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## **State Wetland Protection**

*Status, Trends, & Model Approaches*

*A 50-state study by the  
Environmental Law Institute*

*With support from the  
U.S. Environmental Protection Agency*

2008

# **Appendix: State Profiles**

# Ohio

## I. Overview

Ohio is rich in wetland resources, with more than 400,000 acres of wetlands located within the state's boundaries. However, in pre-settlement times, the state boasted more than 5,000,000 acres of wetlands, many of which were extremely large in area. Ohio has lost approximately 90 percent of its original wetland acreage to agricultural, residential, and industrial development over the last century.<sup>1</sup> Many of the wetlands lost were in the Great Black Swamp in northwestern Ohio.<sup>2</sup> Today, Ohio relies primarily on §401 water quality certification under the Clean Water Act (CWA) to regulate impacts to wetlands. The state also enacted the Isolated Wetlands Law in July 2001 in reaction to the Supreme Court decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC)* that cast doubt on federal jurisdiction over some intrastate isolated wetlands.<sup>3</sup> Administered by the Ohio Environmental Protection Agency's Division of Surface Water, these two laws govern the bulk of wetlands-related activities at the state level. The Ohio Department of Natural Resources also conducts many non-regulatory activities concerning wetlands, including restoration, education and outreach, and research.

## II. Regulatory Programs

### *Wetland definitions and delineation*

Ohio defines "surface waters of the state" or "water bodies" as "all streams, lakes, reservoirs, ponds, marshes, wetlands, or other waterways which are situated wholly or partially within the boundaries of the state, except for those private waters which do not combine or effect a junction with natural surface or underground waters."<sup>4</sup>

Ohio references the U.S. Army Corps of Engineers' 1987 *Wetlands Delineation Manual* in its definition for "wetlands." "Wetlands" are defined as:

those areas that are inundated or saturated by surface or ground water at a frequency and duration that are sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions... [including] swamps, marshes, bogs, and similar areas that are delineated in accordance with the [1987 Manual] and any other procedures and requirements adopted by the [Corps] for delineating wetlands."<sup>5</sup>

### *Wetland-related laws and regulations*

Ohio regulates wetlands primarily through §401 water quality certification to federal §404 permits. In addition to the state's §401 program, Ohio enacted the Isolated Wetland Law in

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<sup>1</sup> Ohio Department of Natural Resources and Ohio Environmental Protection Agency, *Ohio Wetland Restoration and Mitigation Strategy Blueprint*, at <http://www.dnr.state.oh.us/dnap/wetlands/pdf/intro.pdf> (last visited Sept. 13, 2007).

<sup>2</sup> Personal communication with John Mack, Ohio Env'tl. Prot. Agency (June 5, 2007).

<sup>3</sup> 531 U.S. 159 (2001).

<sup>4</sup> OHIO ADMIN. CODE § 3745-1-02(77).

<sup>5</sup> *Id.* § 3745-1-02(90).

response to post-SWANCC uncertainty regarding federal jurisdiction over isolated wetlands. The statute makes it illegal for a person to “engage in the filling of an isolated wetland” or to “discharge dredged material into isolated wetlands” without a permit.<sup>6</sup>

The Isolated Wetland Law, which became effective on July 17, 2001, establishes three tiers of regulation. Three categories of wetlands, consistent with three wetland categories outlined in the state’s water quality standards, are defined according to their ecological significance, with Category One wetlands having the lowest ecological significance and Category Three wetlands having the highest.<sup>7</sup> Wetland categories are determined through application of the *Ohio Rapid Assessment Method for Wetlands (ORAM), Version 5.0*. The three categories are associated with different levels of review, different criteria for approval or disapproval of a permit, and different mitigation requirements. The stringency of regulation increases with ecological significance.<sup>8</sup> Level One review is the least rigorous and applies to Category One or Category Two isolated wetlands of one half acre or less.<sup>9</sup> Level Two review applies to Category One isolated wetlands of greater than one-half acre or Category Two isolated wetlands larger than one half acre but smaller than three acres.<sup>10</sup> Level Three, the most rigorous level of review, applies to Category Two isolated wetlands larger than three acres and all Category Three isolated wetlands.<sup>11</sup> It should be noted that there are no minimum size thresholds for isolated wetlands that fall outside the jurisdictional boundaries of §401/§404—all are included under the Isolated Wetland Law. The only exemption concerns isolated wetlands that were created by coal mining activities and that are being returned to mining activity.<sup>12</sup>

### ***Organization of state agencies***

Both the §401 and isolated wetlands programs fall under the regulatory authority of the Ohio Environmental Protection Agency (OEPA). The Ohio Department of Natural Resources (ODNR) also conducts some state non-regulatory and management activities such as research, habitat and restoration initiatives, and outreach.<sup>13</sup>

*Ohio Environmental Protection Agency.* OEPA’s Division of Surface Water (DSW) oversees a variety of activities related to wetlands, including permitting and §401 certification, enforcement, monitoring and assessment, outreach and technical support, restoration, and research. While there are district offices in place, most regulatory activities are conducted out of the Columbus-based headquarter office.<sup>14</sup> Thirteen full-time equivalents (FTEs) work directly on wetland permits, research, and program development: one §401 coordinator in the southwest district office, one §401 coordinator in the northeast district office, one §401 coordinator in the northwest district office, six §401 coordinators in the central office, two wetland ecologists, and two managers. These staff are funded by a combination of wetland permit fee-based revenue,

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<sup>6</sup> OHIO REV. CODE ANN. § 6111.021, 6111.028.

<sup>7</sup> OHIO ADMIN. CODE § 3754-1-54.

<sup>8</sup> OHIO REV. CODE ANN. § 6111.02(A).

<sup>9</sup> *Id.* § 6111.022.

<sup>10</sup> *Id.* § 6111.023.

<sup>11</sup> *Id.* § 6111.024.

<sup>12</sup> *Id.* § 6111.021(B).

<sup>13</sup> *Id.*

<sup>14</sup> Personal communication with Randy Bournique, Ohio Env'tl. Prot. Agency (Nov. 6, 2003).

federal grants, and general revenue funds.<sup>15</sup> Fees from §401 certifications and isolated wetland permits and penalties and reimbursements from enforcement actions also support DSW activities. In addition, Wetland Program Development Grants from the U.S. Environmental Protection Agency (USEPA) have been utilized for research. Finally, under a memorandum of understanding, the Ohio Department of Transportation (ODOT) provides funding specifically for one FTE to review permits for proposed ODOT projects. In fiscal year 2003, the OEPA's wetland-related program budget was approximately \$1,600,000, with about half devoted to wetland permitting.<sup>16</sup>

*Ohio Department of Natural Resources.* ODNR's Division of Wildlife (DOW) conducts numerous wetland-related activities: §404 permit reviews under the Fish and Wildlife Coordination Act; outreach and technical support for restoration; research and monitoring of populations, wetland habitat, and wildlife; and restoration initiatives, including the administration of grants for restoration. ODNR also is responsible for managing the state's coastal resources along Lake Erie, including wetlands. It issues coastal consistency determinations<sup>17</sup> and coastal erosion area permits.<sup>18</sup> Most restoration activities are conducted at the regional level.<sup>19</sup> The state is broken into five administrative districts, each with at least two private lands biologists that provide technical assistance to property owners. In 2006, DOW entered into an agreement with the Natural Resource Conservation Service (NRCS) to create a new FTE as part of a Wetland Evaluation Team (WET) to assist NRCS with wetland delineation and restoration associated with USDA farmland compliance and conservation programs. As of 2007, one WET has been established in northwest Ohio, with the possibility of two additional WETs assigned to southwest and central Ohio.<sup>20</sup>

Because many of ODNR's activities target and affect multiple types of habitat, it is difficult to estimate the number of FTEs working on wetland-related activities in the agency. Correspondingly, it is also difficult to estimate the annual budget that ODNR devotes to wetlands activities. The normal spending authority for restoration, including the general maintenance of existing structures, is approximately \$900,000 per year, of which \$6-800,000 is normally used. This funding comes from numerous sources. Funding from the Ohio Wetland Habitat Stamp, required of all waterfowl hunters, support restoration, acquisition, and research activities. Other federal grants such as North American Wetlands Conservation Act have also contributed in the past. Fees for general hunting licenses fund some staff salaries, and some monies are also received from a state income tax check-off.<sup>21</sup>

#### ***§401 certifications and isolated wetlands permits***

OEPA-DSW, which oversees both the §401 certification and isolated wetlands programs, typically issues about 200 §401 certifications and isolated wetlands permits in a given year. In 2003, the agency issued fewer certifications and permits than usual: 104 §401 certifications and

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<sup>15</sup> Mack, *supra* note 2.

<sup>16</sup> *Id.*

<sup>17</sup> OHIO REV. STAT. § 1506.03.

<sup>18</sup> OHIO REV. STAT. § 1506.07 *et seq.* Coastal erosion areas are "any territory included in Lake Erie coastal erosion areas identified by the director under section 1506.06 of the Revised Code." *Id.* § 1506.01.

<sup>19</sup> Personal communication with Steve Barry, Ohio Dep't of Natural Resources (Feb. 3, 2004).

<sup>20</sup> Personal communication with Luke Miller, Ohio Dep't of Natural Resources (June 5, 2007).

<sup>21</sup> Barry, *supra* note 19.

49 isolated wetlands permits. Certifications are rarely waived—the vast majority of certifications are approved, with less than two percent denied outright. However, approval is not a straightforward process. Usually, permitting staff work with applicants to modify their original applications so that they may meet approval, or if it is clear that an applicant will never be approved, permitting staff may suggest that the applicant withdraw their submission.<sup>22</sup>

Section 401 certification and isolated wetlands permitting decisions are determined by a combination of factors. The Ohio Administrative Code outlines detailed requirements for regulatory review. A quantitative methodology, *ORAM*, is used to classify wetlands and determine the level of regulation and review the permit application will receive.<sup>23</sup> Intensive measures of the quality and function of wetlands (e.g., wetland indexes of biological integrity) proposed for impacts also are required in some circumstances. Quantitative performance standards are required for nearly all mitigation, including banks.<sup>24</sup> However, qualitative assessment and best professional judgment also often factor into the decision.<sup>25</sup>

### *Nationwide permits*

The State of Ohio has applied various conditions its §401 certifications to the U.S. Army Corps of Engineers' nationwide permits (NWP). Under the state's approach, the Corps must present a provisional NWP, which is valid only after OEPA grants approval or waives review. Generally, OEPA corresponds with the regional Corps district for general conditions.<sup>26</sup>

No NWPs have been denied outright. A 2002 letter from the OEPA to Corps headquarters outlines the state's decisions on §401 certification for discharges of dredged or fill material to various waters of the state under NWPs. A set of special conditions and limitations apply to all NWPs for the state's wetlands:

- Temporary or permanent impacts to Category Three wetlands are prohibited;
- Temporary or permanent impacts to Category One and Two wetlands for any single and complete project are limited to a maximum total of one-half acre (except for NWP#21 - Surface Coal Mining and NWP#27 – Stream and Wetland Restoration Activities); and
- Wetland mitigation shall adhere to the requirements set forth in OEPA's Wetland Water Quality Standards (in the event that suitable mitigation cannot be located on-site or within the watershed, mitigation may be located outside of the watershed if there are significant ecological reasons to do so).<sup>27</sup>

A set of general conditions and limitations specifically for streams are also outlined in the letter. These concern such aspects as impact size limitations, exclusions for specially designated streams, stream reconstruction provisions, off-site and on-site stream or buffer improvements and mitigative measures, and compensatory mitigation for linear projects. Finally, a set of conditions that apply generally to both wetlands and streams include: calculation of length of impacts; combination of NWPs; permittee responsibilities for other local, state, and federal

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<sup>22</sup> Bournique, *supra* note 14.

<sup>23</sup> *Id.*

<sup>24</sup> Mack, *supra* note 2.

<sup>25</sup> Bournique, *supra* note 14.

<sup>26</sup> *Id.*

<sup>27</sup> Letter from Christopher Jones, Director, Ohio Env'tl. Prot. Agency, to Chief of Engineers, U.S. Army Corps of Engineers Headquarters (May 22, 2002) (*available at* [http://www.epa.state.oh.us/dsw/401/2002cer1\\_05222002.pdf](http://www.epa.state.oh.us/dsw/401/2002cer1_05222002.pdf)).

regulations and permits; requirements for the development of stormwater ponds; and a lengthy list of best management practices.<sup>28</sup> The letter also lists conditions specific to activities authorized under some individual NWP's.<sup>29</sup>

Ohio's action on the 2007 NWP's could not be reviewed within the reporting period.

### ***Mitigation***

Ohio state regulations specifically address wetland mitigation, outlining provisions for each of the three categories of wetlands defined in the Isolated Wetlands Law and the state's water quality standards. Regulations define compensatory mitigation as:

the final step in the alternatives analysis ...[meaning] restoration, creation, enhancement, or, in exceptional circumstances, preservation of wetlands expressly for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization have been achieved.<sup>30</sup>

An "alternatives analysis," outlined separately for each of the three wetland categories, is meant to occur in conjunction with applications for §401 water quality certifications, permits to install, or Ohio National Pollutant Discharge Elimination System (NPDES) permits. Each of the three categories' alternative analyses list rules for avoidance and minimization of impacts to wetlands and compensatory mitigation as a final alternative. Compensatory mitigation rules for wetlands also include a prescribed set of mitigation ratios, replacement categories, and mitigation location requirements. The rules also require ecological monitoring of mitigation sites for a period of at least five years, along with the submission of an annual report detailing monitoring results.<sup>31</sup>

On-site and in-kind mitigation is required where its impracticability cannot be demonstrated. Off-site mitigation, if appropriate, should be located within the U.S. Army Corps of Engineers district for Category One impacted wetlands and within the immediate watershed for Category Two and Three impacted wetlands. Specific provisions also exist for linear projects (e.g., highways) in wetlands that allow mitigation to occur outside the watershed of the impacted wetland where deemed acceptable by the OEPA.<sup>32</sup>

Mitigation ratios vary according to the category of wetland, whether the mitigation is on- or off-site, and whether the impacted wetland is forested or non-forested. See Table One below.<sup>33</sup>

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<sup>28</sup> *Id.*

<sup>29</sup> The following individual NWP's have conditions to specific activities that they authorize: NWP#3 - Maintenance; NWP#4 - Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities; NWP#5 - Scientific Measurement Devices; NWP#7 - Outfall Structures and Maintenance; NWP#12 - Utility Activities; NWP#13 - Bank Stabilization; NWP#14 - Linear Transportation Projects; NWP#16 - Return Water From Upland Contained Disposal Areas; NWP#18 - Minor Discharges; NWP#19 - Minor Dredging; NWP#21 - Surface Coal Mining Activities; NWP#23 - Approved Categorical Exclusions; NWP#27 - Stream and Wetland Restoration Activities; NWP#31 - Maintenance of Existing Flood Control Facilities; NWP#32 - Completed Enforcement Actions; NWP#33 - Temporary Construction, Access, and Dewatering; NWP#36 - Boat Ramps; NWP#40 - Agricultural Activities; NWP#41 - Reshaping Existing Drainage Ditches; NWP#42 - Recreational Facilities; NWP#43 - Stormwater Management Facilities; and NWP#44 - Mining Activities.

<sup>30</sup> OHIO ADMIN. CODE § 3745-1-50.

<sup>31</sup> *Id.* § 3745-1-54.

<sup>32</sup> *Id.*

<sup>33</sup> *Id.*

<i>Wetland Category</i>	<i>On-site Mitigation Ratio</i>	<i>Off-site Mitigation Ratio</i>
<b>1</b>	1.5:1.0, non-forested and forested	1.5:1.0, non-forested and forested
<b>2</b>	1.5:1.0, non-forested; 2.0:1.0, forested	2.0:1.0, non-forested; 2.5:1.0, forested
<b>3</b>	2.0:1.0, non-forested; 2.5:1.0, forested	2.5:1.0, non-forested; 3.0:1.0, forested

Replacement categories also depend on the category of wetland being impacted. Category One and Two wetlands can be replaced by Category Two and Three wetlands. Category Three wetlands can be replaced only by Category Three wetlands.<sup>35</sup>

*Alternative mitigation options.* If restoration is not possible, alternative compensatory mitigation techniques (including banking, enhancement, and preservation) may be approved on a case-by-case basis. Enhancement, considered most favorably if enhanced wetlands are located next to the wetlands being impacted, must be accompanied by at least one acre of restored or created wetlands for each acre of impacted wetland. The rules provide a formula for determining the ratio for enhanced wetlands.<sup>36</sup>

Preservation is considered an acceptable form of mitigation only in exceptional circumstances. The wetlands to be preserved must be of very high ecological significance. In addition, other relevant state agencies must agree with the decision and the preserved wetlands must be deeded to the responsible party for management and/or enhancement in accordance with an approved plan, prior to any filling of wetlands at the project site. As with enhancement, preservation must be accompanied by at least one acre of restored or created wetlands for each acre of impacted wetland, unless the OEPA director deems otherwise.<sup>37</sup>

Banking is also mentioned as a mitigation option in the rules, where deemed acceptable by the OEPA.<sup>38</sup> In addition, Ohio laws outline mitigation banking requirements specific to isolated wetlands. Both Level One review and Level Two review (see *Wetland-related statutes and regulations* section above for levels of review for isolated wetlands) list banking as an equivalent option to on-site and off-site mitigation. Level Three review sets a preferred order for mitigation alternatives, with practicable on-site mitigation being the most preferable, followed by off-site mitigation within the same watershed, mitigation banking if the impacted wetland falls within the bank's service area, and finally, mitigation in a location outside the impacted isolated wetland's

<sup>34</sup> *Id.*

<sup>35</sup> *Id.*

<sup>36</sup> OHIO ADMIN. CODE § 3745-1-54 states that the following equation must be used to calculate the required number of wetlands to be enhanced:  $E = [(LMR - 1) \times 2] \times N$ ; where E = minimum number of acres of wetlands required to be enhanced, LMR = left side of mitigation ratio (see *Table One - OAC Mitigation Ratios* above), and N = number of acres of impacted wetlands. For example, if off-site mitigation is to be conducted for two acres of Category Three forested wetlands, a proposed mitigation plan could be two acres of restored or created wetlands and eight acres of enhanced wetlands.

<sup>37</sup> OHIO ADMIN. CODE § 3745-1-54 states that the following equation must be used to calculate the required number of wetlands to be preserved:  $P = [(LMR - 1) \times 2] \times N$ ; where P = minimum number of acres of wetlands required to be preserved, and all other variables are the same as those listed in the enhancement equation above. Thus, if on-site mitigation is to be conducted for five acres of Category Two forested wetlands, a proposed mitigation plan could be five acres of restored or created wetlands and ten acres of preserved wetlands.

<sup>38</sup> OHIO REV. CODE ANN. § 6111.027.

watershed, if substantially greater ecological benefit can be demonstrated. Provisions for isolated wetlands also establish a list of approved mitigation banking sites, as well as a set of mitigation banking ratios (all other mitigation is subject to rule 3745-1-54 of the OAC). See Table Two below.<sup>39</sup>

<b>Table Two. Isolated Wetland Mitigation Bank Ratios.<sup>40</sup></b>	
<b><i>Wetland Category</i></b>	<b><i>Mitigation Bank Ratio</i></b>
<b>1</b>	2.0:1.0, non-forested and forested
<b>2</b>	2.0:1.0, non-forested 2.5:1.0, forested
<b>3</b>	<i>See rule 3745-1-54 of the OAC, or Table One above.</i>

Led by the U.S. Army Corps of Engineers, both the OEPA and the ODNR participate on the area's Mitigation Banking Review Team (MBRT), along with the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and Natural Resources Conservation Service.<sup>41</sup> The three Corps districts with jurisdiction in the state are the Buffalo District, the Pittsburgh District, and the Huntington District. There are currently no mitigation banks in the Huntington District, but some are being processed.<sup>42</sup> The MBRT follows the *Federal Guidance for the Establishment, Use and Operation of Mitigation Banks* (effective December 1995) in overseeing the siting, monitoring, and approval of mitigation sites in the state.<sup>43</sup>

Stream mitigation provisions are not yet specified in Ohio, although a stream mitigation protocol document has been developed. In February 2006, the protocol went through the first round of review. Public work groups were organized in November 2006 to go through the received comments, a process that will end in November 2007. Provisions that get adopted into the rules will depend, in part, on the outcome from the public involvement process.<sup>44</sup>

*Ohio Wetland Restoration and Mitigation Strategy Blueprint.* The OEPA and ODNR, working together under a USEPA Wetlands Program Development Grant, released the Ohio Wetland Restoration and Mitigation Strategy Blueprint in 1999.<sup>45</sup> The Blueprint was developed in response to the desire of OEPA and ODNR to develop a state restoration and mitigation policy and identify high quality wetlands. The Blueprint also builds off a set of restoration and mitigation policy recommendations and goals set earlier in the 1990s by the Ohio Wetlands Task Force (OWTF), a group comprising representatives from business, agricultural, environmental, and conservation groups. The Blueprint lays out both a model for identification of high priority areas for protection, restoration, and mitigation and a strategy for implementation of a state wetland mitigation banking policy and state restoration goals.<sup>46</sup>

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<sup>39</sup> *Id.* § 6777.02.

<sup>40</sup> *Id.*

<sup>41</sup> Ohio Department of Natural Resources, *Wetland Mitigation Banking*, at <http://www.dnr.state.oh.us/dnap/wetlands/banking.htm> (last visited Sept. 13, 2007).

<sup>42</sup> Personal communication with Randy Bournique, Ohio Env'tl. Prot. Agency (May 22, 2007).

<sup>43</sup> Bournique, *supra* note 14.

<sup>44</sup> Personal communication with Randy Bournique, Ohio Env'tl. Prot. Agency (Jul. 31, 2007).

<sup>45</sup> Ohio Department of Natural Resources & Ohio Environmental Protection Agency, *supra* note 1.

<sup>46</sup> Bournique, *supra* note 14.



### ***Compliance and enforcement***

Three enforcement options are available for the OEPA Enforcement and Compliance Program when DSW staff are unable to resolve continuing compliance issues. First, the director may issue a Director's Final Finding Order (DFFO), which may be a unilateral or negotiated administrative order. Second, a DFFO may be issued with a civil penalty of up to \$10,000 per day. This action usually involves some negotiation with the responsible party. Third, judicial enforcement can be sought by OEPA attorneys or by the Attorney General's office.<sup>47</sup> It is rare for OEPA to seek enforcement through the mechanisms described above – approximately five wetland-related DFFOs and only one wetland-related injunction/civil penalty were issued in 2002. More typically, when DSW staff receive a complaint, they work with the Corps, both to make sure the action is not already permitted under a NWP and to give the Corps the opportunity to take the lead on enforcement action if it is deemed necessary. Typically, the Corps issues an after-the-fact permit.<sup>48</sup> DSW has recently begun to post all enforcement actions on their website, including summaries of the listed actions and associated documents.<sup>49</sup>

In 2000, USEPA initiated a general review of OEPA enforcement programs, including solid waste, hazardous waste, surface water, and air. The final report, released in February 2003, concluded that "Ohio maintains an active environmental enforcement presence" and acknowledged various program improvements, including reduced time taken to resolve cases, collection of significant penalties, and improved tracking of environmental improvements.<sup>50</sup> In the state's *2003 Enforcement Report*, emphasis is placed on continuous improvement and building on the effectiveness and efficiency acknowledged in the USEPA's report. The 2003 report highlights improvements and goals for all OEPA programs. Goals specific to the DSW only briefly touch on illegal fills of wetlands as a regulatory area with possible need of enforcement action. The report cites 3,200 linear feet of stream mitigation achieved through enforcement action in 2003, but quotes no number for the illegal fill of wetlands in the same year.<sup>51</sup> (Note: the previous year's enforcement report cites that 39.06 acres of illegally filled wetlands were addressed through enforcement action in 2002).<sup>52</sup>

### ***Tracking systems***

DSW is in the process of developing a tracking system called the Surface Water Information Management System (SWIMS). While the first phase of SWIMS development focuses on NPDES and Permit-to-Install applications and activities,<sup>53</sup> the system is being designed to handle most water permits, including §401 certifications and isolated wetlands permits. SWIMS tracks applicant information, acreage, impacts, mitigation action, fees, annual reporting (applicants are

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<sup>47</sup> *Id.*

<sup>48</sup> *Id.*

<sup>49</sup> See Ohio Environmental Protection Agency, Division of Surface Water, *Enforcement and Compliance Program*, at <http://www.epa.state.oh.us/dsw/enforcement/enf.html> (last visited Sept. 13, 2007).

<sup>50</sup> See OHIO ENVIRONMENTAL PROTECTION AGENCY, 2002 ENFORCEMENT REPORT (2003), available at <http://www.epa.state.oh.us/pic/facts/2002enf.pdf>.

<sup>51</sup> See OHIO ENVIRONMENTAL PROTECTION AGENCY, 2003 ENFORCEMENT REPORT (2004), available at <http://www.epa.state.oh.us/pic/facts/2003enf.pdf>.

<sup>52</sup> See Ohio Environmental Protection Agency, *supra* note 50.

<sup>53</sup> See Ohio Environmental Protection Agency, Division of Surface Water, *SWIMS: Surface Water Information Management System*, at <http://www.epa.state.oh.us/dsw/swims/swims.html> (last visited Sept. 13, 2007).

required to submit an annual report every year for five years),<sup>54</sup> permit compliance, effluent quality data as reported by permit holders during the last 20 years, and preparation of enforcement actions. All information will be geographically referenced, incorporating geographic information system (GIS) data. In the future, SWIMS will also include ambient chemical and biological databases. The system can be continually updated by the regulated community. Using a type of software called SWIMware, available both online and on CD-ROM, permittees will be able to electronically submit data and reports to the system.<sup>55</sup>

### III. Water Quality Standards

On May 1, 1998, the State of Ohio adopted both wetland water quality standards and a wetland anti-degradation rule.<sup>56</sup> Water quality standards have two distinct parts: designated uses and numerical or chemical criteria designed to protect and measure attainment of the uses.<sup>57</sup> All wetlands, as defined by state rules, have been assigned a “wetland designated use.”<sup>58</sup> Wetland-specific water quality standards give narrative criteria with chemical defaults. State rules outline criteria that are applicable to all waters of the state, as well as additional narrative criteria applicable specifically to wetlands, which include:

- Protection of the hydrology necessary to support biological and physical characteristics in order to prevent adverse impacts to water currents, erosion or sediment patterns; natural water temperature variations; chemical, nutrient and dissolved oxygen regimes of the wetland; movement of aquatic fauna; pH; and water levels or elevations (including those resulting from ground water recharge and discharge);
- Protection of the water quality necessary to support existing habitats and populations of wetland flora and fauna in order to prevent adverse impacts on food supplies for fish and wildlife; reproductive and nursery areas; and dispersal corridors;
- Protection of the water quality necessary to prevent conditions conducive to the establishment or proliferation of nuisance organisms; and
- Prevention of conditions that might have an adverse impact on wetland-dependent recreational opportunities.<sup>59</sup>

It should be noted that state regulations outline numeric chemical criteria for wastewater discharges to wetlands separately. The criteria, associated with the “warmwater aquatic life habitat use” designation, apply at “end of pipe.” These regulations also include an option to

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<sup>54</sup> Bournique, *supra* note 14.

<sup>55</sup> Ohio Environmental Protection Agency, *supra* note 53.

<sup>56</sup> MICK MICACCHION, AMPHIBIAN INDEX OF BIOTIC INTEGRITY (AMPHIBI) FOR WETLANDS (Ohio Env'tl Prot. Agency ed., 2002), *available at* [http://www.epa.state.oh.us/dsw/wetlands/2002\\_Amphibian\\_report\\_final\\_rev.pdf](http://www.epa.state.oh.us/dsw/wetlands/2002_Amphibian_report_final_rev.pdf).

<sup>57</sup> OHIO ADMIN. CODE § 3745-1-07.

<sup>58</sup> *Id.* § 3745-1-53.

<sup>59</sup> *Id.* § 3745-1-51.

request alternative criteria, which the director may approve if the alternative criteria are not deemed to be injurious to either the wetland's designated use or its assigned category.<sup>60</sup>

Ohio adopted antidegradation rules specific to wetlands on July 1, 2003.<sup>61</sup> The provisions require that the wetland designated use be maintained and protected in order to prevent loss of wetland acreage or functions. Antidegradation provisions seek to protect a suite of wetland functions, including: groundwater exchange, nutrient removal and/or transformation, sediment and/or contaminant retention, water storage, sediment stabilization, shoreline stabilization, maintenance of biodiversity, recreation, education and research, and habitat for threatened or endangered species. Other considerations include the regional significance of the wetland and other indirect environmental impacts. Wetlands are regulated according to category, which are determined using ORAM (again, Category One wetlands have a lower ecological significance and Category Three wetlands have a higher ecological significance). Review, authorization, and mitigation provisions (described previously) are also outlined in the regulations.<sup>62</sup>

#### **IV. Monitoring and Assessment**

##### ***Monitoring and assessment for wetlands***

A variety of assessment methodologies are used in wetlands management and protection in Ohio. The Ohio Rapid Assessment Method (ORAM) was developed specifically for regulatory purposes in the late 1990s, with the final version released in February 2001 (Version 5.0).<sup>63</sup> The state's water quality standards require permit applicants to use "an appropriate wetland evaluation methodology acceptable to the director" to determine a wetland's category.<sup>64</sup> ORAM provides "a relatively fast and easy method for determining the appropriate category of a particular wetland" for both §401 certification and isolated wetland permits.<sup>65</sup> OEPA staff are primarily responsible for the development of the methodology, though there has been a great deal of interaction between federal agencies and OEPA, as well as liberal borrowing and sharing with other states.

Bioassessment methodologies are also being utilized more and more by OEPA.<sup>66</sup> Ohio began working on the development of biocriteria with the intention of developing Indices of Biotic Integrity (IBI) for the state; evaluating ecological integrity of wetlands using vascular plants, macroinvertebrate organisms, and amphibians; and re-calibrating the ORAM using the IBIs.<sup>67</sup>

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<sup>60</sup> *Id.* § 3745-1-52.

<sup>61</sup> *Id.* § 3745-1-05. Ohio antidegradation provisions describe the conditions under which water quality may be lowered in surface waters, including wetlands, while maintaining and protecting existing beneficial uses. If existing water quality is better than that required to protect existing beneficial uses, it must still be maintained unless important economic or social development is at stake. Even so, existing beneficial uses must still be protected. *See* Ohio Environmental Protection Agency, Division of Surface Water, *A Guide to Ohio EPA's Antidegradation Rule - effective July 1, 2003*, at [http://www.epa.state.oh.us/dsw/rules/antidegguide\\_2003.html](http://www.epa.state.oh.us/dsw/rules/antidegguide_2003.html) (last visited Sept.12, 2007).

<sup>62</sup> OHIO ADMIN. CODE § 3745-1-54.

<sup>63</sup> OHIO ENVIRONMENTAL PROTECTION AGENCY, *OHIO RAPID ASSESSMENT METHOD FOR WETLANDS V.5.0: USER'S MANUAL AND SCORING FORMS (2001)*, available at <http://www.epa.state.oh.us/dsw/401/oram50um.pdf>.

<sup>64</sup> OHIO ADMIN. CODE § 3745-1-54(B)(2)(a).

<sup>65</sup> Ohio Environmental Protection Agency, *supra* note 63.

<sup>66</sup> Bourmique, *supra* note 14.

<sup>67</sup> Ohio Environmental Protection Agency, *supra* note 56.

With support from USEPA Wetland Program Development Grants, DSW has developed various bioassessment methodologies for use in Ohio and has published reports on Vegetation Indices of Biotic Integrity, the Amphibian Index of Biotic Integrity, and the Floristic Quality Assessment Index.<sup>68</sup> These bioassessment methodologies are more intensive and have been used for various non-regulatory purposes.<sup>69</sup> As a part of Ohio's Integrated Wetland Assessment Program,<sup>70</sup> DSW has developed standardized mitigation wetland monitoring and performance standards using the IBIs as well as other measures of mitigation wetland functions and values.<sup>71</sup> Although there is currently no formal monitoring program in place for wetlands, DSW has been conducting a wetland-based ambient monitoring pilot project in the Cuyahoga region.<sup>72</sup> The project is in its final stages and report is being generated.<sup>73</sup>

### ***Monitoring and assessment for streams***

The state has not formally adopted an assessment methodology for streams, although a variety of standardized procedures are used.<sup>74</sup> Ohio has developed a system using ambient biological monitoring of fish and macroinvertebrate assemblages to assess stream quality. Methodologies include the Invertebrate Community Index, IBI, and the Modified Index of Well Being. OEPA has also developed a rapid qualitative measure of a stream's ability to support levels of aquatic life – the Qualitative Habitat Evaluation Index.<sup>75</sup> For the most part, procedures are rigorous and data intensive, relying on chemical water quality parameters and biological criteria. Methodologies have been developed for regulatory purposes – for water quality standards and development of 303(d) lists and 305(b) reports, as well as for support of the state's NPDES program.<sup>76</sup>

OEPA's monitoring program conducts statewide biological and water quality monitoring using a five-year basin approach. The state is divided into 25 hydrologic units, which are assigned to five basins with respect to each of the five OEPA districts. In a given year, monitoring is conducted within five of the hydrologic units and within each of the five OEPA districts. The monitoring cycle for each unit lasts five years. The approach is structured to allow environmental feedback to inform water quality management adjustments and to monitor the status and trends of the state's waters.<sup>77</sup> At present, the monitoring and assessment program hopes to coordinate with watershed and §401/isolated wetland program efforts, though in an informal capacity.<sup>78</sup>

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<sup>68</sup> See Ohio Environmental Protection Agency, *Wetland Bioassessment Program*, at <http://www.epa.gov/owow/wetlands/bawwg/case/oh1.html> (last visited Sept. 12, 2007).

<sup>69</sup> Personal communication with John Mack, Ohio Env'tl. Prot. Agency (Nov. 24, 2003).

<sup>70</sup> To review the various reports of the Integrated Wetland Assessment Program, which was funded by federal wetland development grants See Ohio Environmental Protection Agency, *Wetlands Ecology Group Reports*, at [http://www.epa.state.oh.us/dsw/wetlands/WetlandEcologySection\\_reports.html](http://www.epa.state.oh.us/dsw/wetlands/WetlandEcologySection_reports.html) (last visited Sept. 13, 2007).

<sup>71</sup> Mack, *supra* note 2.

<sup>72</sup> Mack, *supra* note 69.

<sup>73</sup> Bournique, *supra* note 44.

<sup>74</sup> Bournique, *supra* note 14.

<sup>75</sup> Ohio Environmental Protection Agency, *supra* note 56.

<sup>76</sup> Personal communication with Jeff DeShon, Ohio Env'tl. Prot. Agency (Nov. 24, 2003).

<sup>77</sup> Ohio Environmental Protection Agency, *Statewide Biological and Water Quality Monitoring & Assessment*, at <http://www.epa.state.oh.us/dsw/bioassess/ohstrat.html> (last visited Sept. 12, 2007).

<sup>78</sup> DeShon, *supra* note 76.

Monitoring is conducted through biosurveys, an interdisciplinary monitoring effort coordinated on a waterbody or watershed scale. Biological, chemical, and physical monitoring and assessments are conducted at 300-400 sampling sites across the state in any given year. The biosurveys are intended to determine: the extent to which use designations assigned in the Ohio water quality standards are either attained or not attained; whether or not use designations assigned to a given water body are appropriate and attainable; and whether or not any changes in key ambient biological, chemical, or physical indicators have taken place over time, particularly before and after the implementation of point source pollution controls or best management practices. Once the five-year cycle of monitoring is complete, data is analyzed and reported and, finally, a Technical Support Document is produced. The data is eventually incorporated into a variety of documents, including Water Quality Permit Support Documents, Water Quality Management Plans, Nonpoint Source Assessments, Water Resource Inventories (305[b] report), and lists of impaired or threatened waters (303[d] list). Information gathered through this approach forms a comprehensive database that is used to address state and program issues. Periodically, a technical bulletin providing in-depth analysis of particular issues is produced by OEPA staff.<sup>79</sup> The program is supported primarily by federal funding through §319, as well as §106 grants and other project-specific grants.<sup>80</sup>

### ***Citizen monitoring programs***

In March 2003, the state passed the Credible Data Bill.<sup>81</sup> The legislation establishes requirements for credible data, including training, experience, and data collection plans for qualified data collectors. Under the bill, a computerized database will be established for all credible data submitted to the OEPA.<sup>82</sup> To date, the state coordinates with volunteer monitoring programs mostly in a non-regulatory capacity, although this may change as the Credible Data Bill is enacted by the OEPA Director.<sup>83</sup>

ODNR's Division of Natural Areas and Preserves has worked with volunteers on the Ohio Stream Quality Monitoring Project since 1983. The project uses biological testing to compile information on 20 of the state's scenic rivers and streams. More than 5,000 trained volunteers record collected data by filling out assessment forms that contribute to a cumulative index for each sampling location. Data is compiled into a yearly report that is used to assess the status and trends of different stream stations. An environmental education opportunity, volunteers come from scouting groups and school classes, as well as conservation groups, fishing and hunting clubs, and senior citizens.<sup>84</sup>

### ***Watershed programs***

Each basin in Ohio has been assigned a Total Maximum Daily Load (TMDL) team, which includes a §401 certification coordinator. This person brings wetland information and permitting issues to bear as the team addresses water quality goals and issues in the basin. The DSW also

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<sup>79</sup> See Ohio Environmental Protection Agency, *supra* note 77.

<sup>80</sup> DeShon, *supra* note 76.

<sup>81</sup> H.B. 43, 125<sup>th</sup> Gen. Assem. (Ohio 2003) available at [http://www.legislature.state.oh.us/bills.cfm?ID=125\\_HB\\_43](http://www.legislature.state.oh.us/bills.cfm?ID=125_HB_43).

<sup>82</sup> See Ohio Legislative Service Commission, *Fiscal Note & Local Impact Statement*, at <http://www.lbo.state.oh.us/fiscal/fiscalnotes/125ga/HB0043IN.HTM> (last visited Sept. 13, 2007).

<sup>83</sup> DeShon, *supra* note 76.

<sup>84</sup> See Ohio Department of Natural Resources, *Ohio Stream Quality Monitoring Project*, at <http://www.ohiodnr.com/dnap/monitor/default.htm> (last visited Sept. 13, 2007).

allocates §319 funding to watershed coordinators external to OEPA that foster public involvement and education in watershed issues.<sup>85</sup>

There are 38 locally led, state-funded watershed groups in Ohio, covering about 43 percent of the state's area. Local program coordinators, usually from the communities they lead, develop comprehensive restoration plans (working alongside TMDL rules). The plans cover a suite of issues, including wetlands. Plans seek to preserve existing wetlands and implement best management practices for agriculture, mitigation, and other restoration-related activities.

These groups do not have regulatory authority. Instead they seek to implement mitigation or restoration projects that align with the watershed plans. While a few projects are proactive initiatives, most wetland-related activities are a reaction to ODNR or OEPA requests, which come from a stockpile of needs. In an effort to align resources and strategically place wetlands in the landscape, OEPA is presently in the early stages of developing a database of mitigation and restoration projects in order to allow local groups to review project possibilities.<sup>86</sup>

## **V. Restoration and Partnerships**

In 1994, the OWTF report on Ohio wetlands programs recommended the adoption of a statewide goal of restoring 400,000 acres of wetlands by 2010.<sup>87</sup> While both the ODNR and the OEPA conduct activities related to the restoration of wetlands, neither is pursuing this goal directly.

OEPA primarily manages the regulatory aspects of wetlands management and protection, focusing on mitigation or encouraging constructed wetlands for stormwater/wastewater treatment. Funding to OEPA from the USEPA's Clean Water State Revolving Fund loan program has supported both point and nonpoint source projects through the Water Resource Restoration Sponsor Program (WRRSP). The WRRSP offers communities very low interest rates on loans for wastewater treatment plant improvements if the communities also sponsor projects that restore or protect water resources.<sup>88</sup>

Most state restoration activities are through the ODNR Division of Wildlife, which handles habitat, wildlife, and endangered species, among other wetland-related issues.<sup>89</sup> The ODNR Division of Wildlife has worked on wetland restoration intensively since the 1980s and has its own division-wide goal of restoring 5,000 acres over the ten year period between 2001 and 2010. The goal, part of the Division's strategic plan, is habitat-focused and specific to wetlands, including restoration on public and private grounds. Three main focus areas—Killbuck, Western

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<sup>85</sup> Bournique, *supra* note 14.

<sup>86</sup> Personal communication with John Kessler, Ohio Env'tl. Prot. Agency (Nov. 11, 2003).

<sup>87</sup> See Ohio Department of Natural Resources- Division of Water, *Funding Sources for Lowhead Dam Removal*, at [http://www.dnr.state.oh.us/water/dsafety/lowhead\\_dams/funding\\_sources/tabid/3360/Default.aspx](http://www.dnr.state.oh.us/water/dsafety/lowhead_dams/funding_sources/tabid/3360/Default.aspx) (last visited Sept. 14, 2007).

<sup>88</sup> See U.S. Environmental Protection Agency, *EPA Clean Water State Revolving Fund, Activity Update: Ohio's Restoration Sponsor Program Integrates Point Source and Nonpoint Source Projects*, at [http://www.epa.gov/owmitnet/cwfinance/cwsrf/ohio\\_wrrsp.pdf](http://www.epa.gov/owmitnet/cwfinance/cwsrf/ohio_wrrsp.pdf) (last visited Sept. 14, 2007).

<sup>89</sup> Bournique, *supra* note 14.

Lake Erie Marshes, and Mosquito Creek Grand River—were selected based on historic conditions, present status, and where success would most likely occur.<sup>90</sup>

Most ODNR restoration occurs in conjunction with: U.S. Department of Agriculture (USDA) programs (private lands); North American Waterfowl Management Plan (NAWMP); state and provincial agencies; private landowners; corporations; and nongovernmental organizations. In Ohio, NAWMP activities are funded by a variety of sources: grants through the North American Wetlands Conservation Act; some state funds; fees collected from the required purchase of a wetland conservation stamp by waterfowl hunters; as well as general federal aid programs for wildlife restoration.<sup>91</sup> Over 18,000 wetland acres have been protected, restored, or enhanced through this program in Ohio, including the return of retired cropland to native grassland and the protection of coastal wetlands, floodplains, and streams.<sup>92</sup>

ODNR also has a very active private lands program. With many opportunities available to private landowners, DOW has seven private land biologists on staff to assist landowners in choosing the appropriate federal or state program.<sup>93</sup> Furthermore, ODNR funds Ducks Unlimited to provide additional technical assistance in northwestern Ohio. ODNR's private land biologists work closely with USDA staff to provide technical assistance to landowners and to prioritize lands for restoration.<sup>94</sup> ODNR's cost share program supplements multiple USDA programs in order to minimize landowners' expenses, including the Wetlands Reserve Program, the Wildlife Habitat Incentive Program, and the Conservation Reserve Program.<sup>95</sup> Under the private lands cost share program, the state can cover the costs of as much as 100 percent of the restoration – up to \$1,500 per acre if the restored wetlands are maintained for at least 20 years or \$750 per acre if the restored wetlands are maintained for at least ten years.<sup>96</sup> These restorations are targeted in counties located in the wetland focus areas identified in the DOW Strategic Plan. Seventy-five thousand dollars are budgeted annually for the program (\$55,000 from the sale of the state waterfowl stamp and \$20,000 from Ducks Unlimited).<sup>97</sup>

In contrast to the state's stringent monitoring requirements for mitigated wetlands, monitoring of restored wetlands is generally not conducted in Ohio unless state, federal, or university funding is provided to do so. Plans are being developed to monitor wildlife response to restored wetland habitat on the Division of Wildlife's Wetland Focus Areas.<sup>98</sup>

## **VI. Education and Outreach**

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<sup>90</sup> Barry, *supra* note 19.

<sup>91</sup> *Id.*

<sup>92</sup> See U.S. Fish and Wildlife Service, *North American Waterfowl Management Program—Ohio*, at <http://midwest.fws.gov/NAWMP/ohio.html> (last visited Sept. 13, 2007).

<sup>93</sup> Personal communication with Luke Miller, Ohio Dep't of Natural Resources (Nov. 24, 2003).

<sup>94</sup> *Id.*

<sup>95</sup> Barry, *supra* note 19.

<sup>96</sup> Miller, *supra* note 93.

<sup>97</sup> Miller, *supra* note 20.

<sup>98</sup> Barry, *supra* note 19.

OEPA prepared a statewide strategic plan for general environmental education and outreach called *Environmental Education 2000*. The plan covered all environmental education and outreach issues in the state, from siting nature centers to obtaining funding. The plan targets three audiences: students and teachers (kindergarten through college), the general public, and the regulated community (including public and private sector entities).<sup>99</sup> The plan was revised in 2005 and builds upon the 2000 plan.<sup>100</sup> The Ohio Environmental Education Fund comes from a combination of collected penalties for air and water violations and general state funds. The Fund provides money for various projects that do not target wetland-related issues specifically, but involve workshops for students and the general public on various issues (e.g., invasive species, riparian corridors, etc.) and publication of relevant fact sheets and brochures.<sup>101</sup> Additionally, wetland-related grants are given annually.<sup>102</sup>

OEPA's §401 program provides technical assistance and participates in conferences on regulatory issues, but addresses these needs as they arise, rather than through a strategic plan or program. Most of these efforts are directed toward governmental regulators on some level (local municipalities, soil and water conservation districts, other state agencies, etc.), but environmental organizations and other interested individuals are often involved as well.<sup>103</sup>

ODNR also participates in some wetlands-related education and outreach activities through the state's Aquatic Project WILD and Project WET (Water Education for Teachers) programs. Though not specifically wetlands-focused, these programs offers interdisciplinary environmental training for educators to teach K-12 students, including lessons on aquatic habitat and wildlife, conservation, and land use impacts. A state-compiled booklet, *Ohio's WILD Wetlands*, offers numerous activities for teachers to conduct both in and outside the classroom.<sup>104</sup>

## VII. Coordination with State and Federal Agencies

Intra-state coordination on wetlands management and protection occurs to some extent in Ohio. Memoranda of understanding (MOU) demonstrate this fact; one MOU between the OEPA and the ODNR concerns coastal zone §401 certification, while a MOU between the ODOT and OEPA deals with permit review for ODOT projects. Coordination primarily occurs between OEPA and ODNR as the two foremost agencies working in wetlands issues in the state.<sup>105</sup>

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<sup>99</sup> Personal communication with Carolyn Watkins, Ohio Env'tl. Prot. Agency (July 22, 2004).

<sup>100</sup> See ENVIRONMENTAL EDUCATION COUNCIL OF OHIO, *OHIO EE 2010: A STRATEGIC PLAN FOR ENVIRONMENTAL EDUCATION IN OHIO*, available at <http://www.eeco-online.org/about/EECOStratPlanEdited.pdf> (last visited Sept. 13, 2007).

<sup>101</sup> Personal communication with Carolyn Watkins, Ohio Env'tl. Prot. Agency (July 22, 2004).

<sup>102</sup> Some examples of past grants include: \$50,000 for the restoration of wetlands as part of an education program; \$5,000 for the development of a CD-ROM on regional wetland ecology; \$2,300 to facilitate the study of native wetland species by high school students by construct bridge paths to wetlands; \$47,000 for the development of wetland forest and prairie ecosystem guides; \$50,000 for a series of community-level interactive educational workshops, written educational material, televised public service announcements, and activities to enhance the capacity of land trusts to conserve wetlands; \$43,000 for the development of a curriculum for high school wetlands education; \$48,000 to design a university-level class on environmental engineering for constructed wetlands.

<sup>103</sup> Bournique, *supra* note 14.

<sup>104</sup> Personal communication with Jen Dennison, Ohio Dep't of Natural Resources (June 22, 2004).

<sup>105</sup> Bournique, *supra* note 14.



The state also works often with federal agencies, meeting regularly with the Corps, USDA, and FWS staff. OEPA coordinates with Corps districts on §401/§404 issues, including individual permits and certifications on a project-by-project basis. Meetings are also held regularly to discuss general programmatic issues as well as specific projects. For example, OEPA, ODNR, and the Corps consolidated the permit application processes for coal mining operations.<sup>106</sup>

### **VIII. Acronyms and Abbreviations**

CWA – Clean Water Act

Corps – U.S. Army Corps of Engineers

DFFO – Director’s Final Finding Order

DSW – Division of Surface Water

FTE – Full-time Equivalent

FWS – U.S. Fish and Wildlife Service

GIS – Geographic Information System

IBI – Indices of Biotic Integrity

MBRT – Mitigation Banking Review Team

NAWMP – North American Waterfowl Management Plan

NPDES – National Pollutant Discharge Elimination System

NWPs – Nationwide Permits

ODNR – Ohio Department of Natural Resources

ODOT – Ohio Department of Transportation

OEPA – Ohio Environmental Protection Agency

OWTF – Ohio Wetlands Task Force

SWANCC – *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*

SWIMS – Surface Water Information Management System

TMDL – Total Daily Maximum Load

USDA – U.S. Department of Agriculture

USEPA – U.S. Environmental Protection Agency

WRRSP – Water Resource Restoration Sponsor Program

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<sup>106</sup> Personal communication with Randy Bournique, Ohio Env'tl. Prot. Agency (Aug. 2004).