

EPA-HQ-OW-2007-0282

Comments of

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These comments are provided in response to the June 8, 2007 notice entitled *EPA and Army Corps of Engineers Guidance Regarding Clean Water Act Jurisdiction after Rapanos* (72 FR 31824) as extended by 72 FR 67304 to January 21, 2008.

During the summer and fall of 2007, I was told by three regulators from different regions of the country, that their Environmental Protection Agency (EPA) counterparts had informed them that there would be no changes in jurisdiction as a result of implementing the June 2007 Guidance implementing the Rapanos/Carabell Supreme Court ruling of June 2006 (hereafter Guidance). I have recently confirmed those assessments by independently examining jurisdictional determination (JD) forms that have been posted on Corps of Engineers' (Corps) websites.

I have examined scores of forms posted after June 2007 from different regions of the country with special emphasis on those in the arid west where flow in drainageways (linear water features that have some surface, morphological connection ultimately to a TNW) typically is infrequent, of short duration and may be hundreds of miles from a navigable waterbody (TNW) – i.e., locations most likely to have no significant nexus. I have examined the cases that Corps Headquarters has determined either there is jurisdiction or that were remanded to the District because the district didn't conclude that there is jurisdiction. I have not found one drainageway that can be connected eventually to a TNW, no matter how torturous the route or distant the TNW, which was determined to be nonjurisdictional. I have found small, isolated intrastate waterbodies (e.g. MVP-2007-1497-RQM) that have been found to be TNW contrary to the assertions of the local Corps district. I have found roadside ditches that sometimes are regulated because they are relatively permanent waterbodies (RPW) (e.g. POA 2006-1282-4) as well as a few roadside ditches that weren't regulated which will remain unidentified less EPA and/or Corps Headquarters seeks to change the determination.

The obvious conclusion is that the Guidance was designed to maintain the *status quo* and it has been effectively implemented to do just that. The Civaletti Opinion of 1979 established that the EPA has the final decision on geographic jurisdiction relative to the CWA, and thus, bears full responsibility for the abuse of Executive authority that the Guidance represents. It is my opinion that EPA has intentionally developed a process at great expense in both time and dollars that was intended to allow the federal government to continue regulating intrastate waters in contradiction to the Constitution and Section 101(b) of the CWA. That expense not only relates to the one-year spent by unknown

numbers of federal employees preparing the 100+ pages of Guidance and the time spent since by all the regulators filling out the new form, but the loss in revenues and interest paid on properties during the year while most Corps districts did not issue JDs. This is especially reprehensible considering the current conditions of the housing market. It may have been worth the expense and lost productivity, if there was a reasonable expectation that JDs would be more in line with both the provisions of the Constitution and the CWA, but that has not been the case. Instead, the Guidance provides a mechanism for the Executive Branch to continue its past practices and surreptitiously thumb its nose at the Supreme Court.

Supreme Court Justice Kennedy undoubtedly reached his opinion in the Rapanos/Carabell Case as a matter of conscience and his personal interpretation of the law and the Constitution. In memorializing his poorly explained concept of “significant nexus,” he has unwittingly become the dupe of the EPA. Undoubtedly, he trusted that the Executive Branch would implement his concept of significant nexus in an honest and forthright manner, which would result in some but not all, waters not immediately adjacent to legitimate TNW waters (i.e., Section 10 of the Rivers and Harbors Act of 1899, hereafter Section 10 waters and RHA) being determined to be under federal regulation and the remainder not. This has not been the case, and I believe that the result was intentional.

There are fundamental flaws in the Guidance that ensure that virtually all drainageways will be determined to be jurisdictional, among which are the following:

1. The creative redefining of TNW beyond those Section 10 waters that the Corps has long-regulated in direct opposition to standing policy, legal opinion and court decisions.
2. Defining “relatively permanent waters” (RPW) as needing to flow for as little as three months during the year in contradiction to what was considered relatively permanent by the plurality.
3. Providing that either the fact that water does or doesn’t reach a TNW constitutes grounds for a significant nexus.
4. Ignoring the very real effect of transmission losses in determining the likelihood of effect on TNW.
5. Including ditches and other constructed conveyances in the definition of tributaries despite the fact they are defined as “point sources” in the CWA.
6. Defining “significant nexus” to include all effects that simply are more than speculative or insubstantial.

7. Using a “standard” for wetland hydrology that is not consistent with the 1987 Manual, has not been subjected to Administrative Procedures Act (APA) review and is not supported by actual verifiable data.
8. Determining that if the function of the aggregate of wetlands comprises a significant nexus then each wetland does in direct opposition to the concept of functional assessment of wetlands.
9. The use of functions totally unrelated to the TNW (e.g., use by non aquatic species of mammals and birds) as grounds for significant nexus.

“Fixing” the Guidance cannot be accomplished with tweaking words and defining more new terms. Instead, any meaningful implementation of the concept of “limit” that a majority of the Supreme Court justices favored in the Rapanos/Carabell decision must begin with a fundamental attitude adjustment on the part of EPA and the Corps. The word “significant” must be given significance – not lip service. Just as the word “navigable” can’t be ignored in a reading of the CWA, the word significant cannot be all-inclusive. When everything is “significant,” then nothing is significant. Furthermore, significance does not need to be determined on a case-by-case basis in all cases. The sciences of hydrology and hydraulics provide ample mechanisms for determining that large expanses of real estate do not have a significant relationship to TNW when those waters are many miles away – especially in arid climes. It is time that Section 101(b) of the CWA be taken seriously – both by the federal government and the state governments. The states have both the authority and more importantly the responsibility to make wise decisions on the use of their land and water resources. The federal government has usurped the authority of the states and needs to be brought back into a proper, Constitutionally appropriate role in the overall role of land and water management. The federal government should not be making the *de facto* land-use decisions that have become part and parcel of the Section 404 program.

Traditional Navigable Water

The concept of navigable waters or as is now in vogue “traditional navigable waters” (TNW) has been a standard for many decades – at least until the 5 June 2007 release of the myriad of documents purporting to provide guidance on the interpretation of the Rapanos/Carabell Supreme Court cases. The creative interpretation of TNW that has since transpired, in the words of James Robertson, United States District Judge, “essentially reflects a degree of official recalcitrance that is unworthy of the Corps” (National Association of Home Builders, *et al.*, v. U. S. Army Corps of Engineers, *et al.*, Civil Action No. 01-0274). Personally, I would not lay the charge in the National Homebuilders case or the Guidance solely on the Corps but assign equal if not greater credit for the recalcitrance to the EPA. The scramble to find TNWs where there haven’t been any since the concept originated is but one of numerous activities that have been designed to ensure that the net effect of the Rapanos decision is *status quo*.

Congress intended that the term “navigable waters” as used in the RHA be carried to

the full extent of the commerce provisions of the Constitution as evidenced by the language in Section 9 of the RHA:

That it shall not be lawful to construct or commence the construction of any bridge, dam, dike, or causeway over or in any port, roadstead, haven, harbor, canal, navigable river, or other navigable water of the United States until the consent of Congress to the building of such structures shall have been obtained and until the plans for the same shall have been submitted to and approved by the Chief of Engineers and by the Secretary of Army: Provided, That such structures may be built under authority of the legislature of a State across rivers and other waterways the navigable portions of which lie wholly within the limits of a single State, provided the location and plans thereof are submitted to and approved by the Chief of Engineers and by the Secretary of Army before construction is commenced: And provided further, That when plans for any bridge or other structure have been approved by the Chief of Engineers and by the Secretary of Army; it shall not be lawful to deviate from such plans either before or after completion of the structure unless the modification of said plans has previously been submitted to and received the approval of the Chief of Engineers and of the Secretary of Army. **The approval required by this section of the location and plans or any modification of plans of any bridge or causeway does not apply to any bridge or causeway over waters that are not subject to the ebb and flow of the tide and that are not used and are not susceptible to use in their natural condition or by reasonable improvements as a means to transport interstate or foreign commerce.** [Emphasis added]

In the ultimate sentence of Section 9 of the RHA, Congress acknowledged the limits of its authority to supercede the rights of the states upstream of the limits — not of navigable waters, per se — but upstream of the point where transport of interstate or foreign commerce can occur. Since in the beginning of Section 9, Congress is specifying actions in navigable waters and at the end says that those actions do not apply where there is no opportunity for interstate or foreign commerce, they mean the term “navigable waters” to extend to the limit of the Commerce Clause of the Constitution and acknowledge that waterways extend beyond the limits of the federal authority under the Constitution. Since Section 10 follows Section 9, it is reasonable to assume that Congress intended that “navigable waters” in Section 10 be construed also as carrying to the limits of the Commerce Clause under the Constitution.

It is interesting to note that Section 10 of the Rivers and Harbors Act of 1899 uses the phrases “waters of the U.S.” and “other water of the U.S.:

That the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the **waters of the United States** is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or **other water of the United States**, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same. [Emphasis added]

Navigable waters are not ANY effect on interstate or foreign commerce, but must be tied to actual transportation for interstate or foreign commerce. In 1946, the Corps regulations stated the following concerning navigation:

§ 209.260 Navigable waters of the United States. (a) In the administration of the laws enacted by Congress for the protection and preservation of the navigable waters of the United States, the War Department is frequently called upon to make determinations as to the navigability of waterways. It should be understood that such determinations merely represent the views of the Department since the jurisdiction of the United States can be conclusively determined only through judicial proceedings. As information, definitions as to what constitutes a navigable water of the United States based on decisions of the Supreme Court are as follows:

Those rivers must be regarded as public navigable rivers in law, which are navigable in fact. And they are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water. And they constitute navigable waters of the United States within the meaning of the acts of Congress; in contra-distinction from the navigable waters of the States, when they form in their ordinary condition by themselves, or by uniting with other waters, a continued highway over which commerce is or may be carried on with other states or foreign countries in the customary modes in which such commerce is conducted by water. *The Daniel Ball*, 10 Wall, 557.

(b) The capability of use by the public, for purposes of transportation and commerce affords the true criterion of the navigability of a river, rather than the extent and manner of that use. If it be capable in its natural state of being used for purposes of commerce, no matter in what mode the commerce may be conducted, it is navigable in fact, and becomes in law a public river or highway. As Chief Justice Shaw said (21 Pickering 344), it is not every small creek in which a fishing skiff or gunning canoe can be made to float at high water which is deemed navigable, but, in order to give it the character of a navigable stream it must be generally and commonly useful to some purpose of trade or agriculture. *The Montello*, 20 Wall. 430.

(c) Navigability, in the sense of the law, is not destroyed because the course is interrupted by occasional natural obstructions or portages; nor need the navigation be open at all seasons of the year, or at all stages of water. A river having actual navigable capacity in its natural state and capable of carrying commerce among the States is within the power of Congress to preserve for purposes of future transportation even though it be not at present used for such commerce, and be incapable of such use according to present methods, either by reason of changed conditions or because of artificial obstructions. It is not difficult to believe that many streams require only the exertion of federal control to make them again important avenues of commerce among the States. If they are to be abandoned, it is for Congress, not the courts, so to declare. *Economy Light and Power Co. v. U. S.*, 256 U. S. 113.

(d) It is obvious that the uses to which streams may be put vary from the carriage of ocean liners to the floating out of logs; that the density of traffic varies equally widely from the busy harbors of the seacoast to the sparsely settled regions of the Western mountain. The tests as to navigability must take these variations into consideration. To appraise the evidence of navigability on the natural condition only of the waterway is erroneous. Its availability for navigation must also be considered. "Natural and ordinary" condition refers to volume of water, the gradients and the regularity of flow. A waterway, otherwise suitable for navigation, is not barred from that classification merely because artificial aids must make the highway suitable for use before commercial navigation may be undertaken. There are obvious limits to such improvements as affecting navigability. These limits are necessarily a matter of degree. There must be a balance between cost and need at a time when the improvement would be useful. Nor is it necessary that the improvements should be actually completed or even authorized. The power of Congress over commerce is not to be hampered because of the necessity for reasonable improvements to make an interstate waterway available for traffic. Improvements that may be entirely reasonable in a thickly populated, highly developed, industrial region may have been entirely too costly for the same region in the days of the pioneers. The changes in engineering practices or the coming of new industries with varying classes of freight may affect the type of the improvement. Although navigability to fix ownership of the river bed or

riparian rights is determined, as of the formation of the Union in the original states or the admission to statehood of those formed later, navigability, for the purpose of the regulation of commerce, may later arise. U. S. v. Appalachian Electric Power Co., 311 U. S. 377. [Emphasis added]

The indication is that Congress has extended the limits of jurisdiction under the RHA of 1899 to the maximum limits allowed under the Commerce Clause. Furthermore, to constitute a TNW, the water bodies must form a continuous path for transport of water-borne commerce from one state to another or to a foreign land.

In 1972, Congress amended the Federal Water Pollution Control Act (FWPCA) to include Section 404:

Sec. 404. (a) The Secretary of the Army, acting through the Chief of Engineers, may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites.

(b) Subject to subsection (c) of this section, each such disposal site shall be specified for each such permit by the Secretary of the Army (1) through the application of guidelines developed by the Administrator, in conjunction with the Secretary of the Army, which guidelines shall be based upon criteria comparable to the criteria applicable to the territorial seas, the contiguous zone, and the ocean under section 403(c), and (2) in any case where such guidelines under clause (1) alone would prohibit the specification of a site, through the application additionally of the economic impact of the site on navigation and anchorage.

(c) The Administrator is authorized to prohibit the specification (including the withdrawal of specification) of any defined area, as a disposal site, and he is authorized to deny or restrict the use of any defined area for specification (including the withdrawal of specification) as a disposal site, whenever he determines, after notice and opportunity for public hearings, that the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. Before making such determination, the Administrator shall consult with the Secretary of the Army. The Administrator shall set forth in writing and make public his findings and his reasons for making any determination under this subsection.

In Section 502 of the FWPCA, a number of terms are defined including:

(6) The term 'pollutant' means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. This term does not mean (A) 'sewage from vessels' within the meaning of section 312 of this Act; or (B) water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil or gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the wells located, and if such State determines that such injection or disposal will not result in the degradation of ground or surface water resources.

(7) The term 'navigable waters' means the waters of the United States, including the territorial seas.

(14) The term 'point source' means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

On September 9, 1972, the Corps altered § 209.260 to language very similar to that which is set forth at 33 CFR 329 today:

Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events, which impede or destroy navigable capacity.

It is interesting to note that as of December 31, 1948, the Corps did not specifically identify waterways that “have been used in the past” as navigable. Section 329 continues:

Section 329.5 General scope of determination

The several factors which must be examined when making a determination whether a waterbody is a navigable water of the United States are discussed in detail below. Generally, the following conditions must be satisfied:

- (a) Past, present, or potential presence of interstate or foreign commerce;
- (b) Physical capabilities for use by commerce as in paragraph (a) of this section; and
- (c) Defined geographic limits of the waterbody.

Section 329.6 - Interstate or foreign commerce

- (a) Nature of commerce: type, means, and extent of use. The types of commercial use of a waterway are extremely varied and will depend on the character of the region, its products, and the difficulties or dangers of navigation. It is the waterbody’s capability of use by the public for purposes of transportation of commerce which is the determinative factor, and not the time, extent or manner of that use. As discussed in Section 329.9 of this Part, it is sufficient to establish the potential for commercial use at any past, present, or future time. Thus, sufficient commerce may be shown by historical use of canoes, bateaux, or other frontier craft, as long as that type of boat was common or well-suited to the place and period. Similarly, the particular items of commerce may vary widely, depending again on the region and period. The goods involved might be grain, furs, or other commerce of the time. Logs are a common example; transportation of logs has been a substantial and well-recognized commercial use of many navigable waters of the United States. Note, however, that the mere presence of floating logs will not of itself make the river “navigable”; the logs must have been related to a commercial venture. Similarly, the presence of recreational craft may indicate that a waterbody is capable of bearing some forms of commerce, either presently, in the future, or at a past point in time.
- (b) Nature of commerce: interstate and intrastate. Interstate commerce may of course be existent on an intrastate voyage, which occurs only between places within the same state. It is only necessary that goods may be brought from, or eventually be destined to go to, another state. (For purposes of this regulation, the term “interstate commerce” hereinafter includes “foreign commerce” as well.)

Section 329.7 - Intrastate or interstate nature of waterway

A waterbody may be entirely within a state, yet still be capable of carrying interstate commerce. This is especially clear when it physically connects with a generally acknowledged avenue of interstate commerce, such as the ocean or one of the Great Lakes, and is yet wholly within one state. Nor is it necessary that there be a physically navigable connection across a state boundary. Where a waterbody extends through one or more states, but substantial portions, which are capable of bearing interstate commerce, are located in only one of the states, the entirety of the waterway up to the head (upper limit) of navigation is subject to Federal jurisdiction.

Section 329.8 - Improved or natural conditions of the waterbody

Determinations are not limited to the natural or original condition of the waterbody. Navigability

may also be found where artificial aids have been or may be used to make the waterbody suitable for use in navigation.

(a) Existing improvements: artificial waterbodies.

1. An artificial channel may often constitute a navigable water of the United States, even though it has been privately developed and maintained, or passes through private property. The test is generally as developed above, that is, whether the waterbody is capable of use to transport interstate commerce. Canals which connect two navigable waters of the United States and which are used for commerce clearly fall within the test, and themselves become navigable. A canal open to navigable waters of the United States on only one end is itself navigable where it in fact supports interstate commerce. A canal or other artificial waterbody that is subject to ebb and flow of the tide is also a navigable water of the United States.

2. The artificial waterbody may be a major portion of a river or harbor area or merely a minor backwash, slip, or turning area (see paragraph 329.12(b) of this Part).

3. Private ownership of the lands underlying the waterbody, or of the lands through which it runs, does not preclude a finding of navigability. Ownership does become a controlling factor if a privately constructed and operated canal is not used to transport interstate commerce nor used by the public; it is then not considered to be a navigable water of the United States. However, a private waterbody, even though not itself navigable, may so affect the navigable capacity of nearby waters as to nevertheless be subject to certain regulatory authorities.

(b) Non-existing improvements, past or potential. A waterbody may also be considered navigable depending on the feasibility of use to transport interstate commerce after the construction of whatever "reasonable" improvements may potentially be made. The improvement need not exist, be planned, nor even authorized; it is enough that potentially they could be made. What is a "reasonable" improvement is always a matter of degree; there must be a balance between cost and need at a time when the improvement would be (or would have been) useful. Thus, if an improvement were "reasonable" at a time of past use, the water was therefore navigable in law from that time forward. The changes in engineering practices or the coming of new industries with varying classes of freight may affect the type of the improvement; those which may be entirely reasonable in a thickly populated, highly developed industrial region may have been entirely too costly for the same region in the days of the pioneers. The determination of reasonable improvement is often similar to the cost analyses presently made in Corps of Engineers studies.

Section 329.9 - Time at which commerce exists or determination is made

- 1) Past use. A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in paragraph 329.8(b) of this Part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions. Nor does absence of use because of changed economic conditions affect the legal character of the waterbody. Once having attained the character of "navigable in law," the Federal authority remains in existence, and cannot be abandoned by administrative officers or court action. Nor is mere inattention or ambiguous action by Congress an abandonment of Federal control. However, express statutory declarations by Congress that described portions of a waterbody are non-navigable, or have been abandoned, are binding upon the Department of the Army. Each statute must be carefully examined, since Congress often reserves the power to amend the Act, or assigns special duties of supervision and control to the Secretary of the Army or Chief of Engineers.
- 2) Future or potential use. Navigability may also be found in a waterbody's susceptibility for use in its ordinary condition or by reasonable improvement to transport interstate commerce. This may be either in its natural or improved condition, and may thus be existent although there has

been no actual use to date. Non-use in the past therefore does not prevent recognition of the potential for future use.

Section 329.10 - Existence of obstructions

A stream may be navigable despite the existence of falls, rapids, sand bars, bridges, portages, shifting currents, or similar obstructions. Thus, a waterway in its original condition might have had substantial obstructions which were overcome by frontier boats and/or portages, and nevertheless be a “channel” of commerce, even though boats had to be removed from the water in some stretches, or logs be brought around an obstruction by means of artificial chutes. However, the question is ultimately a matter of degree, and **it must be recognized that there is some point beyond which navigability could not be established** [emphasis added].

This point coincides with the extent of federal authority under the Commerce Clause. Section 329 continues:

Section 329.11 - Geographic and jurisdictional limits of rivers and lakes

3) Jurisdiction over entire bed. Federal regulatory jurisdiction, and powers of improvement for navigation, extend laterally to the entire water surface and bed of a navigable waterbody, which includes all the land and waters below the ordinary high water mark. **Jurisdiction thus extends to the edge (as determined above) of all such waterbodies, even though portions of the waterbody may be extremely shallow, or obstructed by shoals, vegetation or other barriers. Marshlands and similar areas are thus considered navigable in law, but only so far as the area is subject to inundation by the ordinary high waters. [Added after September 9, 1972]**

4) The “ordinary high water mark” on non-tidal rivers ~~must be determined by the ordinary flows of the river; neither peak nor flood stages can be included, nor the lowest stage of the flow. Physical markings on the land may be used in determining the mark only where, due to variations of flow, there is no absolute ascertainable level, and where more precise information is not available~~ **(deleted after September 9, 1972)] is the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. [Added after September 9, 1972]**

2. Ownership of a river or lake bed or of the lands between high and low water marks will vary according to state law; however, private ownership of the underlying lands has no bearing on the existence or extent of the dominant Federal jurisdiction over a navigable waterbody.

(c) Upper limit of navigability. **The character of a river will, at some point along its length, change from navigable to non-navigable.** Very often that point will be at a major fall or rapids, or other place where there is a marked decrease in the navigable capacity of the river. The upper limit will therefore often be the same point traditionally recognized as the head of navigation, but may, under some of the tests described above, be at some point yet farther upstream [Emphasis added].

On 8 November 1972, MG J. W. Morris sent a memo to COE field offices directing them to “initiate continuing programs for review of the waterbodies within their geographical area of responsibility to insure that the navigable status of each waterbody is consistent” (ER 1165-2-302, *Water Resource policies and Authorities - Definitions of Navigable Waters of the United States*, dated 11 September 1972). The Chief of

Engineers makes final determination of navigability.

On May 10, 1973, the Corps proposed two definitions of the term “navigable waters” which provided interim guidance to all COE installations until final regulations were promulgated:

1) The term “navigable waters of the United State” means those waters of the United States which are presently, or have been in the past, or may be in the future susceptible for use for the purpose of interstate or foreign commerce. See 33 CFR 209-260 (ER 1165-2-302) (37 FR 18289, Sept 9, 1972, and correction on 37 FR 18911, Sept. 16, 1972) for more complete definition of this term.

(2) The term “navigable waters” as defined in the Federal Water Pollution Control Act (Public Law 92-500, 86 Stat. 816), means the waters of the United States, including the territorial seas.

On April 3, 1974, the COE published final regulations after review of comments received on the May 10, 1973 proposal. In the Preamble to the final regulation, the following statements were made:

Section 209.120(d)(1). Several comments and questions were received concerning the different definitions, which were assigned to the terms “navigable waters of the United States” and “navigable waters”. In this regard, it is noted that the Corps regulatory authority under the River and Harbors Act of 1899 (33 U.S.C. 401 et seq.) speaks in terms of “navigable waters of the United States”. This term has received the benefit of over 100 years of judicial definition and interpretation, which has largely been based on the constitutional extent to which the authority of the United States can extend over the nation’s waterways. Recognizing that the extent of Federal authority over the nation’s waterways has been an evolutionary one and that recent judicial decisions have provided additional guidance and direction as to the scope and extent of this jurisdiction, the Corps recently undertook an extensive review of all of the judicial decisions in this area, and substantially revised and refined its administrative definition of this term to more accurately reflect and incorporate this judicial guidance. This revised definition, which was published in the Federal Register on September 9, 1972 (37 FR 18289) and has been subsequently included in the Code of Federal Regulations (33 CFR 209.260), asserts regulatory authority over many, heretofore, unregulated waterways, as well as establishing the geographical limits of this jurisdiction.

Section 404 of the FWPCA uses the term “navigable waters” which is later defined in the Act as “the waters of the United States.” The Conference Report, in discussing this term, advises that this term is to be given the “broadest possible Constitutional interpretation unencumbered by agency determinations which have been made or may be made for administrative purposes.” **We feel that the guidance in interpreting the meaning of this term, which has been offered by this Conference Report — to give it the broadest possible Constitutional interpretation — is the same as the basic premise from which the aforementioned judicial precedents have evolved. The extent of Federal regulatory jurisdiction must be limited to that which is Constitutionally permissible, and in this regard, we feel that we must adopt an administrative definition of this term, which is soundly based on this premise and the judicial precedents, which have reinforced it. Accordingly, we feel that in the administration of this regulatory program both terms should be treated synonymously [Emphasis added].**

In the final regulation (April 3, 1974), one definition of Navigable waters appears and reads:

(1) The term “navigable waters of the United States” and “navigable waters” as used herein mean those waters of the United States which are subject to the ebb and flow of the tide, and/or are presently, or have been in the past, or may be in the future susceptible for use for purposes of

interstate or foreign commerce (See 33 CFR 209.260 for a more complete definition of these terms)

In support of and as a means of further clarification, the COE simultaneously (April 3, 1974) released a *Legal Review of Corps Regulatory Permit Laws*, which originated in the Office of Counsel at Corps Headquarters. Excerpts from that document that bear on the subject at hand are presented below:

PART II [Page 13 - 16]

JUDICIAL INTERPRETATIONS AND STATUTORY MODIFICATIONS OF CORPS REGULATORY PROGRAMS - THE EVOLUTION OF THE PUBLIC INTEREST REVIEW

I. Extent of Corps Regulatory Jurisdiction.

Courts have, by the evolution of judicial decisions, interpreted and refined the legal definition of “navigable waters of the United States.” This interpretation has primarily focused on the commerce clause of the Constitution. In 1871, the Supreme Court held in The Steamer Daniel Ball v. United States, 77 U.S. (10Wall.) 557 (1871) as follows:

Those rivers must be regarded as public navigable rivers in law which are navigable in fact. And they are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water. And they constitute navigable waters of the United States within the meaning of the Acts of Congress, in contradistinction from the navigable waters of the States, when they form in their ordinary condition by themselves, or by uniting with other waters, a continued highway over which commerce is or may be carried on with other States or foreign counties in the customary modes in which such commerce is conducted by water.

The Supreme Court clearly identified what was necessary to constitute navigable waters — “they are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water.” Furthermore, the Supreme Court fully recognized that there was a difference between “navigable waters of the United States” as used in Acts of Congress and navigable waters of the state. That distinction becomes meaningless, when federal jurisdiction is extended to the furthest intermittent and ephemeral tributary well removed from a truly navigable waterbody. The clarification continues:

Since this decision, Courts have used this basic definition as a basis from which they have examined individual factual situations in reaching conclusions concerning the navigable status of individual waterways, and have made significant refinements, clarifications, and additions thereto. Thus, in Economy Light & Power Co. v. United States, 256 U.S. 113 (1921), the Supreme Court held that a waterway maintains its status as a navigable water of the United States “even though it be not at present used for such commerce, and be incapable of such use according to present methods, either by reason of changed conditions or because of artificial obstructions.” And, in United States v. Appalachian Electric Power Co., 311 U.S. 377 (1944) the Supreme Court, noting that it is proper to consider the feasibility of interstate use after reasonable improvements in determining the navigable status of a waterway, held: “A waterway, otherwise suitable for navigation, is not barred from that classification merely because artificial aids must make the highway suitable for use before commercial navigation may be undertaken.

In administering its regulatory programs, the Corps of Engineers makes navigability determinations of individual waterbodies to initially establish which fall within the purview of the Corps' regulatory jurisdiction. These determinations, which are legal in nature, involve the application of factual data, historical facts, existing conditions, and engineering surveys to the hundreds of legal precedents established over the years which have gradually defined and refined this definition.

The Corps, which until recently has pursued a limited regulatory role over the nation's waterways, has utilized the basic navigability definitions set forth in the aforementioned Supreme Court decisions in making these determinations. This limited definition became increasingly restrictive in its application, however. Increasing difficulties were experienced by Corps field offices in applying this generalized definition to waterbodies where the Corps had theretofore never exercised regulatory jurisdiction, and where past, present or future interstate commerce could not be readily established in order to substantiate navigability determinations.

Recognizing the limitations of this published definition, the General Counsel's office of the Corps undertook a thorough examination of all case law involving the navigable status of the nation's waterways, extracted therefrom a detailed and refined definition of the term, "navigable waters of the United States." This definition, which was reduced to a regulation (ER 1165-2-302), is published in Part 209.260 of Title 33 of the Code of Federal Regulations. It begins with the aforementioned definition, but then expands upon it with detailed guidance on various factors such as the nature of the commerce involved (e.g. the type, means, and extent of its use), the nature of the waterway involved (e.g. whether interstate or intrastate, natural or artificial and obstructions navigable capacity) and the time at which the interstate commerce exists or existed (e.g. past, present or future).

In addition, unlike its predecessor, the new, refined definition not only provides guidance concerning the navigable capacity of individual waterbodies used for purposes of interstate commerce, but also discusses the extent of Federal regulatory jurisdiction. For instance, it indicates that Federal regulatory jurisdiction "... extends laterally to the entire water surface and bed of a navigable waterbody, which includes all the land and waters below the ordinary high water mark."

As further expressed in the regulation, Corps regulatory authority is not only limited to inland waters used as instruments for interstate commerce. The regulation also states that Corps regulatory jurisdiction extends to the entire surface and bed of all waterbodies subject to tidal action. This latter assertion of regulatory authority is a significant addition to the heretofore published Corps definitions of "navigable waters of the United States" in that it encompasses many of the nation's wetlands. Therefore, by this regulation, Corps regulatory authority has been asserted up to the mean high water mark of these wetlands. Since, as will be noted in more detail later, Section 10 and 404 require Corps authorization for the dredging and filling of navigable waters, and Section 10 also requires a Corps permit for any excavation, alteration or modification of navigable waters, the recognition that these waters constitute navigable waters of the United States has enabled Sects. 10 & 404 to be utilized as valuable tools for the control of massive developments in these wetlands. And, the position that waterbodies subject to tidal action constitute navigable waters of the United States has been consistently and increasingly recognized in recent years. United States v. Underwood, 344 F. Supp. 486, 491 (M.D. Fla. 1972), United States v. Lewis, 5 ERC 1198 (S.D. GA., 1973), United States v. Moretti, 478 F. 2d 418, 3 ELR 20414 (5th Cir. 1973), Rose v. Askew Civil No. 73-17 (N.D. Fla., 1973), United States v. Stoeco Homes, Inc., F.S., 3 ELR 20722 (D.C. N.J. 1973).

Navigable waters of the United States, as further expressed in this regulation, also include the territorial seas of the United States (generally, all ocean and coastal waters within a zone of three geographic (nautical) miles seaward of the coastline which are measured from the line on the shore reached by the ordinary low tide). In addition, the regulatory authority of the Secretary of the Army under Section 10 was extended to the Outer Continental Shelf by Section 4(f) of the Outer Continental shelf Lands Act of 1953 (67 Stat. 463; 43 USC 1333(f)).

Although the final administrative determination as to whether a waterbody constitutes a navigable

water of the United States rests with the Chief of Engineers, provision is made in the new regulation for the District Engineers to initially undertake the development of the engineering data and surveys and historical documentation necessary to support such a determination. This accumulated information and data is compiled in a report, which, after review and comment by the District Counsel, is forwarded to the Chief of Engineers with appropriate recommendations as to whether there is sufficient basis to justify a formal determination that the waterbody constitutes a navigable water of the United States. Formal determinations are made following a legal review and concurrence therewith of the materials set forth in this report. To assist in the preparation of this report and the initial legal analysis of the materials discussed therein, the General Counsel's office has prepared an Attorney's Supplement to this navigable waters regulation which has been distributed to all field Division and District Counsel offices.

II. Interpretations of Section 10:

A. The Earlier, limited Navigational Review:

Until only recently, the Corps of Engineers has administered the Rivers and Harbors Act of 1899 with primary or exclusive emphasis on how the proposed structure, dredging operation, landfill, or other alteration of the navigable water would affect navigation. Public notices, which announce the filing of applications for permits to fill, dredge or construct works in navigable waters, defined the Corps' interest as being confined to issues of navigation, and requested comments public only on such issues.

This position was not only supported by the aforementioned legislative history of the 1899 Act, but also by court decisions and an Attorney General opinion. In 1909, the Corps of Engineers requested the Attorney General to indicate whether it should grant permission to an applicant to erect a dolphin off the coast of Santa Barbara, California. The Attorney General ruled that the Corps should not consider the incidental injury to the bathing beach, or impairment of the bathing facilities in the area, or any other similar reason not related to the navigable capacity of the waters or their use in interstate commerce in making its decision. 27 Op. Atty. Gen. 285. Similarly, in Miami Beach Jockey Club, Inc. v. Dern 86 F. 2d 135 (D.C. Cir. 1936) the Court held that the applicant for a permit under Section 10 was entitled to a decision based "exclusively on evidence directed to the question whether in light of present day conditions with relation to commerce and navigation, the project will obstruct the from the navigable capacity of the waterway."

Part II

(b) Extent of Corps Regulatory Jurisdiction. The Corps regulatory authority under the River and Harbor Act of 1899 is based on whether the activity to be performed is to be placed in or will affect a "navigable water of the United States." Section 404 of the FWPCA uses the term "navigable waters" which is later defined in the Act as "the waters of the United States." The conference report to the FWPCA advised that the term "navigable waters" was to be given the "broadest possible constitutional interpretation unencumbered by agency determinations which have been made or may be made for administrative purposes." The new regulation has taken the position that the term "navigable waters of the United States" as used in the 1899 Act and "navigable waters" as used in Section 404 should be treated synonymously, and that both terms should be defined by the Corps' administrative definition of "navigable waters of the United States" as prescribed in ER 1165-2-302 (33 CFR 209.260). Since the Corps regulation on "navigable waters of the United States" is based on judicial interpretations of the constitutional extent to which the authority of the United States can extend over the Nation's waterways, it is felt that the position taken in the permit regulation will be responsive to the guidance in the aforementioned conference report. [Page 24]

Thus, the COE was convinced in 1974 that the extent of federal jurisdiction consistent with the Commerce Clause of the Constitution was encompassed by the limits of authority under Section 10 of the RHA. Since the Commerce Clause limitation applies equally to any federal statute, the COE Counsel concluded that jurisdictional limits under

both statutes were identical.

In the final regulation (April 3, 1974), the COE adopted the definition of wetlands proposed on May 10, 1973. The Preamble discusses the definition as follows:

Section 209.120(g)(3). Numerous comments were received which interpreted this section on wetlands as an expansion of jurisdiction beyond those waters regarded as navigable waters of the United States. In response to these comments, it should be noted that this section prescribes the policy to be followed in evaluating proposed activities in or affecting those wetlands, which are regarded as navigable waters of the United States. At the suggestion of the Environmental Defense Fund, the Soil Conservation Service has been included with those Federal agencies which the District Engineer may consult in assessing the cumulative effect of a proposed activity on wetlands since that Agency's watershed projects often involve activities in wetlands. [Preamble 74]

The final promulgated definition at § 209.120 read as follows:

(3) Effect on wetlands. (i) Wetlands are those land and water areas subject to regular inundation by tidal, riverine, or lacustrine flowage. Generally included are inland and coastal shallows, marshes, mudflats estuaries swamps, and similar areas in coastal and inland navigable waters.

Clearly, those wetlands, which the COE believed were jurisdictional under federal statute where either connected or immediately adjacent to truly navigable waters. As further clarification of that fact, the COE Counsel legal review of April 3 1974 stated:

(d) Wetlands. Since most wetlands which are subject to regular inundation are also subject to the ebb and flow of the tide, they fall within the Corps regulatory jurisdiction under Section 10 of the 1899 Act and Section 404 of the FWPCA if the proposed activity will be performed below the mean high water mark (mean higher high water mark on the West Coast), and in addition, may also fall under Section 10 if the proposed activity will occur above the mean high water mark and will affect the navigable capacity of a navigable water. [Part II, p. 26]

In the majority opinion for the Supreme Court ruling in the Solid Waste Agency of Northern Cook County v. Army Corps of Engineers (SWANCC), Chief Justice Rehnquist wrote for the majority:

(a) In *United States v. Riverside Bayview Homes, Inc.*, 474 U. S. 121, this Court held that the Corps had §404(a) jurisdiction over wetlands adjacent to a navigable waterway, noting that the term "navigable" is of "limited import" and that Congress evidenced its intent to "regulate at least some waters that would not be deemed 'navigable' under [that term's] classical understanding," *id.*, at 133. But that holding was based in large measure upon Congress' unequivocal acquiescence to, and approval of, the Corps' regulations interpreting the CWA to cover wetlands adjacent to navigable waters. See *id.*, at 135-139. The Court expressed no opinion on the question of the Corps' authority to regulate wetlands not adjacent to open water, and the statute's text will not allow extension of the Corps' jurisdiction to such wetlands here.

(c) The Corps' *original* interpretation of the CWA in its 1974 regulations — which emphasized that a water body's capability of use by the public for transportation or commerce determines whether it is navigable — is inconsistent with that which it espouses here, yet respondents present no persuasive evidence that the Corps mistook Congress' intent in 1974.

Chief Justice Rehnquist makes two important points. First, the COE conclusion (which was based at least in part on interpretations of the Commerce Clause) that Section

404 of the CWA and Section 10 of the RHA have identical limits of jurisdiction (with the exception that 404 extends to adjacent wetlands), was and is the correct interpretation. Second, that the language of the CWA will not allow the COE to assert jurisdiction over wetlands that are not adjacent to open water. In using the term “open water”, I assume that the Chief Justice was referring to “open **navigable** water” as is used in the previous sentence of the opinion.

Transmission of Water Through Defined Drainageways

Connectivity and Relatively Permanent Waterbody

A morphological connection between an ephemeral stream and a TNW does not mean necessarily a significant nexus. As currently formulated, however, the Guidance has resulted in every drainageway that is somehow connected (either directly or indirectly), no matter how torturous the route, to be jurisdictional. In assessing the movement of water to a TNW, not only volume, frequency, duration and distance must be actually considered, but also transmission losses along the way and how frequently water actually can reach the TNW. The amount of transmission loss is directly proportional to the distance the water flows, yet the Guidance JD forms combines all distances exceeding 30 miles into the same category as 30 miles.

The Guidance identifies that the agencies will consider volume, duration and frequency of flow, distance to a TNW, the size of the watershed, the average annual rainfall and winter snow pack. Indeed the new JD form provides the opportunity for such information to be recorded. While some completed forms do contain the information, many do not. More importantly, there is no process given for actually factoring those data into a decision. For legitimate evaluation of these factors, thresholds or limit points must be established.

Corps regulations utilize the ordinary high water mark (OHWM) as the limit of jurisdiction in non-wetland waters and, by policy, the agency identifies the upstream limit of jurisdiction [33 CFR 328.4(c)] in Section 404 waters as that point on a stream where the OHWM is no longer “perceptible.” The COE has stated that an “ephemeral wash, arroyo, or vernal pool that does not have an OHWM is not a water of the United States, unless that area has wetlands that meet the criteria in 33 CFR part 328” (65 FR 12882, March 9, 2000). The fundamental problem, however, is what constitutes the OHWM.

The arid region of the southwest provides the most illustrative examples of the considerations that must be made to identify OHWMs. The use of any water mark (WM) to determine jurisdiction at the upstream limits of a watershed in a desert environment is problematic due to a number of factors including the low frequency and duration of storm events, the lack of vegetation and the erodible nature of the soils.

In the desert environment, channel formation typically occurs in highly erodible soils under extreme events. It, therefore, can be difficult to differentiate between erosional features created by extreme events and channels that convey water on some routine basis (i.e., flow during “ordinary” events). Flow and precipitation data provide essential

tools to differentiate channels with an ordinary high water mark from erosional features. It is particularly important to utilize local data in this analysis. Flow, precipitation and soils differ across the country and indeed across the region. Therefore, an analysis must focus on regionally available data, including gage data from each particular region. I have not found any JD forms, and I have examined scores of them, that indicate that a Corps regulator did any calculations to determine flow characteristics. The forms simply list some data and the conclusion that the waterbody is jurisdictional.

Volume

In reaching a jurisdictional determination on drainageways, the process must consider flow in the “ordinary condition” that is flow represented by the OHWM. Just as the Corps regulations do not provide authority for regulation of nonwetland landscapes laterally beyond the OHWM even for Section 10 waters, the determination of jurisdiction in remote landscapes must also be based upon ordinary flows – not infrequent, large storm flows.

While Justice Kennedy may believe that federal regulation should be afforded to of landscapes that have large, infrequent flows, the Corps has never altered the extent of its jurisdiction under either Section 10 or the CWA based upon infrequent flood occurrences. J. Kennedy uses the periodic flooding of the Los Angeles River and Bouquet Canyon Creek as examples of where regulation should occur even on often-dry watercourses. The fact is, however, that many landscapes flood and can be expected to do so at a predictable frequency.

On June 25, 2006, six day after the release of the Rapanos/Carabell Opinions, there was major flooding of Washington, D.C. In fact, the EPA Docket Center as well as the National Archives flooded. The Corps did not alter the extent of its jurisdiction because of that flood. Nor did it alter the extent of its jurisdiction to cover the areas flooded by the Susquehanna River after Agnes in 1972 nor when it flooded on January 19-20, 1996. The Corps did not extend federal jurisdiction to all the areas that flooded during the 1993 or 2001 floods on the Mississippi River. The Corps is not now including the lower Ninth Ward of New Orleans as jurisdictional even after flooding from Katrina destroyed it.

On non-tidal waterbodies, the Corps jurisdiction has always been limited laterally to the elevation reached by the ordinary high water (OHW) – that is, the ordinary high water mark (OHWM) – not the 2-year, 10-year or 100-year recurrence frequency WMs. For example, FEMA is now proposing to classify much more of Washington DC as flood-prone from the Potomac River. No one is suggesting that the Corps start regulating the streets of DC because they flood. Infrequent, large events have not and should not alter the Corps jurisdiction in these areas. Similarly, infrequent, large events should not be used as the basis for determining Corps jurisdiction over waterbodies that are not TNWs or immediately adjacent to TNWs.

Generally, the OHWM is found about 1/3 of the vertical distance between the bed and top of bank, and the volume that fills the channel to 1/3-full corresponds approximately to the MAF (Leopold 1994). Examination of the pictures in the Guidance consistently

places the OHWM approximately 1/3 of the height of the bank above the bed. The ordinary flow can be adequately approximated by a value readily computed or calculated for streams – the measurable mean annual flow (MAF). The Corps has used MAF for years as a tool in determining the level of regulatory oversight. For example, it was used to establish the headwaters initially for jurisdictional purposes and then under the now-expired Nationwide Permit (NWP) 26 and the previous version of NWP 44. At least equally important, between 1975 and 1977, the COE defined OHWM based upon 25 percent duration (40 FR 31325, July 25, 1975), which approximates the MAF (Leopold 1994). For the purposes of determining significant nexus, MAF is important because across the country there is a rough correlation between MAF and OHWM. Therefore, if the MAF derived from site-specific data falls below the practical limits of flow measurement, there is no ordinary flow and, it follows, that there similarly cannot be an OHWM or jurisdiction.

The MAF can also be compared to the velocity necessary to incise a channel in particular soils. Where the velocity represented by a MAF in a particular drainageway falls below that necessary to incise a channel in the most susceptible soils (sand), it follows that there is insufficient energy, on a regular basis, to establish an OHWM in that drainageway and that the existence of a defined channel and any WM is the result of storm events and not ordinary flow. Such drainageways are thus, more appropriately characterized as erosion features and not waters of the U.S.

Frequency of flow.

The Guidance form requires that annual precipitation amounts, both as water and depth of snow pack, be recorded. However, there is no process given for actually factoring the data into a decision for determining if there is a significant nexus or not.

Frequency of inundation or saturation is a well-established concept in wetland delineation and can be utilized as a benchmark for establishing a minimum frequency of flow in a given channel for the channel to exhibit a WM established by ordinary flow, i.e., an OHWM. For channels, frequency of flow has been discussed by Allen and Malanchuk (2001) and more recently by Riley (2005) in Regulatory Guidance Letter (RGL) 05-5 as well as the Guidance.

In the arid regions of the country, many small channels have sand deposited in them - not sand as the bed material. Many of these channels actually have a finer-grained bed and bank. Rather than being an indicator of an OHWM and significant nexus as suggested in the Guidance, the fact that these channels have sand deposited in them actually indicates that the velocity of the water had slowed to the point where the transport of sand could no longer occur. The velocity of water at the point where the sand is deposited in these small channels had to be less than 0.4 ft/sec, and since it would take a higher velocity to erode a channel in finer-grained soils, it would have been impossible for the flows depositing the sand to have incised the channels. Thus, the channel has resulted from an extraordinary event and is an erosion feature – there is no OHWM and it is not a water of the U.S.

The MAF, by definition, is derived by averaging all of the flows during the period of record. In intermittent and perennial streams, it is likely that the daily discharge will actually equal the mean annual flow for some measurable period of time (Leopold 1994). In much of the nation, it appears that it is this daily discharge for a substantial part of each year at approximately the MAF elevation that produces an identifiable OHWM on the banks of streams. Ephemeral drainageways, however, by definition flow only during and immediately following a precipitation event. This means that the channels themselves may have been formed by flashy, intense events or by some other process such as tunnel collapse, without the extended daily discharge typical of intermittent or perennial streams. Thus, the WM found on the banks of such channels generally do not represent ordinary flow.

What, then, constitutes “ordinary flow” in regions of the country where water may only flow once a year or less frequently and then only for a few hours duration? Both Corps documents and the legal opinions in a variety of court cases make it clear that peak surges resulting from storm events do not constitute “ordinary flow” - not even peaks from annual spring freshets. What best describes the concept is the level of flow that remains relatively constant for a period of time after the storm peak has passed. In humid climates, this constant flow often lasts for weeks or months. The most similar pattern in arid climates generally lasts for only hours.

Using standard stormwater analyses as indicated in the Guidance is not appropriate either. Typically, stormwater recurrence analyses are based on the peak discharge – not the ordinary flow. Maricopa County AZ can be used as an example, of conditions in the arid part of the country where a significant nexus is least likely to occur. Figure 1 is the hydrograph from one precipitation event on a wash in Maricopa County, AZ, in January 2005. In this particular hydrograph both the concentration and recessional arms of the hydrograph have a plateau. If the scale of the X-axis was weeks instead of days, then the shape of this hydrograph would be very similar to that observed from humid regions of the country. The discharge represented by the red, broken line, if based upon long term averages (instead of one event), would represent the discharge associated with the OHWM and could be converted, based upon the gage rating curve, to an elevation above the stream bed. Mathematically, over the long-term, the red, broken line would approximate the computed MAF and, thus, the ordinary flow. The elevation in this stream above the bed that this flow would reach represents the OHW. If a recognizable and reliable mark existed at this elevation, then the wash would have an OHWM. If there is no mark that corresponds to this elevation, then the wash lacks an OHWM, is an erosion feature and cannot be considered jurisdictional. From a practical standpoint, if the OHW elevation is so close to the land surface that a WM can not be reliably discerned, it is reasonable to conclude that any ordinary surface flow that might occur would be as sheetflow and that any incised channel that is present is the result of erosion from some infrequent storm event.

Thus, at a minimum, a catchment must have an incised channel, exhibit an OHWM (not simply a WM) and meet other jurisdictional criteria (such as nexus to TNW) before it contains a water of the U.S.

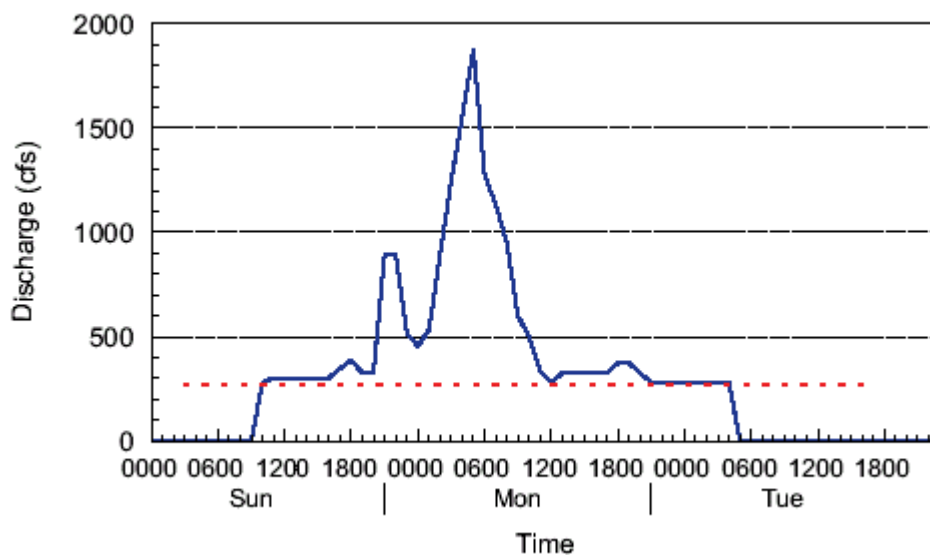


Figure 1. Hydrograph produced by a rainfall event occurring from January 2-4, 2005, at a gauged wash in Maricopa County, AZ. The red line represents the elevation of the “ordinary flow.”

The average annual frequency of any event per year for 11, gauged washes in Maricopa County is only 1.5 (Table 1). The gauged washes have considerably larger catchment sizes and, are likely to have a greater event frequency, than many drainageways in the arid west. The measure of “ordinary high flows” (which are not represented by the peak of storm events) requires that the hydrograph must be adjusted to the WM geometry of the drainageway. When such adjustment is made, the vast majority of the representative, small channels with conforming results (Table 2) flow at a recurrence frequency that is 100 years or greater and all of them have a MAF recurrence frequency of 25 years or greater. These frequencies greatly exceed the biennial frequency required to establish wetland hydrology. This confirms that the WM in many small washes results from extreme events rather than ordinary flows.

Duration of flow.

As with frequency in wetland delineations, duration of inundation and/or saturation is essential in establishing jurisdiction. Similar to wetlands, there should be a minimum duration of flow in a given channel for the channel to exhibit a WM that is established by ordinary flow – an OHWM.

Duration has been explicitly related to wetland hydrology (Environmental Laboratory 1987). However, the metric has broader applicability when assessing all landscapes. Specifically, there are many landscapes where it is readily apparent that surface water can be present for only very short duration and which, therefore, are summarily dismissed as nonwetlands. Similarly, there should be some duration threshold below which a landscape feature is not a water of the U.S.

Table 1. Frequency and duration of flow in streams on and near the Douglas Ranch. The parenthetical "Hourly" values under "Reported Period of Record" is the actual length of record in years based upon the hourly record divided by 8,760 hours per year. The "Reported" Duration is based upon days of the year.

Stream Segment	Gage ID #	Drainage Area (mile ²)	Period of Record		Frequency	Duration			
			Reported (Hourly) (years)	Period of Record (Hours)	Reported (Hourly) (events/year)	Reported (% years)	Hourly Record (%)	Hourly Record (hrs/year)	Hourly Record (hrs/event)
Jackrabbit Wash	5218	~130	4 (4.7)	41,472	2.5	1.26	0.47	41.4	16.6
Box Wash	5273	~6.0	1 (2.4)	20,774	0 (0.4)	0	0.01	0.8	0.8
Flying E Wash	7083	8.5	10 (10.5)	92,350	3.2	1.28	0.32	27.9	8.7
Hartman Wash @RT60	7063	5.6	10 (10.9)	95,346	2	0.56	0.07	5.8	2.9
Winters Wash	5118	27.8	4 (5)	43,913	2.1	0.85	0.22	19.0	9.0
Centennial Trib Aguila	5178	undetermined	3 (4.1)	35,645	0.3 (1.5)	0.01	0.79	68.5	45.7
Upper Trilby Wash	5488	~3	3 (3.8)	33,523	1	0.54	0.21	18.4	18.4
Sols Wash Trib @US93	7028	~6.5	2 (3.4)	30,221	0	0	0.00	0.0	0.0
Sols Wash @SR71	5276	~10	3 (3.6)	31,428	1	0.45	0.07	6.4	6.4
Sols Wash near Matthie	7043	121.4	9 (9.6)	84,447	1.8	0.84	0.29	25.6	15.1
Tiger Wash	5163	85.2	5 (5.8)	50,376	2.5	0.92	0.43	37.6	15.7
MEAN					1.5 (1.6)	0.61	0.26	22.9	12.7
Hassayampa River									
at Wagoner		78.7							
USGS			6			100%			
Maricopa	5352/5353		12 (12.9)	112,781	7.9	28.9	1.77	155.0	19.6
at Walnut Grove		107							
USGS			4			93.02			
at Box Canyon		417							
USGS			35			99.19			
Maricopa	5228		12 (11.9)	103,951	5.4	12.4	17.49	1528.2	283.0
at Morristown		796							
USGS			20			46.55			
Maricopa	5223		8 (8.9)	77,606	4	8.9	7.97	694.7	173.7
at I10		1450							
Maricopa	5283		9 (9.4)	82,629	1.3	0.64	0.55	48.7	37.5
at Arlington		1471							
USGS			13			97.89			
MEAN					4.65		6.95	606.7	128.5

Table 2. Summary of selected sample points from Maricopa County, AZ.

ID	Bottom Width (ft)	Water Mark				Bank Full			Side Slopes		Catchment Area (Sq. Mi.)	MAF		
		Height (ft)	Top Width (ft)	Capacity (cfs)	Recurrence Interval of plateau flows (yrs)	Height (ft)	Top Width (ft)	Capacity (cfs)	Left	Right		†Q (cfs)	Depth (ft)	Velocity (fps)
5001-2	28	0.5	31	42.0	>1000	2	40	436.4	2:1	2:1	0.16	0.006	0.003	0.09
5600-5	Braided See Channel Geometries Below										4.66	0.186	0.071	0.51
	3.5	0.25	4.5	15.8	200-500	1.3	12	240.5	4:1	2.5:1				
	1.5	1	3			2.5	16.5		0:1	20:1				
5700-1	4	0.75	6.5	9.7	200-500	1.83	10.5	53.1	2:1	2:1	0.38	0.015	0.016	0.22
5700-2	5.5	1	7.5	21.4	>1000	1	7.5	21.4	2:1	2:1	0.35	0.014	0.013	0.19
603-12	29	1	31.5	94.8	>1000	2.5	35.5	435.8	0:1-1:1	0:1-1:1	21.0	0.840	0.059	0.49
605-1	5	0.5	9	6.6	200-500	1.5	11.5	42.9	1:1	1:1	0.17	0.007	0.008	0.49
608-1	6	0.25	6.5	3.6	200-500	1	8.5	36.0	1:1	2:1	0.08	0.003	0.004	0.14
610-1	5	0.5	8	12.2	>1000	1	10	42.9	2:1	3:1	0.04	0.001	0.002	
615-1	Braided See Channel Geometries Below										0.01	0.000	0.001	0.06
	2	1	4	25.2	>1000	2	4.5	76.0	1:1	1:1				
	3	1	4			2	5		1:1	1:1				
616-1	4	0.5	5	5.8	200-500	1.5	7.5	38.4	1:1	1:1	0.23	0.009	0.011	0.22
618-1	3	0.5	8.5	6.1	10-25	1	13.5	26.1	2.5:1	8:1	0.75	0.030	0.026	0.37
619-1	6.5	1	7	88.7	>1000	1.3	9.5	142.6	2:1	2:1	0.09	0.004	0.004	0.32
702-2	3.5	0.25	4.2	2.5	>1000	0.42	5	6.2	3:1	1:1	0.01	0.000	0.002	0.09
705-1	10	0.33	12	13.8	>1000	1.3	14.5	144.2	2:1	2:1	0.15	0.006	0.003	0.18
707-1	3	1	3.5	22.5	>1000	2	5	69.8	1:1	0:1	0.02	0.001	0.002	0.14
708-1	9	0.25	11	5.5	>1000	3	63	849.1	16:1	2:1	0.02	0.001	0.001	0.06
709-3	12	0.33	13.5	9.7	100	1.3	25	118.3	4:1	8:1	0.56	0.022	0.009	0.21
710-1	4.5	0.25	6.5	3.4	200-500	0.83	10	28.6	1:1	4:1	0.09	0.004	0.004	0.19
711-1	6.5	0.25	7.5	3.6	200-500	0.75	10	23.9	2:1	2:1	0.06	0.003	0.003	0.12
713-1	4.5	0.17	5.5	1.4	200-500	0.5	8	8.6	2:1	2:1	0.03	0.001	0.003	0.11
714-1	9	0.75	12	31.3	>1000	1	15.5	51.6	2:1	2:1	0.16	0.006	0.005	0.15
715-1	14	0.25	16.5	7.3	25	1	22	75.6	2:1	2:1	0.58	0.023	0.008	0.21
716-1	6.5	0.33	8.5	5.2	500-1000	1	12.5	37.6	4:1	2:1	0.09	0.004	0.005	0.13

In rows that are shaded, limitations of the SCS methods have been exceeded. Results of the analysis may represent skewed and inaccurate results. These data points have a time of concentration of greater than 10 hours, or have several main branches further up gradient of the data point location. The darker-shaded recurrence intervals may be inaccurate.

† - The Mean Annual Flow (Q_{MAF}) is based upon a unit-value (0.04cfs/sq.mi.) empirically derived from Maricopa County gage data for washes nearby the Delineation Site.

The duration threshold for wetland hydrology is “at least” five percent of the growing season (the minimum duration of inundation or saturation that the 1987 Manual acknowledges as possible wetland hydrology). This is also the basis that Lichvar, et al. (2002) used to define OHWM in a study of unvegetated playas in California, although they did not relate the WM to the actual edge of surface water for the specified duration - only the presence of water in some part of the playa.

Even if we use the most inclusive assumption for growing season and compute duration based upon 5 percent of the entire year over the entire period of record, many small channels that the Corps has determined are jurisdictional under the Guidance, do not meet the minimum duration required for a wetland.

As an example, Table 3 presents the duration of flow for 50, gauged locations from the Flood Control District of Maricopa County data base. Values were computed from the daily flow record (i.e. each day that any flow was documented). Nine of the 50 gages indicate stream segments that flow intermittently. The other 41 gages indicate that the channels have ephemeral flows. The average duration for all gages was 4.6% of the year. The duration of flow at 33 gages was less than five percent of the year and the duration at 24 gages was less than one percent of the year over the period of record.

Another analysis of Maricopa County reveals that two larger washes slightly exceed one percent of the year, however, the duration of flow computed on a daily basis for nine other drainage ways in the vicinity through the 2004 water year was less than one percent of the year (Table 1). All of the gauged flows indicated a daily duration of far less than five percent of the growing season. Computed on an hourly basis, the flow at all 11 gages was less than one percent of the year (Table 1). The average duration of flow for the 11 washes was 22.9 hours per year (0.26%) and 12.7 hours per event. While the average duration of discharge events is 12.7 hours, the duration ranges from 0.0 to 45.7 hours per event. Three of the smaller streams had flow events that lasted 3 hours or less.

Based on these data, the duration of flow at all 11 washes is far below the duration thresholds used to establish jurisdictional hydrology in wetlands. Washes with smaller catchments than these 11 washes are likely to have flow durations well below five percent of the year and for most of them, duration of flow is probably below one percent of the year. In most of the United States, surface water for similar, short durations can be found following intense precipitation events or rapid snowmelt on many landscape features that are never identified as waters of the United States.

The duration requirement for a finding that wetland hydrology is present is based on consecutive days of at least five percent of the growing season. Flow in these small washes fail to meet a minimum five percent duration period even when the durations of scattered, nonconsecutive events are totaled.

The current COE interpretation of OHWM for arid systems turns the commonly understood relationship of duration of flow and OHW on its head. On TNWs and other perennial streams, the area below the OHWM is typically inundated for long periods and

Table 3. Comparison of MAF to drainage basin size and mean annual duration on a daily basis for small gauged washes in Maricopa County, AZ.

Gage ID #	n (years)	Drainage Basin (mi ²)	MAF (ac-ft/year)	MAF (cfs)	Unit Flow (cfs/mi ²)	Mean Duration (% Year)
5013	3	undetermined	0	0		0
5033	1	6.6		0	0	0
5178	1	undetermined		0	0	0
6707	9	undetermined	3.222	0.00445		0.02
5488	1	3	4	0.005525	0.0018416	0.27
6893	9	1	4.667	0.006446	0.00644606	0.05
4588	1	7.9	5	0.006906	0.000874177	0.27
6563	9	undetermined	7	0.009668		0.27
7093	8	0.61	11.875	0.016402	0.026888115	0.66
5276	1	~10	13	0.017956	0.0006906	0.55
778	4	19,915	14.25	0.019682	9.88305E-07	0.27
7083	7	8.5	34.5	0.047651	0.005606047	1.45
4863	3	9.2	47.667	0.065838	0.007156267	0.46
6953	1	17.6	50	0.06906	0.003923864	0.55
7063	8	5.4	58.875	0.081318	0.015058917	0.68
5118	2	27.8 (8.3)	78.5	0.108424	0.003900151	0.82
6923	12	~126	95.308	0.131639	0.001044757	0.79
4913	1	1.12	120	0.165744	0.147985714	16.16
7113	7	1.8	134.286	0.185476	0.103042124	0.79
6933	1	185	136	0.187843	0.001015369	0.55
5588	7	4	282.571	0.390287	0.097571766	2.16
5503	8	1628	508.75	0.702686	0.000431625	0.9
5108	2	48.3 (14.6)	515.5	0.712009	0.014741379	1.1
4668	5	14.1	516.6	0.713528	0.050604817	6.79
7013	7	105	615	0.849438	0.008089886	1.48
5218	1	120	772.5	1.066977	0.008891475	0.82
6983	12	150	985.769	1.361544	0.009076961	2.68
6723	3	256	1157.333	1.598508	0.006244173	1.73
6848	3	43,300	1169	1.614623	3.72892E-05	3.37
6833	3	362	1213	1.675396	0.004628165	15.01
783	7	undetermined	1222	1.687826		0.58
7043	7	121.4	1335.714	1.844888	0.015196772	0.82
4918	8	121	1724.667	2.38211	0.01968686	3.26
5163	3	85.2	1877	2.592512	0.030428549	0.82
5228	8	711	2377.125	3.283285	0.004617841	1.32
4923	9	121	2559.333	3.534951	0.029214469	17.34
5613	10	164	3631.2	5.015413	0.030581789	4.79
4902	13	191	4031.461	5.568254	0.029153162	5.42
4833	11	224.6	4980.364	6.878879	0.030627243	12.71
5568	12	64.7	9099.083	12.56765	0.19424503	5.26
5283	7	1450	2417	3.33836	0.002302318	0.9

Table 3 (cont.). Comparison of MAF to drainage basin size and mean annual duration on a daily basis for small gauged washes in Maricopa County, AZ.

Gage ID #	n (years)	Drainage Basin (mi ²)	MAF (ac-ft/year)	MAF (cfs)	Unit Flow (cfs/mi ²)	Mean Duration (% Year)
5598	12	185	10470.083	14.46128	0.078169074	5.75
5223	6	796	10825.333	14.95195	0.018783857	11.18
5093	4	586	16287.25	22.49595	0.038388993	1.1
5308	10	417	18426	25.44999	0.061031154	16.46
5508	12	600	24491.692	33.82792	0.056379875	10.08
5353	10	78	32455.273	44.82722	0.574707988	31.2
5403	10	2241	32975.143	45.54527	0.020323636	4.63
6853	6	45585	74683	103.1522	0.002262853	35.2
4523	8	13223	88244.556	121.8834	0.009217529	2.52
				Mean	0.039358028	4.6398

in many cases year-round, i.e., substantially longer than the length of saturation or inundation necessary to constitute wetland hydrology. COE regulations [33 CFR 328.4(c)] reflect this relationship in that they use the OHWM to define the limits of jurisdiction unless adjacent wetlands are present in which case, the jurisdiction extends beyond the OHWM to the limits of the wetland. In short, many wetlands have less frequent and shorter duration hydrology than areas exhibiting an OHWM. In the arid west none of the drainageways analyzed come close to being considered wetlands, yet the COE has determined that they exhibit an OHWM.

Transmission Losses

As water flows across the ground, some of it evaporates and some of it infiltrates into the bed and bank and percolates down into the ground. This is the fundamental process that recharges ground-water aquifers. In channelized flow, the removal of water from the surface is known as transmission loss (TL). There has been a long and extensive technical literature developed on the topic of TL (see e.g., Sharp and Saxton 1962, Lane 1983, Walters 1990). The NRCS has an entire Chapter (19) in Part 630 of the National Engineering Handbook devoted to TL. Recently, Cataldo, et al. (In Review) described a simplified method for approximating TL that could be used for regulatory purposes. TL is directly related to distance – the greater the distance that water flows, the greater the loss and the less likely water will reach a TNW. Without explanation or justification, the JD form based on the Guidance does not recognize distances greater than 30 miles. This is technically indefensible unless the determination has been made that there is no significant nexus or jurisdiction if flows exceed 30 miles to a TNW. However, since JDs of any distance including many more than 30 miles have been determined to be jurisdictional, a 30-mile threshold obviously has not been established.

Relative to significant nexus, if even large and infrequent flows are lost during transmission before they can reach a TNW, then they could not possibly carry sediments (i.e., rock, sand or cellar dirt) to that TNW under ordinary flows, and thus, do not ordinarily convey such materials to TNWs. Where the ordinary high flow from a wash does not reach the TNW due to TL, the wash effectively lacks a hydrologic connection and certainly a significant nexus to the TNW, yet there is no discussion of TL in the Guidance.

TL is a very real occurrence and cannot be ignored when considering whether ordinary or above-ordinary flows ever reach a TNW. For example, consider the Santa Cruz River in Arizona. For much of its course and over much of the year, it is a dry streambed. In Tucson AZ, however, The Pima County Wastewater Management Department discharges large volumes of treated effluent into the Santa Cruz River at two locations: Roger Road and Ina Road treatment facilities (Figure 2). On April 23, 2007, I tracked by helicopter the flow in the Santa Cruz River from the Ina Discharge outlet downstream. Figure 3 is the discharge being released from the Ina Road facility. The average daily discharge for April 2007 was 26.05 million gallons per day (mgd). The minimum for the month was 24.6 mgd and the maximum was 27.53 mgd. On April 23, 2007, the total daily discharge was 25.47 mgd or 39.4 cubic feet per second (cfs).

As is evident from Figure 3, water was present in the Santa Cruz River upstream from the Ina Road discharge on April 23, 2007. The water present in the River arose from the discharge from the Roger Road facility upstream of the Ina Road facility. On April 23, 2007, the Roger Road facility discharged 16.83 mgd or 26.0 cfs.

It is likely that there was and is in excess of 50 cfs flowing north in the Santa Cruz River from the north side of Tucson on April 23 and everyday in the month of April, 2007. Yet all of that water was lost as it was transmitted north in the streambed. Figure 2 depicts the location in relation to the Ina Road discharge where there was no longer any surface moisture present in the Santa Cruz streambed on April 23, 2007. Figure 4 shows the condition of the streambed at the point of total transmission loss. Thus a continuous, artificial input of 50+ cfs into the Santa Cruz River never even reaches its confluence with the Gila River which is still 200+ miles from the confluence with the Colorado River, a TNW. How can the average 1.5 discharge per year for 22.9 hours in smaller washes have a significant nexus to the TNW if even a major flow such as that in the Santa Cruz River in Tucson does not? The simple answer is -- it can't.

Significant Nexus

On June 19, 2006, the Supreme Court of the United States handed down its decision in *Rapanos, et al. v. United States of America* (Supreme...), and memorialized the concept of *Significant Nexus* as **the** determinative factor establishing the reach of federal jurisdiction under Sec. 404 of the Clean Water (CWA).

While the concept is most often associated with J. Kennedy, J. Scalia, writing for the plurality, also adopted a test of significant nexus. J. Kennedy advocated a broad, ill-defined determination of significant nexus, while J. Scalia framed a more clearly defined, two-part test of significant nexus with the following statement:

Therefore, *only* those wetlands with a continuous surface connection to bodies that are “waters of the United States” in their own right, so that there is no clear demarcation between “waters” and wetlands, are “adjacent to” such waters and covered by the Act. Wetlands with only an intermittent, physically remote hydro logic connection to “waters of the United States” do not implicate the boundary-drawing problem of *Riverside Bayview*, and thus lack the necessary connection to covered waters that we described as a “significant nexus” in *SWANCC*. 531 U.S., at 167. Thus establishing that wetlands such as those at the Rapanos and Carabell sites are areas covered by the Act requires two findings: First, that the adjacent channel contains a “wate[r] of the United States,” (*i.e.*, a relatively permanent body of water connected to traditional interstate navigable waters); and second, that the wetland has a continuous surface connection with that water, making it difficult to determine where the “water” ends and the “wetland” begins. (*Rapanos v. United States*, Opinion of Scalia, J., pages 23 and 24).

J. Scalia's test for significant nexus can be technically evaluated in a strait-forward manner. Technically evaluating wetlands under J. Kennedy's concept of significant nexus is more challenging. For this reason, any analysis must concentrate on a number of technical factors that first establish the extent of any connection and second, evaluate the effect that any connected wetlands had on traditionally navigable waters. The more remote and indistinct the connection and the more common the nature of the landscape,

the less likely that those wetlands would satisfy J. Kennedy's ill-defined test of significant nexus with a TNW.

Definitions

The term *Nexus* has been defined by Merriam Webster (<http://www.m-w.com>) as:

1 : connection, link; *also* : a causal link; 2 : a connected group or series; and 3 : center, focus. In a legal context it has been defined as: A legal way to say causal connection (<http://www.lectlaw.com/def2/n014.htm>).

The term *Significant* has been defined by Merriam Webster (<http://www.m-w.com>)

1 : having meaning; *especially* : suggestive; 2 a : having or likely to have influence or effect : important <a *significant* piece of legislation>; *also* : of a noticeably or measurably large amount <a *significant* number of layoffs> <producing *significant* profits> b : probably caused by something other than mere chance <statistically *significant* correlation between vitamin deficiency and disease>

The COE has provided guidance on the use of the term *Significant* (RGL 87-02) when used in a permit context in response to another court case (*Sierra Club v. U.S. Army Corps of Engineers*). The COE summarizes the guidance in its paragraph 6:

The central point is that use of the word "significant" or equivalent words in permit documentation implies certain legal consequences under NEPA and the 404(b)(1) Guidelines, so one should use the word advisedly and with thorough explanation and documentation in the administrative record to support its use.

Although Regulatory Guidance Letters (RGL) expire, the guidance provided in the RGLs remains valid unless rescinded or superceded (56 FR 2408). The guidance provided in RGL 87-02 remains valid (RGL 05-06). The Guidance trivializes the word "significant" by defining it as anything more than speculative or insubstantial.

Adjacency

Federal regulations at 33 CFR 328.3(a)(7) state: "Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section" are waters of the U.S. Chief Justice Roberts cogently observed during oral arguments in *Rapanos v. U.S. et ux., et al.*, *Petitioners 04-1384 v. United States*, that the passage was a clear statement that the federal government, itself, recognized that at least some wetlands are not under federal regulation.

Technical Evaluation of Adjacency

In order to determine adjacency, factors other than simply horizontal distance must be considered. For decades the concept of adjacency was interpreted that a wetland was "adjacent" to a water of the U.S. when water from the water of the U.S. would regularly inundate the wetland. Thus, vertical separation and direction of water movement were important considerations. Ever since the Supreme Court ruling in *Solid Waste Agency of*

Northern Cook County (SWANCC), the Corps has ignored these guiding factors and used a migratory molecule concept of adjacency – i.e., can a molecule of water theoretically travel from a wetland to a water of the U.S. If the answer is yes, then the wetland is adjacent. This concept continues to drive determinations on JDs since the Guidance was issued. It is as inappropriate as the migratory bird rule and disregards the concept of significant nexus as established both by J. Scalia and J. Kennedy.

Since it is unreasonable for one property owner to assess conditions on other properties as the Guidance indicates is necessary, the analyses of significant nexus must be based upon available tools. One confirmation, of the disconnect between a wetland and a TNW, is the changes in the soils mapped by NRCS. A second is the characterized by NWI of different classifications of wetlands that exist from the TNW to the wetland in question. A third is whether the connection is via a ditch cut through nonwetlands. Thus, a wetland which is adjacent to another type of wetland or nonwetlands does not pass the significant nexus test of J. Scalia which requires a relatively permanent body of water connected to traditional, interstate navigable waters and continuous surface connection with that water, making it difficult to determine where the “water” ends and the “wetland” begins. Furthermore, wetlands, which are connected only by ditches cut through nonwetlands and nonhydric soils, do not even pass the significant nexus test of J. Kennedy.

Meaningfully Distinct

Another term that further clarifies the concept of significant nexus (i.e., significant causal connection) is *meaningfully distinct*. This term has arisen through the Courts in the context of Section 402 of the CWA. In *Friends of the Everglades, Inc., et al., vs. South Florida Water Management District, et al.*, (S. D. Florida, Miami Div., Case No. 02-80309-Civ), the court observed:

Thus, if the relevant question were whether the waters are “completely distinct,” the Court would necessarily have to answer the question in the negative. However, the Supreme Court has instructed that the proper question is whether the bodies of water are “*meaningfully distinct*,” not “completely distinct.”

All bodies of water are, to some extent, hydrologically connected. If a hydrologic connection was sufficient to preclude a finding that two bodies of water are meaningfully distinct, then no two bodies of water in the United States, or the world, would be meaningfully distinct and the test would be completely meaningless.⁶⁰

Drainageways and wetlands, which are meaningfully distinct from TNWs, will not pass the two-part nexus test of J. Scalia. Furthermore, the greater the meaningful distinction between a drainageway and/or wetland and a TNW, the more likely it is that it will not pass the more liberal significant causal connection test of J. Kennedy. The

⁶⁰ Obviously, certain water bodies share more hydrologic connections than do others. However, although such connections may certainly be relevant, the “meaningfully distinct” analysis should not turn only upon the degree of hydrologic connections between two water bodies.

Guidance totally ignores this concept and results in decisions that anything that has any connection has a significant nexus.

Causal Connection

If the concept of *nexus* represents more than simply connection, i.e., causal connection, then it is the effect of the connection and not merely its existence that is critical to determining whether a *significant nexus* exists between a landscape feature and a TNW. The *nexus* must exert or cause a significant effect on the TNW.

Furthermore, in keeping with the concept that J. Kennedy and the plurality in (Rapanos/Carabell) articulated, a wetland, that is not physically adjacent to a TNW to the extent that the boundary between the two is difficult to discern, must have some significant effect on the waterbody itself, and not simply serve functions and have societal values to the general region in which the wetland exists. Thus, the fact that a wetland serves as habitat for terrestrial species is unlikely to contribute to the determination of *significant nexus* to the navigable waterbody. Conversely, a wetland that serves as spawning grounds for anadromous fish species that are important to the TNW may have a *significant nexus* to the waterbody, depending upon the magnitude of the contribution to the fish population in relation to all spawning grounds for the species.

Related Terms Used in the Regulatory Program

The Guidance defines “significant nexus” to include all effects that simply are more than speculative or insubstantial. This not only a simple misuse of the concept of “significant,” but runs contrary to all other aspects of the regulatory program that have been in effect for decades. The COE uses a number of terms that express the relative importance of various activities or actions, especially in regard to the effect that they will have on the natural and human environment. At the lowest end of the spectrum is the phrase *no effect*. At the highest is the phrase *unacceptable adverse effect*. Of course not all effects are adverse. The corollary to *unacceptable adverse effect* with a positive connotation is *unique beneficial effects*. Between the extremes are concepts that categorize effects from none to unacceptable or unique. These include: *minimal effect*, *more than minimal effect* and *significant effect*.

It is important to note that the COE has never before maintained that all actions/effects that are more than speculative or insubstantial are significant. They have categorized many activities as being *minimal* and *more than minimal* but less than significant. In fact, the COE has expressly cautioned its regulators against using the term *significant* indiscriminately. The COE has provided guidance on the use of the term *significant* (RGL 87-02) when used in a permit context in response to another court case (*Sierra Club v. U.S. Army Corps of Engineers*). The COE summarizes the guidance in its paragraph 6:

The central point is that use of the word "significant" or equivalent words in permit documentation implies certain legal consequences under NEPA and the 404(b)(1) Guidelines, so

one should use the word advisedly and with thorough explanation and documentation in the administrative record to support its use.

Although Regulatory Guidance Letters (RGL) expired, the guidance provided in the RGLs remains valid unless rescinded or superceded (56 FR 2408). The guidance provided in RGL 87-02 remains valid (RGL 05-06).

Because of the Guidance providing that any effect that is more than speculative or insubstantial is “significant,” the desert becomes a landscape rich in Section 404 navigable waters. A recent review of JDs in Arizona revealed that all drainageways are waters of the U.S. under the Guidance even if they are hundreds of miles from the Colorado River – the only true federal TNW (i.e., Section 10 water) in Arizona. Examination (Table 4) of 8,506 acres of desert in northwest Maricopa County, AZ, revealed that 229 acres (2.68%) are covered by small, regulated drainageways while only 38.56 acres out of 4,521 acres (0.85%) in MD and VA are small, regulated drainageways under the CWA (Table 4). In other words, there are more than three times the amount of CWA “navigable waters” in the Arizona desert where the average annual precipitation is seven to 15 inches, the average number of flow events is 1.5 per year and the average duration of flow is 12.7 hours per event (an average total of 22.9 hours of flow per **YEAR**), when compared with MD and VA where the average annual precipitation ranges from 40 to 45 inches per year, and many small drainageways carry flow continuously or for the majority of the year (i.e. are real RPWs).

Hydrology Standard

The Guidance presents what the Corps has chosen in other venues (e.g. U.S. Army Corps of Engineers 2006) to identify as an hydrology “standard.” It is long-past time for a “National Standard” identifying what constitutes Section 404 wetland hydrology. Actually, the consideration of “significant nexus” identifies that it is long-past time for a standard of what constitutes federally regulated surface hydrology. The minimum standard should apply across the board – not one standard for streams, rivers and lakes and another for wetlands. If the CWA regulates surface water, then the standard must specify water “to the surface” as the 1987 Manual and the 1991 and 1992 guidance documents do: not 12 inches below the surface as the new wetland hydrology “standard” does. If “gullies, small washes characterized by low volume, infrequent, or short duration” as specified in the Guidance generally are not jurisdictional waters, then neither should be vegetated landscapes that have a water table no closer than 12 inches below the surface for only 14 out of 730 days. Development of the standard should be done in the open through the APA. It should be based upon actual data interpreted in light of rulings in the courts, policy and the Constitution. All three branches of the federal government have failed miserably in providing the public with conclusive definitions and standards. This hydrology “standard” continues a line of failed efforts and provides little to clarify a program that is very broken.

The hydrology “standard” is very different from the hydrology requirement of the 1987 Manual. Furthermore, it is an absurdity to say that a “standard” is secondary to field indicators. Standards need to be primary and directly related to the primary regulation

that they are intended to support – in this case the Clean **WATER** Act (CWA). The purpose of the hydrology standard should be to determine what landscapes can be reasonably called navigable waters. Water no closer to the surface than 12 inches below it does not constitute navigable waters within the context of the CWA. It is strictly ground water and as such should be regulated by the Safe Drinking Water Act. That is the reason that the 1987 Manual indicates at para. 46 that water must be “to the surface.” That is why the phrase “to the surface” occurs five times in the one paragraph answering question 8 in the October 7, 1991 Qs and As and twice in para.3.a. in the March 6, 1992 Guidance. Field indicators should be secondary to the standard, based upon satisfying the standard and be subservient to the standard (i.e., measurement of the actual level of water).

Finally, the “standard” is not technically defensible. I know of no natural, unaltered landscape in the United States with the presence of a water table for **only** 2 weeks at 12 inches every other year has produced hydric soils or a hydrophytic plant community. If this is the national “standard,” then the Corps should produce conclusive data that demonstrates that areas that just satisfy the minimum standard would be recognized as such by wetland scientists. The Corps has neither produced nor presented such data supporting the “standard” (U. S. Army Corps of Engineers 2005) other than a citation to the National Research Council’s (NRC) 1995 study of wetlands. In that respect, the “standard” does not even follow the NRC recommendation. Furthermore, in the last 12 years since the NRC made its recommendation, data should have been evaluated to see if the recommendation was valid. Where are the data? It appears that the COE simply waited a decade and then established a “standard” without technical support or rulemaking.

Functional Assessment

It has long been recognized, that not all wetlands necessarily serve all functions, nor that they serve any function at equal levels (Novitzki, et al. 1996). The federal government through the COE, EPA and the FHWA, as well as state governments (including, for example, North Carolina, Louisiana, and Montana) have for decades been working on methods to assess the relative magnitude of functions delivered by any particular wetland or part of a wetland. Adamus and Stockwell (1983) developed a comprehensive method for wetland functional assessment. The COE expanded on that effort developing a more-user-friendly, computerized version of the method (Adamus 1987). As early as 1994, the COE began working on a second generation of wetland functional assessment known as the Hydrogeomorphic Approach (HGM) (Smith 1994). Since then numerous technical documents dealing with HGM and other functional assessment methods have been published in the refereed literature and agency publications (e.g., Novitzki, et al. 1996).

The COE and EPA have also issued a variety of policy documents addressing functional assessment. For example, the COE regulations at 33 CFR 320.4 (b)(2), provides a list of eight elements identifying the subset of all wetlands that are “wetlands considered to perform functions important to the public interest” suggesting that there are

at least some that do not perform important functions. Many other policy documents recognize the variability in wetlands by addressing functional assessment. These include, but are not limited to: Mitigation Memorandum of Agreement (1990), National Action Plan to Develop the Hydrogeomorphic Approach for assessing Wetland Functions (61 FR 42594, 1996) RGL 2002-2, National Wetlands Mitigation Action Plan (2002).

Thus, from both technical and policy standpoints, it is clear that not all wetlands perform the same functions nor do they perform these functions at the same level. Consequently, it is not adequate to simply identify a feature as a wetland, recite a litany of general wetland functions and conclude that a particular wetland has a significant effect on the traditionally navigable receiving waters. Even more inappropriate is the provision in the Guidance that establishes if all wetlands assessed are significant, then each is significant. Because a system of wetland assessment is necessary to ensure that the most valuable wetlands are protected (Novitzki, et al. 1996), wetlands must be assessed individually to determine their societal service (causal connection) to the TNW.

From a practical standpoint, the only way to assess the amount of wetland along a reach of drainage way is using the NWI maps. The Guidance is faulted for several reasons. NWI maps are not necessarily accurate – especially if there is any indication of drainage. The maps are specifically NOT to be used for regulatory purposes. The maps are not updated with any regularity. There is no way to relate NWI mapping to functional assessment.

The only aquatic species and wildlife that should be considered when assessing functions for a significant nexus test are those species that are directly related to the species in the TNW. For example, a wetland or stream that serves as spawning grounds for fish or invertebrates that live in the downstream TNW or are food for species living in the TNW, may demonstrate a significant nexus. The fact that deer or rabbits or wolves or grassland birds or upland game birds may drink water from a stream or wetland has no real relationship to the biological chemical or physical integrity of the TNW and do not demonstrate a significant nexus. These later functions have been identified as justifying a significant nexus in JDs based upon the Guidance.

Furthermore, the more removed wetlands are from a discernible connection with TNWs (and thus, less likely to satisfy the J. Scalia test), the higher the function that they must serve – at least – with regards to functions affecting the quality and quantity of water that may ultimately find its way to the TNW and/or serve as habitat for aquatic animal species important to the TNW to have even a chance of satisfying the J. Kennedy test.

Of equal or greater concern regarding function is that there is absolutely no evaluation by the Corps or EPA of the relative function or service provided by nonwetlands so that wetlands along a reach can be put into proper perspective. There has been a concerted effort by the federal government to ignore the fact that many nonwetland landscapes provide the same functions as wetlands and that the level of functions may be equal or greater than those provided by wetlands.

Conclusions

In closing, there is not much to say other than the disappointment one experiences when it is obvious that the Executive Branch continues to run amuck. It may be encouraging to those in the EPA and Corps who advocate and support this Guidance, that they are not the first to believe that the deserts of Arizona are loaded with navigable waters. Seems that German POWs interred there reached the same conclusion. I forward the following as appropriate for the record:

Article by Angela Cara Pancrazio in the Arizona Republic: "POW camp paradise lost for Germans"

The frigid weather across the United States was as chilling as the bad news from the war front in those last few days before Christmas, 1944. A cold wave sent temperatures to 34 degrees below zero in parts of the Northeast, snow falling across the northern plains, and a cold drizzle was soaking Phoenix.

The bright hopes of an early victory over invading Germany had dimmed. The Battle of the bulge had begun in Belgium. Newspapers and radio news announcers told of American troops being overrun by the advancing German army.

At a large encampment in Papago Park, east of Phoenix, approximately 1,700 German prisoners of war cheered as they heard broadcasts telling of German victories. The prisoners didn't believe the stories about American victories, thinking they were just propaganda. There was a general celebration and hell-raising in the camp at the first news of the Battle of the Bulge. The celebration on the evening of December 23, however, was a carefully planned ruse to cover the escape of a group of German navy officers and enlisted men.

The Geneva convention states that the prisoners of war have a duty to try to escape. Submarine Capt. Jürgen Wattenberg, then 43, took his duty very seriously. The Papago Prisoner of War Camp was so isolated in the desert that the American guards considered escape all but impossible. They were certain that the rocky, caliche ground was too hard for any attempt to escape by tunneling out. But that was just what the Germans did.

Wattenberg estimated later that digging began sometime in September, 1944. Prior to the digging, the officers had scoured the camp grounds for two areas which would be in blind spots, places where the guards couldn't readily see them. The entrance and exit to the tunnel were out of view of the two guard towers on the east side of the compound.

The German prisoners asked their guards for permission to create a volleyball courtyard. Innocently obliging, the guards provided them with digging tools. From that point on, two men were digging at all times during night hours. A cart was rigged up to travel along tracks to take the dirt out. The men stuffed the dirt in their pants pockets which had holes in the bottoms, and they shuffled the dirt out along the ground as they walked around. In addition, they flushed a huge amount of dirt down the toilets. They labeled their escape route *Der Faustball Tunnel* (The Volleyball Tunnel).

They dug a 178 foot tunnel with a diameter of 3 feet. The tunnel went 8 to 14 feet beneath the surface, under the two prison camp fences, a drainage ditch and a road. The exit was near a power pole in a clump of brush about 15 feet from the Cross Cut Canal. To disguise their plans, the men built a square box, filled it with dirt and planted native weeds in it for the lid to cover the exit. When the lid was on the tunnel exit, the area looked like undisturbed desert.

Wattenberg ordered the men in the adjacent compound to throw a noisy party the evening of December 23, 1944. They weren't told why, but many of them guessed and silently wished their

comrades luck. Besides, they were happy to celebrate the good news of Hitler's final offensive, the Battle of the Bulge.

Beginning at about 9:00 p.m. on December 23, prisoners started crawling out along the tunnel in teams of two or three men. Next door their German buddies were singing, breaking bottles, waving flags and generally making the biggest hullabaloo they could. Each escapee carried clothing, food, forged papers, cigarettes and medical supplies, plus anything else they had been able to save up in the past several months. Wattenberg had managed to procure the names and addresses of people in Mexico who might help them get back to Germany.

The plan was to float down the Cross Cut Canal, then to the Salt River, to the Gila River and on to the Colorado River which would take them into Mexico. Three of the men had constructed a canoe, which could be taken apart and carried in three pieces. They had blocked up the drains in the shower room to test it for water-tightness. It never occurred to the Germans that in dry Arizona a blue line marked "river" on a map might be filled with water only occasionally. The three men with the canoe were disappointed to find the Salt River bed merely a mud bog from recent rains. Not to be discouraged, they carried their canoe pieces twenty miles to the confluence with the Gila river, only to find a series of large puddles. They sat on the river bank, put their heads in their hands and cried out their frustration.

By 2:30 a.m., December 24, all twelve officers and thirteen enlisted German submarine men were on their way. Their efforts have been described as the largest POW escape in the United States. The POW camp's security officer, the late Army Maj. Cecil Parshall, insisted in 1978 that 60 Germans actually escaped that night. He stated that the only reason 25 prisoners were counted as escapees was because that's how many were eventually caught and returned to the camp. The rest were ignored in a government cover-up. Wattenberg, however, has said only 25 escaped. Wattenberg stated later that few of the men had high hopes of actually escaping from the United States and returning to Germany. But once they conceived of the tunnel plan, they were enthusiastic about trying it anyway. Two escapees eventually made their way to Mexico where they were about to be shot as spies when they were rescued by American authorities.

Although the men left in the wee hours of Christmas Eve, the camp officials were blissfully unaware of anything amiss until the escapees began to show up that evening. The first to return was an enlisted man, Herbert Fuchs, who decided he had been cold, wet and hungry long enough by Christmas Eve evening. Thinking about his dry, warm bed and hot meal that the men in the prison camp were enjoying, he decided his attempt at freedom had come to an end. The 22-year old U-boat crewman hitched a ride on East Van Buren Street and asked the driver to take him to the sheriff's office where he surrendered. Much to the surprise of the officers at the camp, the sheriff called and told them he had a prisoner who wanted to return to camp.

Shortly after the sheriff's call, a Tempe woman called in to tell them two prisoners had knocked on her door and surrendered to her. The phone rang again, this time from a Tempe man who said he had two escaped prisoners to be picked up.

The highest ranking officer, U-boat Commander Jurgen Wattenberg and two of his U-boat crewmen, Walter Kozur and Johann Kremer, crawled through the dark tunnel together and slipped into the cold waist-deep canal. They were the fifth of ten teams to leave the tunnel that night. They grinned at each other as they heard the ruckus being raised on their behalf by the noncommissioned officers' compound, diverting the guards' attention. Rising silently from the water, they took a generous snort from their schnapps, homemade hooch from distilled potatoes and citrus.

They hurriedly settled their gear on their backs and set off north-west through the desert. By 2:00 a.m. they were huddled, dripping and cold in a citrus grove where they breakfasted on grapefruit. They settled down to try to sleep in the continuing drizzle.

They found a dilapidated shack by sunrise the next morning and spent the day taking turns sleeping

and guarding. By evening Kremer remarked, "It's Christmas Eve." He took out his harmonica and softly played, *Stille Nacht*,—"Silent Night."

By evening they enjoyed a dinner of canned meat and milk, dried bread crumbs, and chocolate bars hoarded from the daily rations in camp. They talked of their loved ones, and of their other comrades. They spoke of how proud they were of their escape and how well it had gone so far. Then each sat silent in his own thoughts.

By dawn they had reached an area that today would be along Stanford Drive and between 32nd and 44th streets. They hid out in the gullies, concealed throughout the day and exploring the mountains to the north after dark.

The American guards back at the POW camp were not having a merry Christmas at all. They had been called back from holiday leave to beef up the guard at the camp, certainly a rather late effort. In addition, personnel at the Ninth Service Command, Fort Douglas, Utah; the Provost Marshal General's office in Washington, D.C.; the Federal Bureau of Investigation; and other governmental agencies were arriving for intensive investigation.

Several days passed before American Army Private First Class Lawrence Jorgensen, on a search detail, discovered the camouflaged escape hatch and solved the mystery of how the POWs escaped.

In their reconnaissance of the area, the three German escapees finally found a jagged channel that numerous cloudburst and gully washers had carved into the slope near the Squaw Peak area. One of the many eroded alcoves had an overhang of six or seven feet. Desert weeds on top of the ravine helped to conceal the shallow cave. They rolled a few large boulders across the opening. Then they cut brush and propped it in front of the cave to obscure their activities. Kremer scooped out a pit for a fire and their first pot of coffee was brewing by sunrise.

For the next two nights Wattenberg and his two men scouted their environs. On the second night they went to the area east of the Arizona Biltmore resort. Creeping through a citrus grove they heard voices and a dog began to bark. They stopped and crouched low. Finding an irrigation pipe, they filled their canteens, returning to their camp with citrus and fresh water.

By the end of the first week of January, 1945, the three men resolved to find out what had happened to their fellow escapees. Kremer and Kozur slipped into Phoenix at nightfall. As the eastern sky was turning pink the two men returned with their bounty, one sack full of fruit and another full of newspapers. They had hoped to find a map but no luck.

The headlines screamed, "WHOLESALE NAZI ESCAPE SCREENS BIG SHOT'S FLIGHT." Wattenberg was amused at being labeled a "big shot." Previous to this his description had been "the chief troublemaker."

Another newspaper read, "TWO NAZIS APPREHENDED AT MEXICAN BORDER," referring to the capture and near shooting of Reinhard Mark, a midshipman, and Heinrich Palmer, a petty officer, south of Sells, Arizona.

By the end of their month-long outing, Wattenberg and his men became bolder. Prior to the escape, Wattenberg had informed one of the men who was not in the escape party of his intention to remain in the mountains to the north until he could manage to escape further. He had drawn a sketch of the landscape and marked an area for a possible food drop when the group was outside the camp on a work gang.

On January 18 or 19, Wattenberg gave Kremer a note thanking their comrades for the supplies. After dark, Kremer went to the agreed-upon place, an abandoned, dismantled vehicle. He left the note and returned with fruit and several packs of cigarettes. Their remaining food supply was by now depleted.

Kremer decided on an exceptionally bold plan. He decided to sneak back into camp by infiltrating one of the work details. There he could get the news of the other escapees, as well as procure more food before slipping away from another work detail the next day. He was only half successful. He made it back into camp. But during a surprise inspection on the afternoon of Tuesday, January 23, Kremer was caught and discovered. He had been in the camp undetected for three days.

The next day Walter Kozur came down a hill after sundown and was met by three soldiers. Soon Wattenberg realized that he, alone, was still free.

As Saturday dawned, Wattenberg decided that he would go into Phoenix and perhaps get a job as a dishwasher. He also considered hopping a freight train, hoping to arrive at some faraway place that hadn't heard of the POW escape; perhaps a farm where he might get a job. He again looked through the newspapers from which he had clipped articles about the escape. His attention was drawn to some church notices. Perhaps he could get help from a Catholic priest, while being protected by the privacy of confession. He cut out the section of church addresses and folded them neatly, adding them to the collection of clippings in his rucksack.

After sundown he walked for nearly two hours to East Van Buren. No one seemed to notice him as the cars moved along the busy thoroughfare. He passed numerous motels where Americans in uniform were spending the weekend on passes. He ducked his head and quickly passed the crowds of soldiers.

Walking into the central business district of Phoenix, Wattenberg stepped into the American Kitchen restaurant. In a voice as devoid of accent as he could manage, he ordered noodle soup with beef, washed down with cold beer, a meal familiar to a German.

Wattenberg then went to several small hotels and asked about a room for the night. They were all full. He entered the Hotel Adams. The front desk clerk told him that they were all full for the night, but a room would probably open up in the morning after check-out. Wattenberg, tired and discouraged, noticed a vacant chair in the lobby. He sank into the soft cushions and opened a newspaper which had been discarded. Within minutes he was sleeping soundly.

About an hour later, the escapee awoke and noticed that the bellhop was watching him with more than passing interest. Wattenberg suddenly wondered if his picture had appeared in the newspapers. He also felt very conscious of his U.S. Army issue khaki trousers dyed blue. He decided to leave. The bellhop, Ken Vance, reported later that Wattenberg left the hotel at 1:30 a.m., Sunday, January 28.

Wattenberg left the Hotel Adams and headed north. At Central and Van Buren, he stopped Clarence V. Cherry, a City of Phoenix street foreman, and, in heavily accented English, asked for directions to the railroad station. By this time, perhaps he was willing to be caught, but just didn't want to surrender.

When Wattenberg turned to walk on down the street, Cherry caught the attention of Sgt. Gilbert Brady of the Phoenix Police Department. He told the policeman that the tall man in the yellow checkered shirt had just spoken to him in a heavy German accent. Brady caught up with Wattenberg at Third Avenue and Van Buren.

"Sir, could I see your Selective Service registration?" the police officer asked.

"I left it at home."

"Where is home?" Brady asked.

"Glendale."

"Glendale, Arizona, or Glendale, California?" Brady asked again.

“Glendale—uh, Glendale, back east,” Wattenberg replied.

“You’ll have to come with me to the police station,” Brady ordered. Brady offered his fugitive a cigarette.

Wattenberg lit the cigarette, took a deep drag, and exhaled with force and resignation. “The game’s up and I lost,” he admitted quietly.

At the police station the police found that Wattenberg had with him 50 cents in coins, a blank notebook, and several newspaper clippings—some about the escape, others of restaurant and nightclub advertisements, and the Saturday directory of churches.

When Wattenberg was returned to the Papago POW Camp he was taken to the hospital where he was served a Sunday dinner of beef broth, roasted chicken, vegetables and ice cream. It had to last him awhile, since his punishment for the escape was bread and water rations for fourteen days.

By March, 1946, the last of the Papago Park POWs were sent back to their home countries. On June 16, 1946, Wattenberg was reunited with his wife and two sons at Neustadt, Holstein, a German seaport village on the Baltic Sea.

EPILOGUE

On January 5, 1985, the Papago Park Prisoner of War Camp Commission held a commemorative observance at the campsite. The festivities were attended by mayors of Phoenix, Scottsdale, and Tempe. One of the special guests of honor was 85 year old U-boat Commander Jurgen Wattenberg. Looking back on his stay in Arizona, Wattenberg remarked how much he had enjoyed the SPAM dinners!

A banner over the camp meeting declared, “TO RENEW IN FRIENDSHIP AN ASSOCIATION COMMENCED IN ANGUISH.”

Today a residential subdivision, a Saturn dealership and a baseball field cover most of what was once Papago Park POW Camp. The only remaining building which would have heard the voices of the German POWs is now occupied by the Scottsdale Elk’s Club.

Source: Judy Martin. *Arizona Walls: if only they could speak*. Phoenix, AZ: Double B Publication, 1997 (pp. 197-206). ISBN: 0929526767

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