



Indiana Department of Environmental Management  
Office of Water Quality  
Wetlands Section

**Publication Date:**  
May 31, 2024

State Regulated Wetlands General Permit

**Closing Date:**  
June 30, 2024

## PUBLIC NOTICE

**Public Notice Number:**  
IWIP-2024-415-0-JBT-A

**To all interested parties:**

This letter shall serve as a formal notice of the receipt of an application for the **State Regulated Wetland General Permit** by the Indiana Department of Environmental Management (IDEM). The purpose of the notice is to inform the public of active applications submitted for permits required under IC 13-18-22 and to solicit comments and information on any impacts to water quality related to the proposed project. IDEM will evaluate whether the project complies with Indiana's water quality standards as set forth at 327 IAC 2 and all applicable provisions of IC 13-18-22.

**Affected waterbodies:** State Regulated Wetlands within the state of Indiana

**Description:** The Indiana Department of Environmental Management (IDEM) proposes to issue a new State Regulated Wetland General Permit for minimal impacts to Class II wetlands in response to Public Law 1-2024 which becomes effective July 1, 2024.

The general permit contains specific requirements. Ineligible discharges will require an individual State Regulated Wetland permit. The general permit only applies to Class II state regulated wetlands not regulated by the U.S. Army Corps of Engineers.

**Comment period:** Any person or entity who wishes to submit comments or information relevant to the aforementioned project may do so by the closing date noted above. Only comments or information related to water quality or potential impacts of the project on water quality can be considered by IDEM in the state isolated wetland permit review process.

**Public Hearing:** Any person may submit a written request that a public hearing be held to consider issues related to water quality in connection with the project detailed in this notice. The request for a hearing should be submitted within the comment period to be considered timely. The request should also state the reason for the public hearing as specifically as possible to assist IDEM in determining whether a public hearing is warranted.

**Questions?** Additional information may be obtained from Mr. James Turner, at [JTurner2@IDEM.IN.Gov](mailto:JTurner2@IDEM.IN.Gov) or 317-234-6352. Written comments and inquiries may be forwarded to -

Indiana Department of Environmental Management  
100 North Senate Avenue, IGCN 1255  
Indianapolis, Indiana 46204-2251

**Indiana Class II State Regulated Wetlands General Permit**

Indiana Department of Environmental Management  
Office of Water Quality,  
Surface Water and Operations Branch  
100 North Senate Avenue Indianapolis, Indiana 46204  
(317) 232-8670  
Toll Free (800) 451-6027  
www.idem.IN.gov

In compliance with the provisions Title 13 of the Indiana Code, Article 17 of Title 327 of the Indiana Administrative Code, the Indiana Department of Environmental Management (IDEM) is issuing this State Regulated Wetlands General Permit for impacts to Class II State Regulated Wetlands.

Issued : \_\_\_\_\_

Effective: \_\_\_\_\_

Expires: January 15, 2029

In accordance with IC 13-18-22-4 (2), the conditions of this permit remain fully effective and enforceable after the expiration date of this permit if the permittee has submitted a timely notice of intent for coverage under this permit and IDEM has not, through no fault of the person, issued a new permit on or before the expiration date of this permit.

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Martha Clark Mettler  
Assistant Commissioner  
Office of Water Quality

## **TERMS OF THIS STATE REGULATED WETLAND PERMIT:**

- (1) Failure to comply with the terms and conditions of this State Regulated Wetland General Permit may result in enforcement action. If an enforcement action is initiated, a penalty may be assessed up to \$25,000 per day.. The violator may also be subject to criminal liability if it is determined that the wetland impacts were made willfully or negligently
- (2) Although a project may meet the terms and conditions of this permit, IDEM may require an individual State Regulated Wetland Permit if the agency determines that the project would potentially have more than minimal impacts to water quality, either viewed individually or collectively with other projects that may impact the same watershed affected by the proposed project.
- (3) IDEM retains the right to review, modify, terminate, replace, or amend this permit as needed.
- (4) Multiple authorizations can be made for a project if the cumulative amount of those impacts are less than the most restrictive thresholds of this general permit.
- (5) Verifications issued under this permit are done so presuming the wetlands are not Waters of the United States. In no way does this permit act as any type of determination of wetlands' jurisdictional status as Waters of the United States. It is the responsibility of the applicant to work with the United States Army Corps of Engineers to determine the federal jurisdictional status of waters. If the United States Army Corps of Engineers determines wetlands covered by this permit are Waters of the United States, any approval for work under this permit is no longer valid and approval will be needed under an IDEM Section 401 Water Quality Certification before impacts may be made to those wetlands.

## **Conditions of this State Regulated Wetland General Permit**

### **1.0 General**

- (a) Implement the project as depicted and described in the notice of intent for State Regulated Wetland General Permit and as required by the conditions of this permit.
- (b) Complete all approved impacts and mitigation credit purchases before the expiration date of this State Regulated Wetland General Permit.
- (c) Per IC 13-14-2-2, the department may inspect public or private property to inspect for and investigate possible violations of environmental management laws. Therefore, the commissioner or an authorized representative of the commissioner including an authorized contractor, upon the presentation of credentials must be allowed to:
  - (1) Enter the property, including impact and restoration site(s);



- (2) Have access to and copy at reasonable times any records that must be kept under the conditions of this permit;
- (3) Inspect, at reasonable times any
  - a) Monitoring or operational equipment or method;
  - b) Collection, treatment, pollution management, or discharge facility or device; and
  - c) Practices required by this permit;
- (4) Sample or monitor any discharge of pollutants or restoration site.
- (d) Upon completion of the wetland activity, the permittee must submit a signed certification to the department. The certification will include a statement that the authorized work was done in accordance with the department authorization including all conditions.
- (e) Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting conditions and elevation.
- (f) Any impacts in a Class II wetland not permitted under this general permit, another general permit issued by IDEM, or an individual permit are unlawful.
- (g) Permittees who are granted permit coverage will remain covered under this permit until the expiration date of this general permit.
- (h) All impacts shall be consistent with the terms and conditions of this general permit. Any noncompliance constitutes a violation of applicable State law and is grounds for an enforcement action, termination of coverage under the permit, requiring an individual permit, and/or denial of permit coverage renewal.

## **2.0 NOTICE OF INTENT (NOI) REQUIREMENTS**

- (a) General
  - (1) To obtain authorization to discharge under this permit, an applicant must submit a complete Notice of Intent (NOI) at least 30 days before impacts to IDEM.
  - (2) The NOI must be submitted using the most current version of the Notification Form as provided by IDEM.
  - (3) The NOI must be signed by the landowner.
  - (4) Failure to submit all required information will result in the project being considered out-of-scope and not authorized.
  - (5) Except as provided in Section 4.0 when a NOI is submitted and

authorization is granted, an applicant is permitted to discharge fill in accordance with the terms of this general permit upon the effective date of the authorization.

- (6) This authorization to discharge shall become effective on the 31<sup>st</sup> day after IDEM receives a complete NOI unless IDEM determines the NOI is out-of-scope.
- (b) The Notice of Intent must include:
- (1) Indiana Department of Natural Resources, Division of Nature Preserves Correspondence in compliance with Section 4.0(f) of this permit.
  - (2) The name of the applicant or entity requesting authorization.
  - (3) Applicant contact information including applicant name, title, address, telephone, and e- mail address.
  - (4) Consultant contact information including applicant name, title, address, telephone, and e- mail address.
  - (5) The location of the tract and locations of the wetlands on the tract including the wetland or wetlands to be impacted by the project.
  - (6) Existing project site conditions including at a minimum a delineation and classification of all wetlands on the tract. The delineation and classification must be verified by IDEM. IDEM recommends you submit your delineation for a Waters of the State Determination and include your Waters of the State Determination to meet this requirement of the NOI. Doing so may help avoid the risk of denial or extended delays.
  - (7) A description of the proposed wetland activities and project at the site.
  - (8) The acreage of wetland(s) to be impacted.
  - (9) Site plans and maps including aerial and cross-sectional views.
  - (10) Reasoning for the activities.
  - (11) Restoration Plan for all temporary impacts
  - (12) Any additional information required by IDEM to verify the project will qualify under the terms and conditions of this general permit. If additional information is not provided upon request, the project will not be authorized.

- (c) The Notice of Intent (NOI) and all required documents must be submitted electronically to:

[WetlandsProgram@IDEM.IN.Gov](mailto:WetlandsProgram@IDEM.IN.Gov)

It is also recommended you copy the e-mail address for the appropriate IDEM Wetlands Project Manager on [Wetlands.IN.Gov](mailto:Wetlands.IN.Gov)

**Note:** Upon adoption of an online system, IDEM will only accept applications and other documents through the online portal.

### **3.0 Impacts Authorized by this General Permit**

Cumulative permanent impacts to waters of the state from the placement of clean fill including uncontaminated rocks, bricks, concrete without rebar, road demolition waste materials other than asphalt, or earthen material and uncontaminated dredged material up to and including 0.25 acre.

### **4.0 Impacts Not Authorized by This General Permit**

This permit does not authorize:

- (a) Impacts to Waters of the United States. In no way does this permit act as any type of determination of wetlands' jurisdictional status as Waters of the United States. It is the responsibility of the applicant to work with the United States Army Corps of Engineers to determine the federal jurisdictional status of waters. If the United States Army Corps of Engineers determines wetlands covered by this permit are Waters of the United States, any approval for work under this permit is no longer valid and approval will be needed under an IDEM Section 401 Water Quality Certification before impacts may be made to those wetlands.
- (b) Impacts in Class III wetlands.
- (c) Impacts to Rare and Ecologically Important Wetland Types
- (d) Impacts or activities outside the scope of this permit;
- (e) Impacts to wetlands outside of Indiana.
- (f) Impacts to wetlands performed without submitting a notice of intent 30 days prior.
- (g) Impacts of pollutants other than clean fill. Clean fill includes uncontaminated rocks, bricks, concrete without rebar, road demolition waste materials other than asphalt, or earthen material and uncontaminated dredged material.

- (h) Activity where state endangered, threatened, or rare species are documented on a permanent or seasonal basis within a one-half (1/2) mile radius of the proposed project by the Natural Heritage Data Center unless documentation issued by the Natural Heritage Data Center or the Indiana Department of Natural Resources Division of Fish and Wildlife demonstrate the proposed work will not affect any state endangered, threatened or rare species. If IDNR recommends seasonal work restrictions or other avoidance and minimization measures, those restrictions or avoidance and minimization measures must be incorporated into your project plans and implemented during construction.
- (i) Impacts that have the effect of draining the wetland.
- (j) The discharge of pollutants, principally sediment, associated with stormwater run-off.
- (k) Activities associated with the establishment of a mitigation bank.
- (l) Activities that have a cumulative permanent impact of more than twenty-five hundredths (0.25) acre of waters of the state.
- (m) Activity in the proximity of a public water supply intake, except where the activity is for repair of the public water supply intake structures.
- (n) Activities in breeding areas for migratory waterfowl.
- (o) Placement of dredged or fill materials into critical resource waters including:
  - (1) critical habitat for federally listed threatened and endangered species,
  - (2) state natural heritage sites,
  - (3) Outstanding state resource waters
  - (4) outstanding national resource waters,
  - (5) water pollution control board designated waters,
  - (6) exceptional use waters,
  - (7) critical wetland or critical special aquatic sites (see Attachment #2).
  - (8) outstanding state protected wetland, or
  - (9) other waters officially designated by the state as having particular environmental or ecological significance and identified by the commissioner after notice and opportunity for public comment.
- (p) Placement of dredged or fill material resulting in permanent above grade fills in State Regulated Wetlands within the mapped 100-year floodplain as identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.
- (q) Any activity involving fill associated with additional impacts to waters of the state, such as dredging, excavation, or damming, unless the total area of wetland affected is less than or equal to the area allowed by the general permit. Point source discharges of pollutants other than clean fill and uncontaminated dredge material.

## **5.0 Mitigation**

Per 327 IAC 2, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Mitigation of dredge and fill impacts to Indiana's water resources is required to maintain water quality.

- (a) Mitigation must be provided for all permanent impacts.
- (b) Sufficient mitigation credits must be available in the service area where the impacts occur. Credits may not be available at all times.
- (c) Permittee responsible mitigation is not authorized under this General Permit.
- (d) The amount of compensatory mitigation credit to be purchased is:
  - (1) 1.5 to 1 for Non-forested impacts and
  - (2) 2 to 1 for Forested impacts.
- (e) The credits must be purchased in the bank or in lieu fee service area where the impacts occur.
- (f) Provide to IDEM proof of a finalized credit purchase from the Indiana Stream and Wetland Mitigation Program or from a Mitigation Bank within one (1) year of IDEM's receipt of the Notice of Intent; and before authorized impacts to waters of the State. Banks and ILF programs may require 30 days or more to finalize a purchase.
- (g) Failure to purchase credits before impacting water resources will require an individual state regulated wetland permit and may result in additional mitigation requirements to compensate for temporal loss of water resource functions.

## **6.0 CONSTRUCTION AND POST-CONSTRUCTION**

Per 327 IAC 2-1-6(b)(4) the protection of existing uses for aquatic life is required and, per 327 IAC 2-1.3-2 (4) the utilization of best management practices helps ensure the protection of existing uses. Therefore, the following are required:

- (a) All permittees must comply with this permit to demonstrate that all impacts authorized under this permit are managed to meet state water quality standards.
- (b) General Performance Requirements:
  - (1) The permittee must provide water quality management measures that will ensure that the authorized work does not result in degradation of water quality.
  - (2) Obtain prior approval from IDEM for operation of construction equipment or the placement of temporary run-arounds, temporary cofferdams, temporary causeways, temporary crossings, or other related structures within any water of the state, unless specifically



stated, depicted, or detailed in the aforementioned correspondence and project plans.

- (3) Heavy equipment working in the wetlands must be placed on mats or other appropriate measures to minimize soil disturbance and compaction.
- (4) Operate machinery in a manner that minimizes disturbance to waters of the state.
- (5) Do not clear trees within the project boundaries during April 1 through September 30 in order to protect any habitat suitable for the federally endangered Indiana Bat (*Myotis sodalis*) and the federally threatened Northern Long Eared Bat (*Myotis septentrionalis*) unless a waiver has been issued by the US Fish and Wildlife Service.
- (6) Clearly mark the construction limits prior to any disturbance.
- (7) Clearly mark wetlands and streams that are to remain undisturbed on the project site.
- (8) Deposit any dredged material in a contained non-wetland disposal area outside of any water of the state and implement appropriate erosion and sediment control measures to prevent sediment run-off to any waterbody. Sampling may be required to determine if the dredged sediment is contaminated.
- (9) No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the wetland, including those species that normally migrate through the area.
- (10) Tile Maintenance Projects must adhere to the following:
  - (A) Tile to be replaced shall be replaced with solid tile with anti-seep collars and watertight joints within the wetland area.
  - (B) Tile must be replaced with a tile of similar size to the existing tile.
  - (C) Any risers must be placed outside of the delineated wetland boundaries.

(c) Post-Construction

- (1) Any structure or fill shall be properly maintained including maintenance needed to ensure public safety.
- (2) Upon completion of work and restoration, a post-construction report must be filed with the agency per 327 IAC 17-2-4(7).

(d) Restoration

- (1) Restoration of temporary impacts associated with the project must be completed to ensure compliance with state water quality standards. The site must be restored to pre-existing contours and vegetative conditions. A restoration plan must accompany the NOI when submitted as required in section 2.0.
- (2) The restoration plan must include:
  - (A) Method(s) used to remove any temporary fill and restore the wetland to pre-existing grade.
  - (B) Use of a native wetland seed mix within the wetland.

**7.0 Erosion and Sediment Control**

Per 327 IAC 15; 327 IAC 2-1; 327 IAC 2-1.5, the use of appropriate stormwater control measures will be implemented and maintained to manage stormwater and sediment-laden water from migrating off site and entering waterways and wetlands, potentially impairing water quality. Therefore, the project must meet the applicable requirements where permit coverage has been obtained under the Constriction Stormwater General Permit (CSGP) and/or stormwater permit coverage from a local Municipal Separate Storm Sewer System (MS4). If stormwater coverage is not required or does not address the items listed below, the following erosion and sediment control requirements must be completed.

- (a) Wetlands and/or waterbodies adjacent to land-disturbing activities must be protected with appropriate sediment control measures.
- (b) Implement erosion and sediment control measures prior to any land disturbance to minimize sediment from leaving the site or entering a waterbody.
- (c) Use run-off control measures, including but not limited to diversions and slope drains. These measures are effective for directing and managing run-off to sediment control measures and for preventing direct run-off into waterbodies.
- (d) All operations must phase project activities to minimize the impact of sediment to the receiving waterbody(ies). Erosion and sediment control measures must be implemented using an appropriate order of construction (sequencing) relative to the land-disturbing activities associated with the project. Appropriate measures include, but are not limited to, silt fence, diversions, and sediment traps.
- (e) Monitor and maintain erosion control measures and devices regularly, especially after rain events, until all soils disturbed by construction activities have been permanently stabilized.

- (f) Install and make appropriate modifications to erosion and sediment control measures based on current site conditions as construction progresses on the site. The Indiana Stormwater Quality Manual or similar guidance documents are available to assist in the selection of measures that are applicable to individual project sites.
- (g) Implement appropriate erosion and sediment control measures for all temporary run-arounds, temporary causeways, temporary crossings, or other such structures that are to be constructed within any waters of the state.
  - (1) Structures must be included in reviewed designs or approved by IDEM prior to use.
  - (2) Minimize disturbance to riparian areas when constructing these structures.
  - (3) Structures must be included in reviewed designs or approved by IDEM prior to use. Construct temporary run-arounds, temporary causeways, temporary crossings, or other such structures of non-erodible materials.
  - (4) Temporary crossings and causeways must be completely removed upon completion of the project and the affected area restored to pre-construction contours, grades, and vegetative conditions.
- (h) Cut and fill slopes located adjacent to wetlands and streams (including encapsulated streams) or that directly discharge to these aquatic features are to be stabilized using rapid/incremental seeding or other appropriate stabilization measures.
- (i) Stabilize and re-vegetate disturbed soils as final grades are achieved. Initiation of stabilization must occur immediately or, at a minimum, within the requirements of a construction site run-off permit after work is completed. Use a mixture of herbaceous species beneficial for wildlife or an emergent wetland seed mix wherever possible and appropriate. Tall fescue may only be planted in ditch bottoms and ditch side slopes and must be a low endophyte seed mix.
- (j) As work progresses, revegetate areas void of protective ground cover using seeding and anchored mulch, or under more extreme conditions an appropriate grade of erosion control blanket must be used. Erosion control blanket must be used for areas associate with concentrated flow. The selection of material must be made based on site conditions and all applicable permit requirements. If a construction stormwater general permit (CSGP) has been obtained, implement the stabilization plan as specified in the stormwater pollution prevention plan (SWPPP). **Erosion control blankets shall be biodegradable, with loose-woven/leno-woven netting to minimize the entrapment and snaring of small-bodied wildlife such as snakes and turtles (follow manufacturer's recommendations for selection and installation).**

- (k) Anchor mulch. Anchoring shall be appropriate for the site characteristics such as slope, slope length, and concentrated flows. **Anchoring methods may not include loose netting over straw, but can range from crimping of straw, erosion control blankets as specified above that minimize wildlife entrapment, or net free blankets.** Tackifiers with mulch and hydro-mulch are acceptable and shall be applied to the manufacturer specifications.

### Other Applicable Permits

This permit does not relieve any duty to obtain any other permits or authorizations required for this project or related activities from IDEM or any other local, state, or federal agency or person. Nothing in this permit may be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation or the Clean Water Act, as amended.

Coverage under the construction stormwater general permit (CSGP) is required where the land disturbance is projected to be one acre or more for the overall project or operations that result in the land disturbance of less than one acre of total land disturbance that are part of a larger common plan of development or sale. Permit coverage must be obtained prior to the initiation of land-disturbing activities. Information related to obtaining permit coverage is available through the IDEM Stormwater Program online at [www.in.gov/idem/stormwater](http://www.in.gov/idem/stormwater) or via email at [Stormwat@idem.IN.gov](mailto:Stormwat@idem.IN.gov).

The Indiana Department of Natural Resources (317-232-4160 or toll free at 877-928-3755) should be contacted concerning the possible requirement for natural freshwater lake or floodway permits.

### Additional Terms

This permit does not:

- (1) Authorize impacts or activities outside the scope of this permit including project impacts to Waters of the United States;
- (2) Authorize any injury to persons or private property or invasion of other private rights, or any infringement of federal, state or local laws or regulations;
- (3) Convey any property rights of any sort, or any exclusive privileges;
- (4) Authorize changes in the plan design detailed in the notice of intent.

## Critical Wetlands and Critical Special Aquatic Sites

In the interest of maintaining consistency with the State Regulated Wetland program established at 327 IAC 17, IDEM defines Critical Wetlands and Critical Special Aquatic Sites to be synonymous with Rare and Ecologically Important Wetland Types under 327 IAC 17-1-3(3)(B):

- **Acid bog:** Acid bog is an acidic wetland of kettle holes in glacial terrain. Bogs can be graminoid (*Carex* spp. and *Sphagnum* spp.) or low shrub (*Chamaedaphne calyculata* and *Betula pumila*). The graminoid bog can be a floating, quaking mat. The soils in acid bogs are saturated and acidic peat. Bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. When a sphagnum mat floats, it rises and falls with the water table. Acid bogs can be found in northern Indiana.
- **Acid seep:** Acid seep is a bog-like wetland typically found in unglaciated hill regions. This community is a small groundwater-fed wetland located primarily in upland terrain. A thin layer of muck may lie over a mineral substrate. The soil reaction is acid. This seep community is characterized by flowing water during at least part of the year. Acid seeps are located primarily in southern Indiana.
- **Circumneutral bog:** Circumneutral bog is a bog-like wetland that receives groundwater. Circumneutral bogs can be a mosaic of tall shrub bog, graminoid bog, and other communities. The graminoid bog often occurs on a quaking or floating mat. Although a few bogs occur in unglaciated regions, most are found in glacial ice-block depressions. The soils in circumneutral bogs are usually peat, or other low nutrient organic substrates, which are saturated and circumneutral to slightly acid. Circumneutral bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. Circumneutral bogs are usually found in northern Indiana.
- **Circumneutral seep:** The circumneutral seep (or seep-spring) is a groundwater-fed wetland on organic soil. It is primarily herbaceous. Species typically include marsh marigold (*Caltha palustris*) and skunk cabbage (*Symplocarpus foetidus*) with a scattered tree canopy. Circumneutral seep is typically situated on or near the base of a slope. The soil is typically circumneutral muck. This seep community is characterized by slowly flowing water during at least part of the year. Circumneutral seeps can be found scattered throughout Indiana.
- **Cypress swamp:** Bald cypress swamps are seasonally to permanently inundated wetlands found in depressions and sloughs of large bottomlands associated with the Wabash/Ohio River system. Poorly to very poorly drained soils characterize this environment. Bald cypress (*Taxodium distichum*) is present, and green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), and overcup oak (*Quercus lyrata*) are also usually present. This community is restricted to extreme southwest Indiana.
- **Dune and swale:** Dune and swale is an ecological system consisting of a mixture of upland (black oak sand savanna, dry to mesic sand prairie) and wetland (pond, panne, sedge meadow, marsh, wet prairie) natural communities. These



communities occur in long, narrow, linear complexes, with the dry communities occupying sand ridges, and the wet communities occurring in the intervening swales. Black oak (*Quercus velutina*), paper birch (*Betula papyrifera*), jack pine (*Pinus banksiana*), and prairie vegetation typically occur on the ridges, and sedges, reeds, and marsh/aquatic vegetation line are found in the swales. Water levels are directly influenced by ground water, with the interdunal swales controlled largely by lateral flow through porous beach ridges. Dune and swale is restricted to extreme northwest Indiana, near Lake Michigan.

- **Fen:** Fen is a calcareous, groundwater-fed wetland. Fens are often a mosaic of grassy areas, sedgy areas, graminoid-shrubby cinquefoil, and tall shrub areas. The extent of the tall shrub component of fens may be determined by fire frequency and/or soil moisture. Drying of the soil increases the growth of shrubs. Fens typically occur in the vicinity of glacial moraines. Fens typically have a muck or peat substrate. The water level fluctuates seasonally and is fed by groundwater. Fens can be found in central and northern Indiana.
- **Forested fen:** Forested fen is a tree-dominated wetland on organic soil which receives groundwater. Forested fens are often a mosaic of treed areas, tall shrub areas, and herbaceous areas. A tall shrub layer is often well developed in forested fens. Indicative species typically include tamarack (*Larix laricina*), black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), poison sumac (*Toxicodendron vernix*), and red maple (*Acer rubrum*). Forested fens occur in wet lowlands, where moraines meet outwash features or depressions. Forested fens have saturated, poorly to very poorly drained soils that are often muck, but some seasonal flooding can occur in forested fens that are especially level. This community is a late successional stage of fen or circumneutral bog. Forested fens occur in northern Indiana.
- **Forested swamp:** Forested swamp is a seasonally inundated to intermittently exposed wetland of large river bottoms. Forested swamps do not receive direct flow from river flooding except under exceptional circumstances. Forested swamps occur in depressions, sloughs and large bottomlands, typically dominated by tree species such as swamp cottonwood (*Populus heterophylla*), green ash (*Fraxinus pennsylvanica*), and swamp white oak (*Quercus bicolor*). In northern Indiana important tree species include black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*). Poorly to very poorly drained and aerated soils characterize the swamp environment. Soils usually are mineral not muck or peat. This community type is found throughout Indiana.
- **Marl beach:** Marl beach is a fen-like community located on the marly muck shorelines of lakes. Marl precipitate is evident. A thin layer of water is present in spring, but dries down in summer. Draw-down of a lake creates additional area for this community to develop on. Marl beaches can be found in extreme northern Indiana, primarily in the northeast.
- **Muck flat:** Muck flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow

basins. This community has a peat substrate. The muck flats can float on the water surface, but during high water periods are usually inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Muck flats are found in northern Indiana.

- **Panne:** Panne is a groundwater fed herbaceous wetland occupying interdunal swales near Lake Michigan. Pannes are located on the lee side of the first or second line of dunes from the lakeshore. The soil is wet, calcareous sand. Pannes are located in counties bordering Lake Michigan.
- **Sand flat:** Sand flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a sand substrate. During high water periods sand flats at the margins of lakes or ponds are inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Sand flats occur in northern Indiana, and in the Plainville Sand Section of southwest Indiana.
- **Sedge meadow:** Sedge meadow is an herbaceous wetland typically dominated by graminoid species such as flat sedge (*Cyperus* spp.), spike rush (*Eleocharis* spp.), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Sedge meadow is an herbaceous wetland of stream margins and river floodplains, and lake margins or upland depressions. Streamside sedge meadows are frequently flooded in the spring and early summer. Sedge meadows of lake margins and depressions often contain standing water during wet months and after heavy rains; during dry periods, the water level is at or just below the substrate. Sedge meadow usually occupies the ground between a marsh and the uplands, or a shrub swamp or wet forest. Periodic high water can kill trees and shrubs invading sedge meadows. Sedge meadows can be found in the northern half of the state.
- **Shrub swamp:** Shrub swamp is a shrub-dominated wetland that is seasonally inundated to intermittently exposed. This community occurs in depressions and the substrate in either mineral soils or muck, as opposed to peat which is characteristic of bogs. Shrub swamp is characterized by non-flowing or very slowly flowing water with levels that fluctuate seasonally. Shrub swamps are persistent, though considered successional. Two opportunistic native shrubs, sandbar willow (*Salix exigua*) and gray dogwood (*Cornus racemosa*), by themselves, are not indicative of shrub swamps. This community type is found throughout Indiana.
- **Sinkhole pond:** Sinkhole ponds are water-containing depressions in karst topography. Sinkhole ponds are found in the Mitchell Karst Plain in south-central Indiana.
- **Sinkhole swamp:** Sinkhole swamps are depressions in karst topography dominated by tree or shrub species. Sinkhole swamps are found in the Mitchell Karst Plain in south-central Indiana.

- **Wet floodplain forest:** Wet floodplain forest is a broadleaf deciduous forest of river floodplains. Wet floodplain forests occur in depressions and flats on narrow to wide floodplains and also on recently exposed substrates that are frequently flooded. Wet floodplain forests are frequently flooded and may have standing water seasonally to permanently present. Wet floodplain forests occur statewide.
- **Wet prairie:** Wet prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet prairies occur in deep swales and the substrate ranges from very deep black mineral soils (which are high in organic matter) to muck. Ponding in spring lasts for several weeks prior to drainage. Wet prairies commonly occur in the Grand Prairie Natural Region, the Tipton Till Plain and the Bluffton Till Plain, with a few examples found in the Northern Lakes Natural Region.
- **Wet sand prairie:** Wet sand prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet lowland prairies occur in deep swales and the substrate is sand, sometimes mixed with muck. Flooding is a regular springtime occurrence in wet sand prairie and may last several weeks. This community occurs in a mosaic with marsh and other wetlands, and with upland prairies and sand savannas. Fire was frequent occurrence, but more common in the fall when waters had receded. This community occurs in northwest Indiana and in the Plainsville Sands area.