protection/solesourceaquifer.cfm. Maps and GIS data are provided for all EPA-designated sole sources aquifers in the United States.

In addition, state and local agencies may also have groundwater information and maps available for review.

14.4.3. Environmental Consequences

After the study area of the proposed project has been adequately described, the consequences of the proposed action or alternative(s) on groundwater within the study area should also be evaluated.

Begin by characterizing any impervious surfaces, excavation, or construction of structures that would have the potential to affect groundwater. Different types of impacts to groundwater, including any direct or indirect impacts that result from construction and operation of the proposed project should also be considered. All areas where permanent infrastructure would be built, and locations where temporary construction-related activity might occur (such as equipment lay-down, staging, and building of temporary access roads) should be considered for potential direct construction-related impacts to groundwater. Impacts could include petro-chemical spills from construction activities that could reach groundwater through infiltration and cause water quality issues.

The extent to which operation activities may affect groundwater should also be considered. For example, withdrawal and drawdown of groundwater from a new well that supplies water to a new facility could affect groundwater levels during operations, which in turn could affect other groundwater users in the area. New impervious surfaces could also create a barrier to infiltration, thus potentially affecting groundwater recharge.

14.4.3.1. Significance Determination

Exhibit 4-1 of FAA Order 1050.1F provides the FAA's significance threshold for groundwater. A significant impact exists if:

The action would:

1. Exceed groundwater quality standards established by federal, state, local, and tribal regulatory agencies; or
2. Contaminate an aquifer used for public water supply such that public health may be adversely affected.

In addition to the threshold above, Exhibit 4-1 of FAA Order 1050.1F provides additional factors to consider when evaluating the context and intensity of potential environmental impacts for groundwater. Please note that these factors are not intended to be thresholds. If these factors exist, there is not necessarily a significant impact; rather, the FAA must evaluate these factors in light of context and intensity to determine if there are significant impacts. Factors to consider that may be applicable to groundwater include, but are not limited to, situations in which the proposed action or alternative(s) would have the potential to:

- Adversely affect natural and beneficial groundwater values to a degree that substantially diminishes or destroys such values;
- Adversely affect groundwater quantities such that the beneficial uses and values of such groundwater are appreciably diminished or can no longer be maintained and such impairment cannot be avoided or satisfactorily mitigated; or
- Present difficulties based on water quality impacts when obtaining a permit or authorization.

14.4.4. Mitigation

Some examples of potential measures to mitigate impacts to groundwater include:

- limiting ground disturbance and depth to the areas necessary for project-related construction in sensitive and shallow groundwater areas;
- protecting water quality of surface water runoff that may infiltrate into the ground;
- restoring vegetation on disturbed areas to prevent soil erosion following project completion;
- limiting the area of new impervious surfaces to the areas necessary for project-related construction; and
- developing oil response plans designed to contain any potential spills of oil or oil-based products associated with the proposed action and alternative(s).

14.5. Wild and Scenic Rivers

Wild and Scenic Rivers are those rivers having remarkable scenic, recreational, geologic, fish, wildlife, historic, or cultural values as defined by the Wild and Scenic Rivers Act. If the FAA is taking an action that would physically impact resources covered by the Wild and Scenic Rivers Act, there may be consultation requirements under the Act.

14.5.1. Regulatory Setting

Exhibit 14-6 lists the statute that is relevant to Wild and Scenic Rivers impacts.

Exhibit 14-6. Statute Related to Wild and Scenic Rivers

Statute	Location in U.S. Code	Implementing Regulation(s)[a]	Oversight Agency[a]	Summary[a]
Wild and Scenic Rivers Act	16 U.S.C. §§ 1271-1287	36 CFR part 297, subpart A (USFS)	NPS, USFWS, and BLM	Creates the National Wild and Scenic Rivers System to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

[a] BLM = Bureau of Land Management; CFR = Code of Federal Regulations; NPS = National Park Service; U.S.C. = United States Code; USFS = U.S. Forest Service; USFWS = U.S. Fish and Wildlife Service.

The primary federal law governing Wild and Scenic Rivers is the Wild and Scenic Rivers Act. This Act was created by Congress to preserve rivers with these characteristics in a free-flowing condition for the enjoyment of present and future generations. The Wild and Scenic Rivers Act established the National Wild and Scenic River System (National System), which consists of those rivers and river segments deemed by Congress to have one or more "outstandingly remarkable" scenic, recreational, geologic, fish and wildlife, historic, or cultural values. Rivers in the system are classified based on the degree of development present along the river, and whether the river is wild, scenic, or recreational. Four federal agencies administer the Wild and Scenic Rivers Act for rivers within the National System: the Bureau of Land Management (BLM), the National Park Service (NPS), the USFWS, and the U.S. Forest Service (USFS). The agency chosen to administer a given component of the National System is based on which agency manages the land surrounding that river or river segment.

New rivers or river segments are added to the National System by Congress or the Secretary of the Interior (in some instances). Prior to considering whether or not a river should be added to the National System, a study of the river is authorized by Congress. These *study rivers* are rivers being proposed for addition to the National System. Study rivers may or may not end up being added to the National System, but still need to be considered for federal actions.

The Nationwide Rivers Inventory (NRI), which is maintained by the NPS, lists more than 3,400 rivers or river segments that appear to meet the minimum Wild and Scenic Rivers Act eligibility requirements based on their free-flowing status and resource values. The development of the NRI resulted, in part, from Section 5(d)(1) in the Wild and Scenic Rivers Act, which directed federal agencies to consider *potential* Wild and Scenic Rivers in their comprehensive land management processes. NRI listed rivers are afforded some protection from adverse impacts of federal projects until detailed studies are conducted.[10] Rivers on the NRI list may or may not be

[10] It should be noted that Nationwide Rivers Inventory (NRI) listed rivers are not part of the National System, and the requirements under Section 7 of the Wild and Scenic Rivers Act do not apply to NRI listed rivers. The authority directing all federal agencies to avoid or mitigate actions adversely affecting NRI listed rivers comes from the President's 1979 Environmental Message Directive on Wild and Scenic Rivers (August 2, 1979), and the August 11, 1980 CEQ Memorandum on Procedures for Interagency Consultation (available at: https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm#pd).

recommended for addition to the National System. Federal agencies with a project that could affect an NRI listed river must coordinate with the respective agency that has jurisdiction over that river.

Section 7 of the Wild and Scenic Rivers Act prohibits federal agencies from assisting (by loan, grant, license, or otherwise) in the construction of any water resources project (projects that would disrupt the free-flowing character of designated Wild and Scenic Rivers or congressionally-authorized study rivers) that would have a direct and adverse effect on the values for which such river was included in the System or identified by Congress for study. Under Section 7, federal agencies proposing a water resources project, as defined in the implementing regulations at 36 CFR § 297.3, with the potential to directly and adversely affect designated rivers or study rivers must coordinate with the respective agency responsible for administering the relevant river or river segment and obtain a Section 7 determination. In addition, Section 7 applies to federally proposed or assisted water resource projects below, above, or on a stream tributary to a designated river that will invade the designated river area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area as of the date of designation.[11] If there is potential for a water resources project to have such impacts, Section 7 consultation is also required. States can also administer Wild and Scenic Rivers or segments of such rivers and should also be consulted, as applicable. For more information on the consultation process under Section 7, refer to *Wild & Scenic Rivers Act: Section 7 Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council*, October 2004.[12]

Section 12 of the Wild and Scenic Rivers Act requires a federal agency with jurisdiction over any lands which include, border upon, or are adjacent to a designated Wild and Scenic River or study river, to take action necessary to protect the river in accordance with the purposes of the Wild and Scenic Rivers Act.

Section 4(f) Relation to Wild and Scenic Rivers. Lands in Wild and Scenic River corridors may be subject to Section 4(f) of the U.S. Department of Transportation Act of 1966. Publicly-owned public parks, recreation areas, refuges, and historic sites in a Wild and Scenic River corridor are subject to Section 4(f); privately owned lands that have historic/archaeological sites listed in, or eligible for, the National Register of Historic Places are also subject to Section 4(f). Lands in Wild and Scenic River corridors managed for multiple uses may or may not be subject to Section 4(f) depending on the manner in which they are administered by the managing agency. Section 4(f) would apply to those portions of the land designated in a management plan for recreation or other Section 4(f) uses. See Chapter 5 of this Desk Reference for more information.

[11] The same standard used for designated rivers applies to congressionally authorized study rivers. However, the standard for study rivers is slightly modified to eliminate “unreasonably diminish” and instead state “diminish,” which applies a slightly more protective standard to study rivers for the duration of the shorter term study process.

[12] https://www.rivers.gov/documents/section-7.pdf.

14.5.1.1. Consultations, Permits, and Other Approvals

For any proposed action or alternative(s) affecting a designated Wild and Scenic River, study river, or NRI listed river, consultation with the appropriate land management agency must be conducted. The specific consultation requirements are explained below.

Section 7 Determination for Designated Wild and Scenic Rivers and Study Rivers

If the proposed action or alternative(s) includes a water resources project that may affect a designated Wild and Scenic River or study river,[13] a Section 7 determination from the agency (i.e., the NPS, BLM, USFWS, or USFS) with jurisdiction over the river or river segment will need to be obtained.

A separate document under Section 7 does not need to be prepared; typically, the NEPA document prepared for the proposed project will contain sufficient information for the relevant agency to prepare a determination. Early coordination with the relevant agency (i.e., during the early stages of document development) will ensure that the NEPA document contains any specific information or analysis needed by the agency in order to complete their determination.

As soon as possible (but no later than 60 days prior to issuing a decision or finding document for an action) the FAA should provide the relevant agency with the NEPA documentation necessary to make a Section 7 determination. At a minimum, the documentation must include:

- the name and location of the affected river;
- the location of a project;
- the nature of the permit or other authorization proposed for issuance;
- a description of the proposed activity;
- any proposed mitigation; and
- any other relevant information, such as plans, maps, and environmental studies, assessments or EISs.

Upon receiving this information from the FAA, the relevant agency will make a determination regarding whether the proposed project will:

- have a direct and adverse effect on the values for which the Wild and Scenic River or study river was designated; or
- for designated rivers (or study rivers), the project will not invade nor unreasonably diminish the scenic, recreational, and fish and wildlife values of the river through impacts to river segments above or below the river, or in the stream tributaries to the river.

Based on these considerations, the relevant agency will either provide the FAA with consent to go forward with the action or deny consent. The Secretary charged with the river's administration may also recommend measures to eliminate the adverse impacts. If the agency does not issue a consent determination, the FAA cannot proceed with the action.

[13] "May affect" includes actions in the bed or banks of the designated Wild and Scenic River System river or study river, or in the bed or banks of a river segment above or below the designated or study river, or on the stream tributaries to a designated or study river in some instances.

NRI Rivers Consultation

If an action could affect a river or river segment listed on the NRI, but the FAA determines that the action would not result in adverse impacts on the NRI river (for example, through preparation of a FONSI), the FAA should send a copy of the Environmental Assessment (EA) and FONSI to the relevant regional NPS office for their file.

If an action has the potential to result in an adverse effect on the natural, cultural, and/or recreational values of a river or river segment listed on the NRI, the FAA should consult with the appropriate regional office of the NPS.[14] As early as possible in the project planning process, the FAA should request assistance, in writing, from the regional NPS office in evaluating the impacts of the proposed action and alternative(s) on the NRI river. This request should provide enough information to the NPS office regarding the proposed action and alternative(s) to allow them to make a determination regarding the impacts of the action on the natural, cultural, and recreational values of the river. The NPS will also assist in developing appropriate measures to avoid or mitigate impacts to the NRI river. If the NPS does not respond to the FAA's request for assistance within 30 days, the FAA may proceed with the analysis as otherwise planned, taking care to avoid or minimize adverse impacts on the NRI river.

Under CEQ's August 10, 1980 memorandum, *Procedures for Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory*, available at: http://energy.gov/sites/prod/files/Mitigate_Effects_Rivers.pdf, when consultation with U.S. Department of the Interior leads to a determination that the impacts on a NRI river segment are significant, or would preclude inclusion in the Wild and Scenic River System or downgrade its classification, the FAA should invite the NPS and any affected land management agencies to be cooperating agencies. If the NPS does not respond to such request for assistance within 30 days, then the FAA may proceed as otherwise planned, taking care to avoid or minimize adverse impacts on the National Inventory River. For projects requiring EISs, the ROD must adopt appropriate avoidance and mitigation measures and a monitoring and enforcement program.

14.5.2. Affected Environment

The study area should be defined as the entire geographic area with the potential to be either directly or indirectly impacted by the proposed action and alternative(s). For example, if construction of a new facility is part of the proposed action or alternative(s), the study area should include any areas directly impacted through any visual, audible, or other type of intrusion that is out of character with the river or alters the outstanding features of the river's setting. The study area should also include any area indirectly impacted by the proposed action and alternative(s), such as rivers or river segments many miles downstream from the construction footprint of a project which may experience changes in water quality or quantity due to the proposed action and alternative(s). In addition, the default boundaries of Wild and Scenic Rivers as defined in the Wild and Scenic Rivers Act extend to a maximum of one-quarter mile from the ordinary high water mark on each side of the river (an average of not more than 320 acres per mile). As a result, be sure to consider any area within this boundary as part of the study area.

[14] It should be noted that the NPS is available to assist other federal agencies in carrying out the NRI consultation process; however, it is the role of the federal permitting agency (i.e., the FAA and not the NPS) to ensure that effects to NRI rivers are avoided or mitigated.

After the study area has been established, the presence of Wild and Scenic Rivers, study rivers, and NRI rivers in the study area will need to be determined.

Some sources that may be particularly useful in determining whether a river or river segment has been designated as a Wild and Scenic River, study river, or is listed on the NRI include:

- the NPS's NRI website at: https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm provides a map which can assist in determining if any rivers in the study area are included on the NRI; and
- the National Wild and Scenic River's Designated Wild and Scenic Rivers website at: http://www.rivers.gov/map.php provides a list of all designated Wild and Scenic Rivers in the National System as well as all study rivers.

In addition, consider contacting the federal, state, tribal, or local agency responsible for managing the land adjacent to the river for information regarding the land use.

If any Wild and Scenic Rivers, study rivers, or NRI rivers are identified in the study area, a map which shows the river location in comparison to the location of the study area should be included in the NEPA document.

14.5.3. Environmental Consequences

After the affected environment of the proposed project has been adequately described, the environmental consequences of the proposed action and alternative(s) on all Wild and Scenic Rivers, study rivers, and NRI listed rivers located within the study area should be evaluated.

Different types of impacts to Wild and Scenic Rivers, study rivers, and NRI listed rivers should be considered, including any direct and indirect impacts that result from construction and operation activities of a proposed action or alternative(s). All areas where permanent infrastructure would be built and locations where temporary construction-related activity might occur (such as equipment lay-down, staging, and building of temporary access roads) should be considered for potential direct construction-related impacts. Other potential impacts that should be assessed include noise, air quality, and visual impacts. In addition, any impact that affects or alters the scenic, recreational, geologic, fish, wildlife, historic, or cultural values for which the river was designated (or considered for designation) should be considered.

14.5.3.1. Significance Determination

The FAA has not established a significance threshold for Wild and Scenic Rivers in FAA Order 1050.1F; however, the FAA has identified factors to consider when evaluating the context and intensity of potential environmental impacts for Wild and Scenic Rivers (see Exhibit 4-1 of FAA Order 1050.1F). Please note that these factors are not intended to be thresholds. If these factors exist, there is not necessarily a significant impact; rather, the FAA must evaluate these factors in light of context and intensity to determine if there are significant impacts. Factors to consider that may be applicable to Wild and Scenic Rivers include, but are not limited to, situations in which the proposed action and or alternative(s) would have an adverse impact on the values for which a river was designated (or considered for designation) through:

- Destroying or altering a river's free-flowing nature;

- A direct and adverse effect on the values for which a river was designated (or under study for designation);
- Introducing a visual, audible, or other type of intrusion that is out of character with the river or would alter outstanding features of the river's setting;
- Causing the river's water quality to deteriorate;
- Allowing the transfer or sale of property interests without restrictions needed to protect the river or the river corridor (which cannot exceed an average of 320 acres per mile which, if applied uniformly along the entire designated segment, is one-quarter of a mile on each side of the river); or
- Any of the above impacts preventing a river on the NRI or a Section 5(d) river that is not included in the NRI from being included in the Wild and Scenic River System or causing a downgrade in its classification (e.g., from wild to recreational).

14.5.4. Mitigation

Some examples of potential measures to mitigate impacts to Wild and Scenic Rivers include:

- avoiding Wild and Scenic Rivers, study rivers, or NRI rivers by re-siting components outside the 0.25 mile corridor;
- removing structures (such as discharge structures) following completion of construction activities;
- re-siting project components to areas of previously disturbed riverbank;
- reducing discharge velocities to avoid scouring of the riverbed;
- transporting construction materials, such as rip-rap, offsite rather than storing such materials within view of the river; and
- designing a project to reduce visual and noise impacts.

During the environmental review process, NPS, BLM, USFWS, or USFS (or other expert resource agency) would normally provide letters addressing action impacts on the affected river. Often, those letters include recommended measures to avoid those impacts. When dealing with designated rivers in the Wild and Scenic River System and study rivers, if the result of the Section 7 consultation is a conclusion that a water resources project would have direct and adverse impacts on the values for which the river was designated, measures proposed by the expert resource agency that are designed to avoid the identified direct and adverse impacts must be adopted or the FAA cannot grant approval for the proposal.[15] The same prohibition applies to actions above, below, or in the stream tributaries of a designated river or study river where a water resources project invades or unreasonably diminishes (for designated rivers) or diminishes (for study rivers) the scenic, recreational, and fish and wildlife values present. An appendix to

[15] Section 7 of the Wild and Scenic Rivers Act not only requires consultation with applicable agencies, but also prohibits the FAA from assisting an action "by loan, grant, license, or otherwise . . . that would have a direct and adverse effect on the values for which such river was established." Section 7 also prohibits the FAA from assisting an action that would "invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present" of a river segment above, below or in the stream tributaries of a designated river (or for study rivers, the standard is an action that would invade the study river or "diminish" scenic, recreational, and fish and wildlife values present).

the NEPA document should include copies of consultation letters. The NEPA document should summarize the most important information in those letters and accurately cross-reference the appendix and pages in that appendix for further information. If mitigation is suggested, but not necessary to avoid direct and adverse impacts on the values for which a Wild and Scenic River or study river were designated, and the FAA or the applicant does not adopt any recommended mitigation, the NEPA document should clearly explain why the recommendation was not adopted.

14.5.5. Summary of FAA Wild and Scenic River, Study River, and NRI River Assessment Responsibilities

FAA assessment responsibilities include:

1. Determine if any Wild and Scenic Rivers, study rivers, NRI, or otherwise eligible rivers or river segments under Section 5(d) are within a project's study area. If no Wild and Scenic Rivers, study rivers, NRI, or Section 5(d) rivers are found within the study area, no further analysis is needed.
2. If present, conduct a review of the proposed project with the agency that has jurisdiction over the river or river segment.
3. If the proposed action or alternative(s) includes a water resources project that could affect a designated Wild and Scenic River or study river, the FAA must obtain a Section 7 consent determination from the agency (i.e., the NPS, BLM, USFWS, or the USFS) with jurisdiction over the river or river segment. If the agency does not issue a consent determination, the FAA cannot proceed with the action (however, this prohibition has time limits when a study river is involved, as outlined in Section 7(b) of the Act).
4. If the proposed action or alternative(s) includes a water resources project that could affect an area outside a designated river corridor (an area below, above, or in the stream tributaries to the designated river) and that could invade the designated river, or unreasonably diminish the scenic, recreational, fish or wildlife values of the designated river, the FAA must obtain a Section 7 consent determination from the agency (i.e., the NPS, BLM, USFWS, or the USFS) with jurisdiction over the river or river segment. If the agency does not issue a consent determination, the FAA cannot approve the action, or portion of the action, that constitutes a water resources project.
5. If the proposed action or alternative(s) includes a water resources project that could affect an area outside a study river corridor (an area below, above, or in the stream tributaries to the study river) and that could invade the study river, or diminish the scenic, recreational, fish or wildlife values of the study river, the FAA must obtain a Section 7 consent determination from the agency (i.e., the NPS, BLM, USFWS, or the USFS) with jurisdiction over the study river or study river segment. If the agency does not issue a consent determination, the FAA cannot approve the action, or portion of the action, that constitutes a water resources project.
6. If the proposed action or alternative(s) has the potential to impact a river or river segment listed on the NRI, but the FAA determines that the proposed action and alternative(s) would not result in adverse impacts on the NRI river (for example, through preparation of

a FONSI), the FAA should send a copy of the NEPA document to the relevant regional NPS office for their file.

7. If the proposed action or alternative(s) has the potential to result in an adverse effect on the natural, cultural, and/or recreational values of a river or river segment listed on the NRI, the FAA should consult with the appropriate regional office of the NPS. If the NPS does not respond to the FAA's request for assistance within 30 days, the FAA may proceed with the analysis as otherwise planned, taking care to avoid or minimize adverse impacts on the NRI river.
8. All information and documentation of consultations on potential impacts to Wild and Scenic Rivers, study rivers, or NRI rivers, including a Section 7 consent determination if applicable, should be included in the NEPA document.

Appendix B. Water Resources

Federal activities affecting all environmental impact categories are governed by many statutes, regulations, and Executive Orders. Each impact category chapter of this Desk Reference (Chapters 1-14, as applicable) contains an exhibit with a tabular overview of the major applicable Federal statutes, regulations, Executive Orders, and the agencies responsible for overseeing their implementation. This appendix supplements the background information relevant to those requirements that is provided in the chapter exhibits. Please note that these requirements may not be applicable to every FAA action, and should only be included when relevant to the proposed project.

B.10. Water Resources

The following statutes, orders, and regulations govern the protection of wetlands, floodplains, surface waters, and groundwater.

B.10.1. Wetlands

B.10.1.1. Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating the discharge of pollutants into *waters of the United States*,[1] which include wetlands. Pollutants regulated under the CWA include *priority pollutants* which include various toxic pollutants; *conventional pollutants*, such as biochemical oxygen demand, total suspended solids, fecal coliform, oil and grease, and pH; and *non-conventional pollutants*, which include any pollutant not identified as either priority or conventional. The two primary sections of the CWA relating to wetland impacts and permitting are Section 404 and Section 401. See the EPA website on the CWA at: https://www.epa.gov/laws-regulations/summary-clean-water-act.

Section 404

Section 404 establishes a program to regulate the discharge of dredged or fill material into waters of the United States. Jointly administered by the U.S. Army Corps of Engineers (USACE) and the EPA, the USACE is responsible for the day-to-day administration of Section 404 and the review of Section 404 permit applications.[2] The EPA provides general program oversight. The fundamental rationale of the Section 404 permit program is that no discharge of dredged or fill material should be permitted if there is a practicable alternative that would be less damaging to the nation's aquatic resources, or if significant degradation would occur to the nation's waters.

[1] A *water of the United States* is considered a jurisdictional surface water or wetland under the CWA; the regulatory definition is found at 33 CFR § 328.3(a), and further guidance is found in the EPA/USACE Memorandum "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*." Any surface water not meeting this definition is considered non-jurisdictional, and therefore has no statutory protection under the CWA. It is important to note that not all surface waters are considered jurisdictional under the CWA. This determination is made on a case-by-case basis by the USACE; as a result, the FAA should consult with the USACE to determine the jurisdictional status of any surface water that may be affected by a proposed action or alternative(s).

[2] The CWA provides states with the option of administering the Section 404 permit program. To date, Michigan and New Jersey are the only states with this authority (40 CFR §§ 233.70-233.71).

As a result, before conducting dredge or fill activities in waters of the United States, including wetlands, the USACE must issue a permit authorizing such activities.

For additional guidance and information on Section 404 of the CWA, see the EPA website on Section 404 located at: http://water.epa.gov/lawsregs/guidance/wetlands/sec404.cfm.

Section 401

Section 401 ensures that federal actions do not impair water quality. Section 401 requires that, prior to approval of any federal action which may result in discharge into waters of the United States (such as a Section 404 permit), permit applicants must first receive a Section 401 water quality certification. The EPA has granted all states and 36 Native American tribes the authority to issue water quality certifications under Section 401. Before the USACE can issue a Section 404 permit, a Section 401 water quality certification must first be obtained. In most cases, Section 401 certification reviews are conducted at the same time as Section 404 permit reviews, as many states have established joint permit processes to ensure this occurs.

For additional guidance and information on Section 401 of the CWA, see the EPA website on Section 401 located at: https://www.epa.gov/cwa-404/clean-water-act-section-401-certification.

B.10.1.2. Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act requires federal agencies to consult with the USFWS, NMFS (in some instances), and appropriate state fish and wildlife agencies regarding the conservation of wildlife resources when proposed federal projects may result in control or modification of the water of any stream or other water body (including wetlands). The Act provides for financial and technical assistance to states to develop conservation plans, subject to approval by the DOI, and implement state programs for fish and wildlife resources. The Act also encourages all federal departments and agencies to utilize their statutory and administrative authority, to the maximum extent practicable and consistent with each agency's statutory responsibilities, to conserve and promote the conservation of non-game fish and wildlife and their habitats. Coordination with the USFWS and state wildlife agencies may be necessary if the proposed project has the potential to impact applicable water bodies.

For additional information on the Fish and Wildlife Coordination Act, see the USFWS website located at: http://www.fws.gov/laws/lawsdigest/fwcoord.html.

B.10.1.3. Executive Order 11990, *Protection of Wetlands*

Executive Order 11990, *Protection of Wetlands*, 42 *Federal Register* 26961, (May 25, 1977) directs all federal agencies to avoid adverse impacts associated with the destruction or modification of wetlands, to the extent practicable. The stated purpose of this Executive Order is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands." To meet these objectives, this Executive Order requires federal agencies to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. If use of wetland is proposed, the FAA must make a *finding* where an alternatives analysis should demonstrate that there is no practicable alternative to the use of the wetland and that all practicable measures to minimize harm to the wetland have been included. This Executive Order applies to acquisition, management, and

disposition of federal lands, as well as facilities construction and improvement projects which are undertaken, financed, or assisted by federal agencies except for permits, licenses, or allocations to private parties for activities involving wetlands on non-federal property. In addition, this Executive Order applies to federal activities and programs affecting land use, including but not limited to, water and related land resources planning, regulation, and licensing activities. This Executive Order applies to all wetlands, whether they are considered jurisdictional under the CWA or not.

For additional guidance and information on this Executive Order, please see the EPA website at: http://water.epa.gov/lawsregs/guidance/wetlands/eo11990.cfm.

B.10.1.4. DOT Order 5660.1A, Preservation of the Nation's Wetlands

This DOT Order implements the guidelines set forth in Executive Order 11990. As stated in this DOT Order, transportation facilities should be planned, constructed, and operated in order to assure the protection and enhancement of wetlands (though as stated in Paragraph 4.b of DOT Order 5660.1A, this does not include routine repairs and maintenance of existing facilities). To comply with this DOT Order, the FAA should provide the public and agencies with special interest in wetlands appropriate opportunity for early review of proposals involving new construction in wetlands.

To view the full text of this DOT Order visit:
http://www.dot.ca.gov/ser/vol1/sec1/ch1fedlaw/USDOTOrder56601A.pdf.

B.10.2. Floodplains

B.10.2.1. National Flood Insurance Act

The National Flood Insurance Act established the National Flood Insurance Program (NFIP), which is implemented by FEMA. NFIP is a voluntary floodplain management program for communities (cities, towns, or counties). Communities that participate must adopt sound floodplain management programs, and in exchange, the federal government makes floodplain insurance available to the community to protect against financial losses. Any action within a FEMA-mapped floodplain in a participating community must follow the community's FEMA-approved floodplain management regulations.

For additional guidance and information on the NFIP, please visit:
http://www.fema.gov/national-flood-insurance-program.

B.10.2.2. Executive Order 11988, *Floodplain Management*

Executive Order 11988, *Floodplain Management*, 42 *Federal Register* 26951, (May 25, 1977) requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of 100-year floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. To accomplish this objective, federal agencies should take action to reduce floodplain loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out their responsibilities.

For additional information on this Executive Order, see FEMA's website at: https://www.fema.gov/environmental-planning-and-historic-preservation-program/executive-order-11988-floodplain-management.

B.10.2.3. DOT Order 5650.2, Floodplain Management and Protection

DOT Order 5650.2 directs transportation agencies on how to implement Executive Order 11988.

For additional information on DOT Order 5650.2, see the DOT website at: https://www.fhwa.dot.gov/engineering/hydraulics/policymemo/order56502.pdf.

B.10.3. Surface Waters

B.10.3.1. Clean Water Act

The sections of the CWA relating to waters of the United States are Section 303(d), Section 404, Section 401, and Section 402.

Section 303(d)

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of *impaired waters*. *Impaired waters* listed under Section 303(d) are those waters that do not meet water quality standards that states, territories, and authorized tribes have set for them, even after minimum pollution control standards for direct sources of pollution have been installed. The law requires that these jurisdictions establish priority rankings for waters on the list and develop total maximum daily loads of pollutants for these waters. The Section 303(d) list of impaired waters should be reviewed to determine if any impaired waters are present in a project's study area.

For additional information on impaired waters or to see a list of potential impaired waters in the study area, please visit the EPA's website at: http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/.

Sections 404 and 401

For discussion of Sections 404 and 401, see "Wetlands" above. These CWA sections also apply for jurisdictional non-wetland surface waters.

Section 402

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program. This program controls direct or *point source* discharges into waters of the United States. In most cases, the NPDES permit program is administered by authorized states and may be referred to as the State Pollutant Discharge Elimination System permit program. NPDES permits, issued by either the EPA or an authorized state/tribe, contain industry-specific, technology-based, and/or water-quality-based limits, and establish pollutant monitoring and reporting requirements.

The NPDES Stormwater Program regulates the discharge of polluted stormwater runoff into the waters of the United States due to industrial and construction-related activities. In general, all construction activities disturbing 1 acre (43,560 ft^2) of land or larger require coverage under a

NPDES Construction General Permit. Under this NPDES permit, the construction site is considered the *point source*.

For additional guidance and information on Section 402 of the CWA, see the EPA website on Section 402 at: https://www.epa.gov/cwa-404/clean-water-act-section-402-national-pollutant-discharge-elimination-system.

B.10.3.2. Fish and Wildlife Coordination Act

See discussion above under "Wetlands."

B.10.3.3. Rivers and Harbors Act

The Rivers and Harbors Act was established to protect the navigability of waters used for commerce in the United States. Section 9 of the Act prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waterways of the United States without approval. As defined by the Act, *navigable waters of the United States* are those waters that are subject to the change in the tide and/or are used, have been used in the past, or may be susceptible to use to transport interstate or foreign commerce (see 33 CFR part 329). Administration of Section 9 of the Act has been delegated to the USCG. As a result, any bridges or causeways built over navigable waters require a permit from the USCG.

Section 10 of the Act requires authorization from the USACE for the construction of any structure in, over, or under a navigable water, and for the excavation/dredging or deposition of material, or any obstruction or alteration in any navigable water. Structure or work outside the limits defined as navigable waters require a Section 10 permit if the structure or work affects the course, location, condition, or capacity of the surface water (for example, the construction of a new transmission line that is outside the limits of a navigable water but spans the navigable water).

For additional information and guidance on the Rivers and Harbors Act, visit the USACE website and its description of the Rivers and Harbors Act at: https://www.fws.gov/laws/lawsdigest/riv1899.html.