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## Association of State Wetland Managers Legal Issue in Upgrading Flood Maps2 016

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# LEGAL ISSUES IN UPGRADING FLOOD MAPS TO REFLECT CLIMATE CHANGE, OTHER CHANGED CONDITIONS



*FEMA photo*

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## ISSUES ADDRESSED BY THIS PAPER

Governments will, over time, need to upgrade flood hazard maps to reflect climate change, urbanization, erosion and sedimentation and other watershed changes. Will governments face legal problems with such upgrading?<sup>1</sup> How can governments avoid legal problems?

## FEMA FLOODPLAIN MAPS, OTHER FLOODPLAIN MAPS

Floodplain maps fall into two general categories:

1. **NFIP maps.** More than 21,000 local governments have adopted floodplain regulations to qualify for the National Flood Insurance Program (NFIP) and serve, in many cases, a variety of additional community goals. Regulations typically include floodplain maps which show floodplain boundaries and elevations. Most flood maps have been prepared for flood insurance rating purposes for the NFIP. These maps have in most instances been prepared by contractors to the Federal Emergency Management Agency (FEMA), other federal agencies, states and some local governments. These are the most common maps used for planning and regulatory as well as flood insurance rating purposes. FEMA has mapped more than 100 million acres of flood hazard areas nationwide and designated some six million acres of floodways along 40,000 stream and river miles. These maps usually show the boundaries and elevations for the 100 year flood. Many maps also show the 500 year floodplain. Some of the maps show floodway boundaries and elevations.
2. **Other floodplain maps prepared for land use planning, regulation, and other purposes by a broad range of federal, state, and local agencies.** These maps are in some cases based upon more detailed flood studies than the NIP maps. Many local governments map smaller rivers and streams not shown on the NFIP maps. Some show the affects of urbanization on flooding. Some show broadened floodways and coastal high velocity zones. Some map areas subject to flooding due to levees and dams.

## LIMITATIONS OF EXISTING MAPS

Both categories of floodplain maps are subject to a variety of limitations. Many rural floodplain maps are at small scale and are characterized by relatively low degrees of accuracy. Many NFIP flood maps do not map smaller creeks and streams including areas subject to stormwater flooding. Many rural maps of both types are not based on hydrologic models. Both typically do not reflect increased runoff from urbanization although taking into account “future conditions” is increasingly common. Many do not reflect flood control structures such as levees. They do not, in many instances, delineate coastal high hazard or rural floodways. They usually do not reflect other special hazards such as ice jam flooding and flooding on alluvial fans.

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<sup>1</sup>Most local governments and states have adopted floodplain maps and regulations for the 100 year floodplain..

FEMA is presently updating and digitizing floodplain maps (Risk Map Program) with the help of states, local governments and other federal agencies. Digital floodplain maps showing coastal areas potentially impacted by climate change are also now being prepared by the National Oceanic and Atmospheric Administration and U.S. Geological Survey in cooperation with other agencies.

FEMA statutes and regulations provide criteria and procedures for preparing and amending flood insurance maps (NFIP) to be used for flood insurance purposes. For maps not used for flood insurance purposes, states and local governments may apply their own criteria and procedures. See, for example, *Ravalese v. Town of East Hartford*<sup>2</sup> (The landowner did not have a Constitutionally protected right to have his property excluded from the floodplain zone where the FEMA map excluded his property from the floodplain, but the town zoning map included his property in the floodplain.)

A landowner may challenge FEMA National Flood Insurance (NFIP) flood map elevations within 90 days of the second publication of a flood elevation determination by FEMA. However, the extent to which NFIP mapping may in some circumstances preempt state or local mapping in light of *Columbia Venture v. Dewberry*,<sup>3</sup> remains to be seen. In *Columbia* a federal court of appeals held that The National Flood Insurance Program statutes and regulations preempt state tort law suits against independent map contractors.

The FEMA statutes and regulations provide appeal and remapping procedures. See *Great Rivers Habitat Alliance v. FEMA*, 615 F.3d 985 (8<sup>th</sup> Cir. 2010) in which the court quoted FEMA statutes in observing that “(i)n order to appeal a (elevation) determination on the basis of scientific or technical accuracy, FEMA’s regulations require supporting documentation.” *Id.* At 990. The court further quoted FEMA regulations (44 CFR 67.6(b)(1)). *Id.* at 990.

If an applicant believes that the proposed base flood elevations are technically incorrect due to a mathematical or measurement error or changed physical conditions, then the specific source of the error must be identified. Supporting data must be furnished to FEMA including certifications by a registered professional engineer or licensed land surveyor, of the new data necessary for FEMA to conduct a reanalysis.

Climate change would presumably constitute “changed physical conditions”. See 44 CFR 67.6(b)(1). *Id.* at 990.

How have traditional floodplain regulatory maps and changes in such maps fared in the courts?

## **COURT CASES DEALING WITH TRADITIONAL FLOOD MAPS**

Courts have addressed the Constitutionality of existing (traditional) floodplain maps in a modest number of cases and these cases suggest what courts will do in the future with maps showing flood elevations and floodplain boundaries reflecting climate change.

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<sup>2</sup>608 F. Supp. 575 (D. Conn., 1985).

<sup>3</sup>604 F.3d 824 (4th Cir., 2010).

**Some inaccuracy in flood mapping is tolerable.** As one would expect, regulations based on maps that have no relationship to wetland or flooding conditions are susceptible to legal challenge as denying due process or as a taking of private property. See, e.g., *Sturdy Homes, Inc. v. Town of Redford* where the court held an attempt to designate an area a flood hazard zone where there was no evidence of flooding was unconstitutional.<sup>4</sup> While total inaccuracy in maps would make them susceptible to legal challenge, some inaccuracy is tolerable. For example, in *Turnpike Realty Co. v. Town of Dedham*,<sup>5</sup> the Massachusetts Supreme Court upheld the sufficiency of the Town of Dedham's floodplain zoning map, which incorrectly included two knolls of 3.2 acres and .2 acres in the floodplain. However, there was substantial evidence of flooding for other areas, including photographs and exhibits of flooding from 1954 and 1967, and testimony of an expert hydrologist. Flood levels had been reached in 1936, 1938, 1955 and 1968. The court held that although inclusion of the knolls was "inadvertent," the ordinance was valid and the owner might seek a special permit for such areas under provisions of the ordinance that allowed a landowner to demonstrate that a particular area is not subject to flooding. See also other decisions below.

See, in addition, *Andrews v. Town of Amherst*<sup>6</sup> in which a Massachusetts court held that a zoning amendment applying floodplain prone conservancy (FPC) zone restrictions to a floodplain area was valid. The court concluded that "(c)ontrolling development on land subject to flooding and maintaining adequate flood storage area are reasons rationally related to land use regulation." The court concluded that "technical problems with the topographical map do not invalidate the action of the town...." The court concluded, quoting *Dandridge v. Williams*,<sup>7</sup> and other cases, that "Legislative line drawing . . . does not violate equal protection principles simply because it is not made with mathematical nicety or because in practice it results in some inequality". The court concluded "we will not second guess the town on its judgment as to the extent of predicted flooding and the resulting need for revision of the FPC district line." *Id.*

The U.S. Supreme Court in *Dandridge*, *supra*, more broadly observed with regard to classifications: "A State does not violate the Equal Protection Clause merely because the classifications made by its laws are imperfect. If the classification has some "reasonable basis," it does not offend the Constitution." *Id.* at 485. See also *Lindsley v. Natural Carbonic Gas Co.*<sup>8</sup> "The problems of government are practical ones and may justify, if they do not require, rough accommodations — illogical, it may be, and unscientific." *Metropolis Theatre Co. v. City of Chicago.*<sup>9</sup>

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<sup>4</sup>186 N.W.2d 43 (Mich., 1971).

<sup>5</sup>284 N.E.2d 891 (Mass. 1972), cert. denied, 409 U.S. 1108 (1973).

<sup>6</sup>862 N.E.2d 65 (Mass. 2007).

<sup>7</sup>397 U.S. 471, 485 (1970).

<sup>8</sup>220 U.S. 61 (1911).

<sup>9</sup>228 U.S. 61, 69 (1911).

**Courts have provided broad support for traditional floodplain maps despite errors in such maps.** Courts have upheld mapping efforts in a variety of other situations in which there have been some errors in the maps. These cases should give confidence to governments that courts will uphold floodplain maps even if they contain some uncertainties and inaccuracies or use mapping methods different from those used by state, federal, or local agencies. For example, see *Britt v. United States*<sup>10</sup> (Court held that property owners had no claim of negligence against the U.S. for preparing and disseminating inaccurate flood maps due to “flood control” exemption in Federal Tort Claims Act.); *Baroni v. U.S.*<sup>11</sup> (Court held that FHA was not liable to purchasers of subdivision housing units for miscalculation of 50 year flood height in approving plans for a subdivision due to the federal “flood control” exemption); *State ex rel. Pitz v. City of Columbus*,<sup>12</sup> (Court held that zoning restrictions precluding property owner from building on his property based on erroneous floodway map did not constitute a taking.); *Ahern v. Fuss & O’Neill, Inc.*<sup>13</sup> (Court dismissed a Section 1983 due process claim when a town employee provided incorrect 100 year flood elevation to a developer. The flood elevation had changed because FEMA had revised its flood map because the map had erroneously listed a lower elevation due to a technical error in preparing the map.); *Stonacek v. City of Lincoln*,<sup>14</sup> (Court dismissed all claims against city for alleged failure to provide up to date information on flooding to a landowner pursuant to floodplain regulation.)

**Local governments and states can decide what floodplain map they will use.** See *In Re Schieber*<sup>15</sup> (Court sustained Floodplain Conservation District ordinance against multiple challenges. Court held that it was up to the community to decide what version of floodplain map it was to use.); See also *Ravalese v. Town of East Hartford*<sup>16</sup> (Landowner did not have a Constitutionally protected right to have his property excluded from floodplain zone where FEMA map excluded property but town zoning map included property in floodplain).

**Scientific uncertainties are tolerable in not only mapping but broader fact-finding.** See, for example, *Northwest Env’tl. Defense Ctr. v. Wood*,<sup>17</sup> in which the court held that scientific studies supported the Corps’ opinion in a wetland case, despite counter studies, and held that a reviewing agency need not eliminate all uncertainty. In *City of Newark v. Natural Resources Council*,<sup>18</sup> a New Jersey court upheld public land ownership maps based upon “analysis of color infrared photographs of the meadows.”<sup>19</sup> Responding to testimony contesting the accuracy of the maps, the court observed that “the evidence adduced indicates only a difference of opinion between...experts.”<sup>20</sup> The court concluded that where a subject is debatable the agency determination must be upheld “because a court would (otherwise) usurp the legislative body if it attempted to determine the results of the debate.”<sup>21</sup>

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<sup>10</sup>515 F. Supp. 1159 (D. Ala., 1981).

<sup>11</sup>662 F. 2d 287 (5th Cir., 1981).

<sup>12</sup> 56 Ohio App. 3d 37 (1988)

<sup>13</sup>78 Conn. App. 202 (Conn., 2003).

<sup>14</sup>782 N.W.2d 900 (Neb. 2010).

<sup>15</sup>927 A.2d 737 (Pa. Commw., 2007).

<sup>16</sup>608 F. Supp. 575 (D. Conn., 1985).

<sup>17</sup>947 F.Supp. 1371, affirmed, 97 F.3d 1460 (9<sup>th</sup> Cir., 1996).

<sup>18</sup> 414 A.2d 1304 (N.J., 1980), cert. denied, 449 U.S. 983 (1980).

<sup>19</sup>82 N.J. 535.

<sup>20</sup>Id. at 541.

<sup>21</sup>Id. at 542.

**Courts give weight to expert agencies such as EPA, NOAA, the Fish and Wildlife Service, the Army Corps of Engineers and the U.S. Geological Survey on scientific issues.** Courts attempt to respect the "separation of powers" between the legislative, executive, and judicial branches of government. This means that they generally defer to legislative or executive (administrative agency) decisions in deciding acceptable levels of risk, particularly in regulatory contexts and this makes good sense with regard to climate-related flood as well as other types of scientific risks. The U.S. Supreme Court in *Queenside Hills Realty Co. v. Saxl*<sup>22</sup> in upholding a New York law requiring the installation of sprinkler systems in non-fireproof construction for lodging houses stated that the "legislature may choose not to take the chance that human life will be lost in lodging house fires and adopt the most conservative cause which science and engineering offer. It is for the legislature to decide what regulations are needed to reduce fire hazards to a minimum."

**A floodplain regulatory agency may update mapping methods.** The Vermont Supreme Court in *In Re Wooford Packers, Inc.*<sup>23</sup> addressed some of the legal issues which arise when a regulatory agency changes the procedures and methods for mapping and regulating floodplains. The changes in this case occurred in a more traditional flooding context but climate change flooding raises similar issues. In Vermont, floodplain regulations are administered at the regional level by District Commissions and at the state level by a state Environmental Board. The plaintiff in this case proposed to build a thirty-unit retirement village on a 12.5 acre parcel in Bennington and applied to the District for a permit. He was denied the permit by the District and, on appeal, by the Environmental Board for a number of reasons. These include because the proposed development was in the floodway and "in the event of a 100 year flood" the village would "result in a significant increase in peak flow adjacent to and downstream from the project..."<sup>24</sup>

The District had historically used Federal Emergency Management Agency flood maps to determine the 100 year floodplain and floodway boundaries and elevations which did not take into account erosion. However, the District and Board had, prior to the permit application, adopted new criteria for determining floodplains and floodways which reflected erosion. The criteria had not been formally adopted as a regulatory rule by the District and Board. The landowner appealed this determination claiming, in part, that the District and Board needed to adopt changes in floodway criteria by formal legal rule. The court disagreed, and observed that "An agency is not required to adopt rules and regulations to carry out what its authorizing statute specifically directs it to do."<sup>25</sup> The court further observed that:<sup>26</sup>

While ANR's (Agency of Natural Resources) alteration of its methodology for determining floodways may have been a surprise to WPI (the landowner)—apparently the first applicant to undergo "fluvial geomorphology" analysis—we cannot conclude that it lacked the authority to do so.

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<sup>22</sup>328 U.S. 80, 83 (S.Ct., 1946).

<sup>23</sup>830 A.2d 100 (Vt. 2003).

<sup>24</sup>830 A.2d 100, 102 (Vt., 2003).

<sup>25</sup>830 A.2d 100, 105 (Vt., 2003).

<sup>26</sup>830 A.2d 100, 105 (Vt., 2003).

**Regulators may be able to require that landowners seeking a floodplain permit develop flood information.** An Idaho court in *Noble v. Kootenai County*<sup>27</sup> held that the county had validly denied subdivision approval where the landowner had not provided Base Flood Elevation for a proposed subdivision as required by local regulations.

## **PROBLEMS, ISSUES**

Despite broad support for floodplain regulations including maps, courts have found legal problems with some mapping efforts:

**Failure to base maps upon some reasonable indication of flood hazards.** Regulations based on maps that have no or limited relationship to flooding conditions are susceptible to legal challenge as denying due process. See, e.g., *Sturdy Homes, Inc. v. Town of Redford*.<sup>28</sup>

**Failure to comply with procedures required by statutes.** Landowners may be able to successfully challenge flood maps if regulatory agencies have failed to comply with legally established statutory or ordinance procedural requirements for mapping such as notice and hearing requirements. For example, in *Free State Recycling Systems Corp. v. Board of County Comm'rs for Frederick County*,<sup>29</sup> a court held that the county did not follow statutory notice and hearing procedures in adopting the zoning ordinance and, as a result, ordinance provisions were invalid. See also *Hirsch v. Maryland Dep't of Natural Resources*<sup>30</sup> in which a Maryland court held that state wetland regulations were invalid as applied to specific landowners because wetland "orders and maps" had not been filed "among the land records in every county affected" as required by statute. Instead, the maps had been placed in a file cabinet drawer in an area inaccessible to the public or to the title searchers.

In *Stingray v. Concord Township ZHB*, 260 C.D. 2008 (Pa. Commw. 6-3-2009) the court held that a township must use a 100 year FEMA flood map because the township ordinance defined floodplain areas in their floodplain ordinance to include areas covered by the "100" year flood and this was the only map to do so (there was another flood map which apparently delineated the 500 or 1000 year flood). The court remanded the case to the lower court to determine whether the latter map (500 to 1000 year flood) also delineated the 100 year flood and could then presumably be used.

**Failure to update.** In one case a court held that floodplain maps must be updated as conditions change and new information becomes available. See, for example, *A.H. Smith Sand & Gravel Co. v. Dep't of Water Resources*,<sup>31</sup> in which a Maryland court upheld a state statute that requires permits for activities in the 50-year floodplain, but held that maps defining the floodplain had been too broadly drawn. The court held that it was necessary to revise earlier maps in light of the flood experience of Tropical Storm Agnes. It may be argued that upgrading flood maps and regulatory elevations is needed to reflect "changed conditions"<sup>32</sup> as called for in zoning enabling

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<sup>27</sup>830 A.2d 100, 105 (Vt., 2003).

<sup>28</sup>186 N.W.2d 43.

<sup>29</sup>885 F. Supp. 798 (D. Md., 1994).

<sup>30</sup>416 A.2d 10 (Md. 1980).

<sup>31</sup>313 A.2d 820 (Md. 1974).

<sup>32</sup>See, e.g., *Birckhead v. Board of Co. Comm'rs*, 273 A.2d 133 (Md., 1971).

statutes. Wisconsin requires local governments to upgrade their flood maps when changed conditions occur.<sup>33</sup>

## **AVOIDING PROBLEMS WITH FLOOD MAPPING PROCEDURES AND FLOOD MAPS REFLECTING CLIMATE CHANGE AND OTHER CHANGED CONDITIONS**

Based upon existing case law, recommendations may be made for avoiding legal problems with upgrading flood maps. Governments should:

**1. Follow statutory and ordinances procedures and other requirements.** Regulatory agencies should, in amending their maps, carefully apply the statutory and administrative regulatory procedures called for in their zoning and other statutes and regulations.

**2. Incorporate best information available.** As discussed above, governmental units should have confidence that maps reflecting climate-related and other changes will be upheld even if the new maps include some inaccuracies and scientific uncertainties. However, governments should use the best scientific information available to reduce claims that climate change projections and regulations based upon such projections are speculative.

**3. Over time, develop increasingly specific and quantified flood maps reflecting climate change and other changes in floodplain hydrology and hydraulics.** State and local governments may best work with FEMA (National Flood Insurance Program) and other federal agencies such as NOAA to carry out increasingly specific flood and climate change studies to provide the factual basis for upgrading local and state flood maps, policies, and regulations.

**4. Provide procedures for updating or making more specific flood elevations, velocities erosive forces and other flood factors on a case-by-case basis.** Local and state governments can best incorporate procedures in their regulations for refining on the ground map elevations, velocities, wave heights and other flood factors where there may be uncertainties or errors. The quality of data used as the initial basis for floodplain mapping, assessment and regulation may be less important if procedures are available during administrative phases of a regulatory program to refine data as individual permit applications are received. In a wetland case, *Just v. Marinette County*,<sup>34</sup> the Wisconsin Supreme Court upheld a procedure for remedying map inaccuracies through field inspections and the application of written criteria. Relatively inaccurate U.S. Geological Survey maps had been used for wetland mapping, combined with a written definition for wetland areas: “(A)reas where groundwater is at or near the surface most the year or where any segment of plant cover is deemed an aquatic according to N.C. Fassett’s ‘Manual of Aquatic Plants’.”<sup>35</sup> A landowner who contested the regulations argued, in part, that the wetland maps were not sufficiently specific and that his land was not a wetland. The court sustained the regulations, noting that the land was clearly wetland by the written test.

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<sup>33</sup>See *City of La Cross v. DNR*, 353 N.W.2d 68, 71 (Wis., 1984). The court in this decision observed: “Wis. Admin. Code sec. NR 116.05(4) provides that municipalities must upgrade their flood plain zoning ordinances as new information, including new flood data, new hydrologic data, and improved technological information and methods, becomes available.”

<sup>34</sup>201 N.W.2d 761 (Wis. 1972).

<sup>35</sup>*Id.* at 766.

**5. Request the legislative body to endorse the maps and fact-finding upon which the maps are based.** Governments may reduce the potential for legal challenges to floodplain regulatory maps by endorsing the “policy” elements of mapping efforts such as the regulatory flood selected for regulation (e.g., 100 year flood, 500 year flood). Policy elements may be protected as “discretionary” under Federal Tort Claim Act and state tort claim acts. Courts have held, with some exceptions, once a decision has been made to undertake a hazard reduction measure the degree or level of protection afforded is a discretionary question and not, in general, subject to liability unless a particular level of protection is mandated by legislation or an agency's own guidelines. A discussion of factors determining whether a decision would be discretionary versus operational (ministerial) was provided by the Supreme Court of Hawaii in *Rothschild v. State*.<sup>36</sup> In this case, the court held that the decision to reconstruct or not reconstruct a two-span concrete bridge with the capacity to convey a 25-year storm with one which could convey a 50-year storm was a discretionary decision and therefore subject to sovereign immunity pursuant to the Hawaii State Tort Liability Act.

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<sup>36</sup>655 P.2d 877 (Haw., 1982).