

☞ **05hr\_SSC-DNRRR\_Misc\_pt06p**



☞ **Exhibits/comments submitted by Tilton. RE: DNR study regarding Lower St. Croix ordinary high water mark.**

(FORM UPDATED: 08/11/2010)

**WISCONSIN STATE LEGISLATURE ...  
PUBLIC HEARING - COMMITTEE RECORDS**

**2005-06**

(session year)

**Senate Select**

(Assembly, Senate or Joint)

**Committee on ... DNR (SSC-DNRRR)**

**COMMITTEE NOTICES ...**

- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**

**INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL**

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... bills and resolutions (w/Record of Comm. Proceedings)
  - (**ab** = Assembly Bill)                      (**ar** = Assembly Resolution)                      (**ajr** = Assembly Joint Resolution)
  - (**sb** = Senate Bill)                              (**sr** = Senate Resolution)                              (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

Book 2  
Part  
2 of 2

Jennifer Esser

Clerk, Senate Select Committee on DNR Regulatory Reform

FEBRUARY HEARING MATERIALS

**LIST OF EXHIBITS TO TILTON COMMENTS RE WI DNR 'STUDY'  
REGARDING LOWER ST. CROIX ORDINARY HIGH WATER MARK**

**EXHIBIT A** DNR "Study" materials and additional selected materials with numbering added

**EXHIBIT B** Aerial Photos of Tilton shoreline

**EXHIBIT C** Photos of Tilton shoreline taken during October 2005 site surveys and investigations done by Dr. David Biesboer and Graham Environmental Services, Inc, including photos taken with stakes showing DNR's proposed OHWM of 681.5

**EXHIBIT D** Reduced version of 10/28/04 Tilton Tree Survey, with names and dimensions of trees removed. Only trees 4" or larger were surveyed. See Exhibit L for full Tilton Tree Survey, including names and dimensions of trees

**EXHIBIT E** Graham Environmental Services, Inc., Lower St. Croix Ordinary High Water Mark Evaluation Report, including photos of Tilton site and Lake Mallalieu-Union Pacific RR site OHWM indicators and location of DNR's proposed OHWM of 681.5

**EXHIBIT F** Report of Professor David D. Biesboer, Ph.D., University of Minnesota Professor of Biology, dated 10/26/05, regarding OHWM indicators on Tilton property and re DNR 'study' methodology in general

**EXHIBIT G** BARR Engineering Report, dated 10/29/04, regarding Tilton OHWM and other matters

**EXHIBIT H** William L. Tilton letter to DNR % Robert Baczynski, dated 8/8/05, containing commentary relevant to DNR's OHWM 'study'

**EXHIBIT I** Miscellaneous notes by W. Tilton upon initial partial review of DNR OHWM 'study' materials. These notes were compiled 9/15 and 10/3/05 and contain commentary re DNR staff's use of criteria not contained in the Diana decision nor in Chapter 40, re DNR staff's lack of scientific method, re ignorance of or misuse of Chapter 40 and Diana criteria, etc. These notes are incomplete and are provided simply as further illustration of the many omissions and inadequacies contained in the DNR 'study' materials.

**EXHIBIT J**

(a) Memo to River House File from WL Tilton dated 11/11/04 regarding site visit to Tilton property by DNR, including detail re refusal of E. Post to look at OHWM indicators on the Tilton property and her inability to articulate what were the OHWM indicators relevant to the Tilton property; (b) Email of WI DNR to St. Croix Co. Zoning, including comment of Eunice Post dated 12-15-04 stating Tilton OHWM is 682 and would be further determined per DNR's ongoing 'study;' (c) Public Statement distributed by Eunice Post, WI DNR, on or about 1/13/05, inviting suggestions of additional sites for DNR 'study.' This is part of Exhibit 1 at pages 1050-1051; compare to August 2005 statement in final DNR 'study' report that there was not time for DNR staff to investigate additional sites as part of their OHWM study - *i.e.*, as DNR's dishonest explanation why DNR staff failed to make any on-site study of the Tilton shoreline, despite Tilton's requests since 1999 that they do so; despite E. Post's site visit in November 2004; and despite Tilton's October 2004, February 2005 and August 2005 specific requests that an OHWM investigation and determination be made specifically at and for the Tilton property."

**EXHIBIT K**

Miscellaneous Experts' Curriculum Vitae

**EXHIBIT L**

Tilton "Tree Survey" dated 10/19/04 containing location of all trees on Tilton property 4" or thicker at breast height, with notation of tree dimensions and type. This is the full-sized and detailed version of the reduced survey contained in Exhibit D.

Twin Cities Campus

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26 October 2005

William Tilton, Esq.  
Tilton & Dunn, P.L.L.P  
2220 US Bank Center  
101 East Fifth Street  
St. Paul, MN 55101

Dear Mr. Tilton:

You retained me as a wetland biologist/botanist to examine your property. I am a wetland and terrestrial biologist/botanist with international experience; and I am the Director of a large field station in Minnesota. My task was to determine whether or not I agreed with previous assessments of your property as to the elevation that might be considered the Ordinary High Water Mark (OHWM) at your residence at 278 Westgrove Road, Troy Township, Wisconsin on the eastern bank of the St. Croix River.

I utilized Chapter 40 of the Wisconsin Waterway and Wetland Handbook as the guide for my observations when I visited your property for several hours on the afternoon of 4 October 2005. I particularly reference the definition of OHWM as noted in the State Handbook:

“The point on the bank or shore up to which the presence and action of surface water is so continuous as to leave a distinctive mark, such as by erosion, destruction or prevention of terrestrial vegetation, predominance of aquatic vegetation, or other easily recognizable characteristic.”

I carefully examined both biotic and abiotic (physical factors) that might be indicative of the OHWM. I present them in order as listed in section IV. Determining the Ordinary High-Water Mark as presented in Chapter 40 of the Waterway and Wetland Handbook. The water elevation was reported to be at 677.2 AS on the afternoon of 4 October 2005 when I examined the property.

### 1. Biological Indicators.

a. Mosses. Mosses were collected in two transects directly in front of the property at 1.0 meter intervals from the waters edge to an elevation of 684 AS (7 samples x 2 transects = 14 samples). Initial inspection showed these mosses to be terrestrial in nature, and some were growing attached to damp rocks at the shoreline. A thorough search of the entire shoreline of the property did not reveal any aquatic mosses to be present in the water or near the shoreline. Terrestrial mosses were found at all sampling sites. Using the textbook, *How to Know the Mosses and Liverworts*, 2<sup>nd</sup> Edition, by H.S. Conard and P.L. Redfean, Jr., the mosses were keyed to the genus *Platydictya*, probably *P. subtile*, a common and very small (less than 1 cm.) moss in Minnesota and one that often colonizes the sides of tree such as at this site. It is a terrestrial species. *More importantly, it is the*

lack of aquatic species of mosses at this sight that is most notable. Common aquatic genera that I would expect to find in this part of the Midwest are *Fontinalis*, *Hygrohypnum*, or *Fissidens*. None were noted to be present.

Populations of the mosses were scant as might be expected near a sandy shoreline but found in great profusion on the trunks of trees and rocks between an elevation of 678 and 684 AS. The lowermost elevation of mosses was exactly at an elevation of 677, i.e., slightly below the level of the water on 4 October 2005 on a few rocks that were being splashed because of wave action.

b. Lichens. Lichens were not present in enough profusion to be used as an indicator of OHWM. A few were present on rocks and trees but their abundance could not be used as a solid biological indicator of OHWM. In particular, I note that the general indicators used in Chapter 40, i.e., the presence/absence of coarse brown, black, orange, or green lichens were not present.

c. Trees. Many trees both mature and immature are found on this property between the water's edge and the residence. This have been carefully surveyed and mapped by Ogden Engineering Co. (River Falls, WS; 10-19-04; Job # 99-2432). These include plants of the genera *Ulmus* (elms), *Acer* (maple), *Populus* (cottonwoods), *Quercus* (oaks), *Thuja* (cedar), *Fraxinus* (ash) and *Betula* (birch). Although some are considered to relatively hydric in nature, such as the willows (*Salix nigra*), maples (*A. saccharinum*) and cottonwoods (*P. deltoides*), the oaks and cedars would not. In any case, the large number of these trees near the shoreline suggests that these trees are probably not even close to the OHWM on this property, i.e., they are not stressed by growing in constantly saturated soils, nor having their crowns inundated for long enough periods of time to stress them significantly.

Another indicator according to the Waterway and Wetland Handbook is the roots of species at or near the OWHM. Easily recognizable root morphologies including water roots, pancake roots, or pipe elbow roots in maples or birches were not evident on this property even near the waters edge. Roots of the larger trees near the shoreline mostly had roots growing directly toward the shoreline indicating that they were at an elevation reasonably far away from the OWHM. Slumpage was not observed on the sloping beach of this property and thus was not a confusing factor in making these observations.

d. Pollen. Pollen lines, especially as noted in the Handbook for pine pollen, were not in evidence at this site because pine pollination occurs in the spring.

e. Large cattail mats. Cattails have not colonized this property.

f. Algae stain. Algal stains or evidence of algal colonization was carefully searched for on naturally occurring rocks on the shoreline, on landscape rocks present on the beach and extending toward the residence, and on the trunks of trees along the entire property line along the river. No evidence of algal stains or remnants of heavy colonization by algae was observed. Some algal colonization was observed only on submerged rocks. These

were identified in the field as blue-green algae because of their characteristic color (dark bluish-green and slimy texture (gelatinous sheath). Microscopic examination of these rocks showed only some simple unicellular blue-greens and the common *Oscillatoria*. Algae identified as *Protococcus* were found associated with the mosses, but these are a simple, terrestrial algal species and often found growing on the sides of damp trees and rocks.

## 2. Physical Indicators.

a. Ice Scars. A careful search for obvious ice scars on the trees within several meters of the shoreline, well within a supposed OHWM, revealed no obvious ice scarring.

b. Erosion. No obvious signs of erosion were noted on this property other than small alluvial channels that were probably due to drainage from precipitation.

c. Mudstains and debris and

d. Water stains on rocks, culverts, seawalls, etc. Stains indicative of the OHWM were carefully searched for on all trees, rocks, and other permanent objects on the shoreline. Stains were found but none were indicative of a OHWM because they occurred at many different heights above ground level and were never consistently found around the circumference of a vertical surface such as a tree. I expected to see stains that might be indicative of a OHWM on large rocks forming a wall that were present on the beach of the property and extended from an elevation of 678 to 682 AS. These rocks (perhaps part of an attempt to landscape the property in the past) had exposed vertical surfaces ideal for showing stains. No stains consistent with water levels remaining for relatively long periods of time were observed on the vertical surfaces of these walls.

e. Leachate marks in the soil. If mineral soils are flooded for extended periods of time, they become anaerobic. They will develop characteristic grey, blue-grey or slightly greenish coloration in a process known as gleying. Soils can also be mottled if alternately flooded (for relatively long periods of time) followed by drying. In the latter case, the soil is said to become mottled, they will have orange/red or dark red-brown areas in a gleyed matrix.

Soil pits to 15 inches were dug in one-meter intervals for 7 meters (7 pits) from the shoreline toward the residence. No evidence of gleying or mottling was found in these soils. All were uniformly brown in color leading to the conclusion that the shoreline soils are not being subjected to long periods of flooding, excluding oxygen from the soil, and causing them to gley or mottle.

f. Change in soil types. Soil types do change in transects from the water's edge to the forested shoreline becoming progressively more organic as the transition occurs from the sandy beach area to the trees near the edge. However, again, gleying was not observed in these soils suggesting that most soils including the beach are not flooded long enough to become anaerobic, *i.e.*, they are above the OHWM.

**Other observations.** Aquatic species were not found on the shoreline of this property. Although the fetch and wave action of the river might preclude them, I did not observe common aquatic species for our area at the site such as *Zizania* (wild-rice), yellow or white pond lilies, *Carex* (rush species), *Potamogeton* (pondweeds), *Elodea* (water weed), or *Najas* (naiads).

Nor did I observe transitional species that might colonize an inundated area and are common to our region such as *Impatiens* (jewel weed), *Rumex* (docks), *Typha* (broad and narrow leaved cattails), *Polygonum* (smart weed), *Alismia* (water plantain), or even regionally universal weedy grasses that favor wet areas such as *Phalaris arundinacea* (reed canary grass). All are indicative of saturated soils and are not present along the shoreline of this property. The only species in abundance that can tolerate very wet conditions were the *Salix* (willows) growing at the aquatic/terrestrial interface on this property.

It might be noted also that using the criteria presented by the State of Wisconsin is quite nebulous from a scientific standpoint. Few objective and definitive conclusions can be derived from the distribution of organisms, the species of organisms, etc. as presented in the criteria because of the large site-to-site variations found along the shoreline of the St. Croix. As an example, stains of all types suggested in the criteria are almost impossible to delineate or define, especially since they are made by organisms whose populations ebb and flow from month to month or year to year; or using mud stains that also ebb and flow with the rise and fall of the river level.

**Conclusion.** I present this conclusion based on my scientific observations and on the "reasonable-prudent test" noted on page 15 of the Waterway and Wetland Handbook. As a scientist and also reasonable/prudent person, I come to the same conclusions as outlined by Thomas E. MacDonald (Barr Engineering, 29 October 2005) in a letter to Mr. Tilton. Based on the biological and physical indicators of the OHWM, the OHWM must near or very close to an elevation of 676.0 and 677.8 AS (corroborated by the survey of Ogden Engineering Co., 19 October 2004 at 676 AS).

The principle evidence includes, based on a careful interpretation of Chapter 40 in the Wisconsin Waterway and Wetland Handbook, the following:

- Terrestrial mosses are clearly evident and flourish to the water's edge at an elevation of 676.0 AS.
- Trees, that can grow under hydric conditions, but exhibit morphologies more characteristic of growth in a terrestrial environment (large size, no water roots, pancake roots, or elbow roots; or conversely, are solidly considered to be terrestrial species) are present in large numbers at the shoreline of this property.
- Stains, whether caused by algal colonization, mud, water, ice scars, etc., are not evident on this property.
- Soils that could be expected to be gleyed or mottled at or below the OHWM are not found on this property in the area of the expected OHWM.

• Aquatic species or transitional wetland species are not observed to be growing on this property indicating that the beach area is relatively dry and principally above the OHWM.

Sincerely,

A handwritten signature in black ink, appearing to read "David D. Biesboer". The signature is fluid and cursive, with the first name "David" and last name "Biesboer" clearly distinguishable.

David D. Biesboer, Ph.D.  
Professor of Plant Biology  
Morse-Alumni Distinguished Professor  
Director, Itasca Biological Station and Laboratories



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October 29, 2004

G

William Tilton, Esq.  
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St. Paul, MN 55101

RE: Section 12, T28, R29 along the St. Croix River  
Proposed Flood Protection

Dear Mr. Tilton:

You asked Barr Engineering to provide for you some detailed analysis of your property on Lake St. Croix in regard to (1) the flood impacts associated with a proposed flood-proofing project for your home at 278 Westgrove Road, Troy Township, Wisconsin; and (2) determination of the Ordinary High Water Mark (OHWM) elevation for this property. Barr Engineering has 40 years of experience in analyzing such matters, including extensive work with the Army Corps of Engineers and the National Park Service, including projects involving the St. Croix River. Barr Engineering assigned to me the task of assembling and analyzing the data on these issues. I have an M.S. Civil Engineering degree from the University of Minnesota, with over 18 years of education and experience with these issues. A summary of my findings and conclusions follows.

(1). IMPACT ON FLOOD LEVELS

Clearly, your home at 278 Westgrove Road, Troy Township, Wisconsin, is in the floodplain of the St. Croix River. This raises the question as to whether flood-proofing of the structure would have any impact on the height of any flood stage that may occur on the St. Croix River/Lake St. Croix. An ancillary question is whether your home is in the floodway or the flood-fringe of the St. Croix River. For reasons detailed below, we have concluded that if you were to flood-proof this structure by means of fill, said flood-proofing would have no discernable effect on the flood stage of the St. Croix River. Following from that analysis, the only conclusion is that your home is in the St. Croix River flood-fringe, not its floodway.

It is my understanding that you have at least a couple of different options for flood-proofing your house. For example, using fill under and around the entire footprint of the house versus using pilings. Given that our conclusion that a "greatest fill" scenario would have no discernable increase in the flood stage of the St. Croix River, obviously any method which uses less than a maximum amount of fill would have even less of an impact on the flood.

In doing this analysis, I have relied upon several resources, including the survey of the property done by Ogden Engineering; United States Geological Survey 7.5 Minute Topographic maps of the St. Croix Valley; my own personal inspection of the site; and upon detailed scientific modeling by Barr Engineering of multiple cross-sections of the St. Croix Valley, including precisely at your property and 1+ miles upstream and downstream from your property (this reach model was located from approximately river mile 12 to river mile 14.5).

Per these sources, it appears your home is (presently) more than 130 ft. from the shoreline of the St. Croix River/Lake St. Croix. If the entirety of your home's footprint plus a 15-foot bench around the home were to be flood-proofed with sloped fill, the edge of the fill would be about 85-feet from the shoreline. Assuming this, the volume of fill (from that 85' mark to the hill behind your house) below the regulatory flood level which would be used to flood-proof your house is calculated to be about 3,000 cubic yards or 1.9 acre feet. In contrast, the volume of the St. Croix River floodplain between the proposed fill and the Mississippi River is more than 50,000 acre feet.

We used an HEC-RAS computer model to check the effect of any loss of conveyance which your flood-proofing might cause. See attached documentation and calculations. The model was created using six cross-sections from USGS 7.5 Minute Topographic maps. The reach model was located from approximately river mile 12 to river mile 14.5, as noted. Encroachments were included on both sides of the cross-sections to produce an equal conveyance loss on both sides of the river, i.e., for purposes of analyzing the effect of flood-proofing your property via fill, it was assumed that similar fill would be placed not only on the Wisconsin side, but also on the Minnesota side of the river for all six cross-sections. The conveyance loss that was modeled at each side of each cross-section is equivalent to that which would occur due to your proposed flood-proofing project. Using this data and these calculations, a comparison of the regulatory 100-year flood profile, both with the fill and without the fill, indicates that there would be no increase (0.00 feet) in flood stage as the result of equal degree of encroachments in this stretch of the river/Lake St. Croix.

In short, scientific modeling data of the profile of the St. Croix River Valley proves conclusively that, if you were to flood-proof your home using 3,000 cubic yards of fill, which would be required by flood-proofing to be done via fill, there would be no discernable effect on any flooding of the river/lake.

This finding is supported by the 1971 report *Flooded Area of Afton, Minnesota*, prepared by the United States Geological Survey (copy enclosed), which states that "complete on-land encroachment would cause less than 0.1 foot of backwater." Please note that in this report "complete on-land encroachment" assumes complete encroachment above the normal streambed level of 675 feet for the entirety of the St. Croix River upstream from where it meets the Mississippi River. This USGS report further states that "floodway limits along the St. Croix River could be drawn at the natural shoreline with no significant backwater effect." Accordingly, the USGS considers all areas along the St. Croix River higher than the normal pool elevation of 675 ft. to be flood-fringe area. As the report indicates, this is due to the fact that the backwater from the Mississippi River controls the regulatory flood levels of the St. Croix River.

In short, this scientific data also supports the conclusion that your property is clearly in a flood-fringe area, not in a floodway area.

(2). ORDINARY HIGH WATER MARK (OHWM) DETERMINATION

For the reasons described below, I have determined that the true Ordinary High Water Mark (OHWM) for your property in Troy Township should be between 676.0 and 677.0 feet above sea level.

In reaching this conclusion, I have used the above-describe resources and personal investigation plus a review of Chapter 40, "Ordinary High Water Mark," and the Waterway and Wetland Handbook (State of Wisconsin). I have used Chapter 40 as a guideline for interpreting the following definition of Ordinary High Water Mark:

The point on the bank or shore up to which the presence and action of surface water is so continuous as to leave a distinctive mark, such as by erosion, destruction or prevention of terrestrial vegetation, predominance of aquatic vegetation, or other easily recognized characteristic.

Chapter 40 of the Wisconsin Waterway and Wetland Handbook, above-referenced, provides guidance for a field determination of the OHWM, including biological and physical indicators. From my personal examination of your property on October 18, 2004, I determined that there was inconclusive physical evidence of the OHWM from a few of the Chapter 40 guidelines. For example, the soil was sandy throughout the floodplain area; water staining of rocks and walls was faint and possibly caused by the flooding of 2001; and there were no mud stains or ice scars noted. There was no significant erosion line along the shore.

On the other hand, Chapter 40 mentions several biological indicators of the OHWM. There were several of these apparent on your property. Specifically, there were mosses and trees abundant along your shoreline. According to Chapter 40, "...mosses which are located on exposed rocks, stumps, tree roots, etc., are usually considered terrestrial and the lowermost elevation of these mosses is a good indicator of the OHWM." We surveyed this transition from moss to no-moss at four locations on your property, designated on the attached survey map as "OHW-1," "OHW-3," "OHW-4," and "OHW-5." The elevations of these locations, which were up to 325 feet apart, were within 1.8 feet in elevation of each other. All of these moss/no-moss elevations were between 676.0 and 677.8 above sea level, with an average elevation of 677.0.

According to Chapter 40, tree roots are another biological indicator or guide of the OHWM. It states therein, "The roots of living trees and shrubs along the shoreline will turn up and away from the water. Exposed bases and roots of older trees with roots growing primarily toward the shoreland on a horizontal plane are usually just above the OHWM if no slumpage has occurred."

We surveyed two locations where trees provided an indication of the OHWM. On the enclosed survey map, "OHW-2" marked the lower-most elevation of a line of willow trees along the shore. The ground elevation of the willow trees is 676.3 feet above sea level. In addition, a white oak is located approximately 40 feet from the shoreline. White oak are commonly found

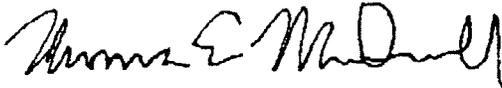
above the OHWM, according to Page 18 of Chapter 40. The ground elevation at the white oak is 679.4 feet above sea level. There are many other mature trees on your property at similar and even lower elevations, including 4 to 5 foot diameter cottonwoods, a 4-inch diameter elm, and several maples.

I have been told that occasionally the Wisconsin DNR has used an OHWM of 686.0 feet above sea level for the St. Croix River in the vicinity of your home. However, according to the hydrologic modeling that we performed, this elevation is only slightly lower than the particular elevation for a 10-year flood. Given the guidance of Page 15 of Chapter 40 ("Ordinary high water marks are generally established by the presence of water at a given elevation for a minimum of 30-70 days a year, over a 20 day period"), clearly the actual OHWM must be lower than a typical one-year flood level. Therefore, it must be far below a predicted 10-year flood level. Therefore, a use of 686.0 feet is a dramatically higher level for the OHWM than that suggested by the Chapter 40 guidelines.

Instead, based upon the above-described analysis, it is my opinion that the Ordinary High Water Mark for your property is between 676.0 and 677.0 feet above sea level.

The opinions expressed in this letter are also based upon my education and experience and are held by me to a reasonable degree of professional certainty. It is my understanding that this letter will be included as supporting your application for a land use permit for flood-proofing and remodeling your home at 278 Westgrove Road. I am available for further discussion of these opinions.

Sincerely,



Thomas E. MacDonald, P.E.  
Senior Engineer, Barr Engineering Company

Enclosures



To Be Send via email to Robert.Baczynski@dnr.state.wi.us

~~October 30, 2005~~ August 8, 2005 sent

H

Dear Mr. Baczynski,

Please forward copies of this email message to Mr. Breese, Mr. Sommerhaus, Mr. Bauman, Mr. Lepak, Ms. Post and any other Wisc. DNR employee or citizen with an interest in these subjects. I want these comments and facts to be part of the record prior to the anticipated August 31, 2005 Declaratory Ruling on the OHWM for Lake St. Croix.

As you know, I am a property owner on Lake St. Croix. My property, including over 400 feet of shoreline, is about three miles south of the I94 bridge at Hudson. Please add my name, office mail address and email address to DNR distribution lists for any OHWM matters and for any other matters involving the St. Croix River, Lake St. Croix, Floodplane issues, Shoreline issues or Wild and Scenic River matters. I thought I was supposed to have been added to such lists in the past, but it seems several such notices have gone out to others, but not to me.

As you promised you could do during the Hudson meeting on July 27, 2005, please send to me copies of the slides used at that presentation of "data" the DNR has gathered regarding setting of an Ordinary High Water Mark (OHWM) for Lake St. Croix and particularly for my property on that lake. If the material is available electronically you can send it to me via email at this address. Or you can send it to my office, address below.

Is there a tape or memo or DNR memo or other record of the July 27 meeting? If so, I request copies of all such items.

I would also appreciate copies of all other data, photos and other information which have been gathered by the DNR and which may be relevant to the DNR's decision regarding the OHWM for my property in particular and for the greater Lake St. Croix area in general. I will pay any copying costs incurred. I thought I'd see at least a listing of such information at the July 27 meeting; but nothing of the kind was presented.

This request and all other requests in this letter for information, data or documents should be considered pursuant to your team's promises of disclosure made to the many citizens present at the July 27 Hudson meeting and pursuant to any state and federal laws permitting access by citizens to information in the possession of the DNR.

I have developed some very serious concerns as to the accuracy, impartiality and completeness of the data being sought and of the conclusions to be reached by the DNR Team looking into the OHWM for Lake St. Croix, particularly for my own property.

Along that line, and for reasons that will be more clear upon a reading of this letter, I formally re-request that the Wisc. DNR make an OHWM determination specifically for my property on Lake St. Croix and that you do so as part of your present ongoing study, i.e. do it **before** the Aug. 31 release of a Declaratory Ruling on the issue. As your DNR records will indicate, I have been

requesting an OHWM determination for my property since 1999. My 400+ feet of shoreline are mostly undisturbed by human hands and in other ways I have a far superior site than several of the sites chosen by the DNR to look at for this OHWM study. Last year the DNR received a volume of data including several expert reports and OHWM determinations for my property. The DNR has promised that an OHWM determination for my property would be done finally as part of the DNR's present study. Therefore I was a bit when I came to the July 27 meeting to discover that the DNR's public report of data collection so far did not include **any** of the data received by the DNR relative to my property.

Related to that subject, I want to lodge a protest against the failure of the July 27, 2005 meeting to fulfill its promised purpose of presenting preliminary "findings". See the Aug 18, 2004 letter of Daniel Bauman which described this session as intended to

develop field report identifying OHWM findings, share with partners, compare to historical elevations and data gathered from the public.

But there was not any "field report identifying OHWM finding" presented at the July 27, 2005 meeting. The DNR people present affirmatively refused to make any stab at what thoughts they had regarding any OHWM finding. Since there was no "finding" info, there obviously was not any attempt made at the meeting to "compare [those findings] to historical elevations," as had been promised at the beginning of the 'study.'. Similarly, the July 27 presentation totally omitted any of the promised "data gathered from the public," including the extensive data for my own property. A couple dozen citizens, including several people with valuable expertise, came to the meeting to talk turkey with government workers about what data was available and what conclusions or 'finding' you were tending toward. Instead we were told there that the DNR didn't want to talk about any particular OHWM elevations that night; there would be no finding till Aug 31, by which time a Declaratory Ruling would be made. Public input was discouraged at the very meeting which seemed to be specifically designed as an opportunity **for** public input before the DNR made another bad OHWM determination.

Additionally, at the July 27 meeting it was not clear what criteria the DNR is using to make its OHWM determination. Mention was made of Chapter 40 of the Waterway and Wetland Handbook for the State of Wisconsin, entitled "Ordinary High Water Mark". But mention was also made of something called "the Browse Line," whatever that is, "drift lines" and "erosion lines" without any explanation of what implications those vaguely defined issues had on the DNR's OHWM determination.

**IMPORTANT DATA WHICH APPEARS TO BE IGNORED BY THE DNR TEAM LOOKING AT THE OHWM FOR LAKE ST. CROIX**

From the July 27, 2005 meeting I understand that your team investigating the OHWM for Lake St.

Croix is not taking into consideration the OHWM determination now in existence for the Minnesota shore of Lake St. Croix, nor any of the factual information upon which that Minnesota shore OHWM is based. I request all information, if any, which your team or other Wisc. DNR personnel have collected from the Minnesota DNR or other sources in Minnesota which may be relevant to this OHWM. If you (i.e. your team or other WI DNR sources) have not collected any information from any Minnesota sources, I request that you state so in your response to this letter. For what it's worth, assuming no Minnesota-sourced data has been collected as stated at the July 27 meeting, I would also be curious as to why your team would choose purposely to ignore a potential wealth of information regarding the OHWM issue which you imply you are investigating thoroughly.

I also inferred at the July 27 meeting that your team had not yet investigated nor considered the OHWM determination made over the years by the City of Hudson. Is that true and, if so, why not? If you have not collected any information from the City of Hudson or from the experts upon which the city has relied upon in the past, please, state so in your response to this letter.

I was very surprised to learn at the July 27 presentation that you had not yet taken an opportunity to look at the detailed OHWM analysis of my own Lake St. Croix property done by Barr Engineering, Ogden Engineering and other experts (at some considerable expense to me) and which provides detailed and overwhelming evidence that the OHWM at my property is between 676 and 677 feet above sea level. Because the DNR ignored my five years of requests that the DNR do it, at my own expense I hired the best experts available to gather relevant data for an OHWM determination at my property.

For example, I had a team of surveyors & others do a survey of my property. As part of that Louis Filkins and his associates at Ogden Engineering (a long-established and very well-respected local expert resource) did an investigation and made an OHWM determination, which has been provided to you but apparently ignored. As part of the data gathering, I had that team do a survey which shows the location, diameter, elevation and type of every tree on my property (over 4" in diameter) within 200 feet of their professionally-determined OHWM. You have been provided with that map/survey for my 400+ feet of shoreline. It shows over three dozen such trees waterward of the DNR-enforced OHWM of 682' (and over half a dozen of those waterward trees were between 3' thick and 5'5" thick). It appears no such woody vegetation survey has been done at any of the five DNR-chosen sites; but for some reason it seems that this unique survey-of-trees data provided by me to the DNR has so far been totally ignored.

In addition, I hired Barr Engineering, a long-established national firm with 40+ years of experience in analyzing such matters, including extensive work for the Army Corps of Engineers and National Park Service, including projects involving the St. Croix. Barr Engineering specifically referred to Chapter 40 criteria for the OHWM. The Barr report specifically addressed physical indicators such as soil, water staining, mud stains, ice scars and erosion lines.

In addition, Barr addressed biological indicators mentioned in Chapter 40. For example, it investigated mosses and trees along my shoreline.

It so happens that **moss** is the very first-listed "Indicator" in the DNR Handbook Chapter 40 section entitled "What to look for when making an OHWM Determination." So Barr Engineering did a moss survey on my property. Barr's data and finding based on its moss survey is as follows:

. . . Chapter 40 mentions several biological indicators of the OHWM. There were several of these apparent on your property. Specifically, there were mosses and trees abundant along your shoreline. According to Chapter 40, "...mosses which are located on exposed rocks, stumps, tree roots, etc., are usually considered terrestrial and the lowermost elevation of these mosses is a good indicator of the OHWM." We surveyed this transition from moss to no-moss at four locations on your property, designated on the attached survey map as "OHW-1," "OHW-3," "OHW-4," and "OHW-5." The elevations of these locations, which were up to 325 feet apart, were within 1.8 feet in elevation of each other. All of these moss/no-moss elevations were between 676.0 and 677.8 above sea level, with an average elevation of 677.0.

I also presented photos from a helicopter flyover of my property, showing an obvious natural division between the aquatic vegetation in the water and the terrestrial vegetation on the shore. An ordinary person would describe this as barren sand and rock, i.e. -- a beach. This 8+ foot wide area is sort of a "no-man's land" for both terrestrial or aquatic vegetation. If you read the 1914 Diana Shooting Club v. Husting 156 Wisc. 261, 272 and the "reasonable person" test noted in the DNR handbook, one would think that a glance at the flyover photo would indicate that the OHWM *must* be somewhere on that barren beach separating the woody vegetation (i.e. the forest) from the water. It is in that area, based on fine tuning from moss and tree roots, that one reaches the OHWM of between 676.0 and 677.0 for my property.

This data and much more was presented to St. Croix County and the DNR in October or November, 2004. I note that on Dec. 15, 2004 Gary Lepak and Eunice Post provided the DNR's comments to the county regarding my application, so by then the DNR was clearly aware of (or *should have been* aware of -- see Ms. Post's comments, below) the several expert opinions I had obtained on the OHWM issue. It seems clear that no such detailed analysis of OHWM issues had previously been done by or given to the DNR (and presumably this was clear to Mr. Lepak and Ms. Post, since they both had told me in the past that they could not describe to me the facts used to support the 682 enforcement level; every now and then someone talks vaguely of a Dan Koich having determined an OHWM of 682' as part of a Marzoff application years and years ago, but no one has ever provided any data supporting that number; certainly none was mentioned at the public meeting on July 27, 2005; if you talk to Buzz or Mary Marzoff they will tell you that the OHWM "investigation" by Mr. Koich was done totally arbitrarily).

In his Dec. 15, 2004 memo commenting on my Application for Land Use Permit, Mr. Lepak is silent on the OHWM issue altogether (he has at other times stated that's not his issue, that he's not expert in that area, tho I found a memo from him from 1983 where he confidently states the OHWM is 688 feet! Finally in a 1999 memo Mr. Lepak admits "This [the long-enforced 688 OHWM level] needs to be verified", i.e. it's wrong; then he simply summarily changes the DNR's OHWM, but in a very tentative way: "the OHWM which *I believe to be* at 682 feet," [italics added] and Mr. Lepak cites no evidence to support it.). Interestingly, to the extent Mr. Lepak looked at my 2004 data he found it convincing -- i.e. he accepted the conclusion by Barr Engineering on the more-complicated Floodway/Floodfringe Boundary issue.

Ms. Post had the DNR job of advising the county on the OHWM issues in my Application, and in doing so she simply ignored the data and expert conclusions altogether. In her Dec. 15, 2004 comments Ms. Post simply summarily said "The ordinary high water mark at the Tilton property is 682 1912 Corps adjusted elevation datum." The county was looking to Ms. Post for guidance on the OHWM issue and in so doing Ms. Post misled the county. There are no signs that she even read the Barr Engineering or Ogden Engineering data or looked at the photos or surveys; if so she makes no explanation for why her 682 declaration is contradicted by all available evidence. Are you aware that Ms. Post was on my property in November 2004, while the stakes placed by the Filkins/Ogden and Barr experts were still in place? I asked her to walk to those stakes and see for herself what the other experts were looking to. She summarily refused to do this simplest of investigations, despite my direct request that she do so as part of the DNR's OHWM study and despite that she was just down the beach from the data.

Given this history and more, this raises questions about the qualifications and/or objectivity of some of the DNR people doing this study and questions about the care with which data is being gathered and analyzed.

From these experiences, from my review of historical documents (see e.g. the Lindeberg and Marzoff files) and from my personal encounters with certain DNR personnel on this issue I get the impression that there is a distinct prejudice within the DNR to ignore any evidence which would support an OHWM level akin to that already determined by the State of Minnesota, the City of Hudson, Barr Engineering, Ogden Engineering and others. Rather it seems that the DNR wants to make an OHWM Determination as high above sea level as possible in order to maximize its own police power and restrict property rights as much as possible.

The fact that three of the five official sites looked at by your OHWM team (the Rolle property, Twin Springs and the Kinnickinnic area) were all 'investigated' by your team during a week in mid-May 2005 when the river was higher than what the OHWM logically is (e.g. woody vegetation was sticking out of the water; moss was clearly under water at the time of your team's visit) makes me wonder how you can relay on most of the data you have collected.

The DNR collectors of data said that their process of gathering data is to start at the water line and go up hill to (or toward) the bluff. So they inherently cannot gather data supporting a OHWM level lower than what the water was on the day of the data gathering. Why not do this during the dry season? When the water is at the low pool elevation of about 675 feet (like now), start at the low pool elevation and work your way toward the bluff. Do it in the next week or two on my property, if you do not trust the Barr or Ogden or other info for some reason. You'll get different, more relevant and more reliable data than you did when your team "investigated" at three of your sites in May of this year.

As I said toward the beginning of this letter, I have developed some very serious concerns as to the accuracy, impartiality and completeness of the data being sought and of the conclusions to be reached by the DNR Team looking into the OHWM for Lake St. Croix, particularly for my own property. I will be cc'ing this email to several other citizens who I believe may be interested in the fairness and accuracy of the OHWM Declaratory Ruling which is to be issued August 31, 2005. I know there are many more citizens who have an interest in this subject who are not on this cc list; this is because I simply do not have their addresses on this computer. I encourage people receiving this email to forward it to others who may have an interest.

I will appreciate your courtesy in responding to the questions raised and in taking the actions requested in this letter. I am happy to discuss or meet regarding these issues. For phone calls, please first try my office at 651-224-7687 [best place to leave phone messages].

Respectfully,

Bill Tilton  
278 Westgrove Road  
Hudson, WI 54016

Please send U.S. Mail to my office:

c/o Tilton & Dunn, PLLP  
101 East 5<sup>th</sup> Street  
#2220  
St. Paul, MN 55101

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DRAFT

B.11 TICTON - 612-867-7473

September 15, 2005

Notes Regarding OHWM

According to the welcome for the public hearing, Robert Baczynski gave introduction stating that this process started when citizens complained that Wisconsin's OHWM for Lake St. Croix "is not consistent with State of Minnesota's elevation for measuring setbacks and that the Wisconsin DNR needs to change that." However, the elevation that Minnesota has historically used for determining setbacks was fundamentally ignored in this study.

He states that OHWM elevations "were determined and are established" as 687 feet for Prescott, 682 feet for Town of Troy, and 685.75 feet for Union Pacific Railroad property in the City of Hudson. But the DNR has absolutely no data to substantiate any of those levels. Throughout the presentation of the DNR during this study, it has referred back to those previous determinations, even though it ultimately has acknowledged that there has been no factual basis in the record to substantiate those elevations. See p. 100.

Eunice Post Comments, 8/31 and Memo dated August 30, 2005: Gives a time line for conducting this OHWM process. Ignores that I started asking for OHWM determination for my property in 1999. It was submitted to the DNR in late October 2004. Followed up with letter from Jenny Shilcox that the DNR would be making an ordinary high water mark determination. November \_\_, 2004 two or three people from the DNR appeared at my property and affirmatively refused to do an OHWM determination. December \_\_, 2004, Eunice Post writes to Jenny Shilcox in an e-mail that my OHWM will be determined as part of this ongoing study by the DNR. January \_\_, 2005, DNR asks for additional sites for the following eight months of investigation Form filled out and submitted with application data in February 2005. I again submit my OHWM request, this time with a formal form filled out. July 27-28, 2005, DNR holds "public informational meetings." See the exact DNR claim for the purpose of these meetings. It was not met. See my August 8, 2005 to Bob Baczynski.

Gary Lepak data, pgs. 103+. One slide purports to show "previous OHWM elevations" at 687, 685.75, and 682.0. He fails to say that the DNR has no data to support those determinations. Next slide shows two-year flood at 681.2 feet. Contrast this with their finding of the OHWM at 681.5. Contrast this with the Minnesota DNR statement that the "top of the bank" (higher than Wisconsin's definition of OHWM) is at the 1.5 to 2 year flood; then for reasons unstated it shows the higher of those two, the two-year flood. How can Wisconsin find an ordinary high water mark which is higher than the two-year flood, which is higher than what Minnesota determined to be the two-year flood, which is what Minnesota determined to be "top of the bank," which is clearly higher than the ordinary high water mark?

Lepak presents data from February 1 through October 1. In other words, it only uses 9/12 of the year and makes things look like the water is higher than it is.

Pg. 105: Slide for "Days Above Selected Elevations @ Prescott" shows that 681.5 was equaled or exceeded only 21 days per year on the average between 1950 and 2005. Compare that with DNR Handbook Ch. 40 which states that a "minimum of 30 to 70 days" would be appropriate

elevation data to support an ordinary high water mark determination. According to the slide on page 105, this would mean that the OHWM would be at least as low as 680.5 (31 days on the average) or 678 (69 days per year on the average) or lower. Similarly, at Stillwater, data on page 106, the 1950 to 2005 data shows 31 days at or above 681 feet on the average and 67 days at 678.5. Even using Lepak's more recent years of the averages from 1985 to 2005 that the higher elevation in Stillwater, 681.5 feet, is only reached or topped 27 days per year. 679.0 feet for the 1985 to 2005 data is equaled or exceeded 69 days at Stillwater. Accordingly, according to their own data and using the most recent (wetter) years, the elevation should be at 679.0 feet or lower even at Stillwater.

At the barge dolphins near Stillwater, they found a stain line at 681.55 feet. Way towards the end of the pages Eunice Post points out the advantage of that stain line, indicating "permanence" among other things. But the DNR had no clue when those dolphins were last painted, so they can't have any clue as to when that stain might have been placed there. Nor do they make any attempt to correlate this stain or any of the many other stains they looked with water peak elevations from spring flooding or rain floods.

Pages 108 and 109 show that the Army Corps uses a different definition of OHWM than Wisconsin.

Pages 100 and 111 give a list of the exhibits to the DNR materials.

Page 112 states that the river corridor is classified in the Cooperative Management Plan, Lower St. Croix National Scenic Riverway, as of January 2002 as "River Town" from "Hudson and approximately two miles south of Hudson." Does that reach to my property?

It goes on to say, "The Department does not have the survey information for the 682 and 687 OHWMs" except for the Marzoff property in Troy Township and the Gresser property in Prescott, respectively. It says, "The 685.75 OHWM was set and surveyed by Department staff (see Exhibit A.16)." **Note to WLT: See**

Page 113 lists the teams. It says London Nelson did soils. Then it gives the names of other people. Konkel, Seemon, and Post identified vegetation. Lepak, Helsel, Ferrin, and Post did survey work (done 9/7/04, 5/18-19/05; 7/12-13/05) for water stains. All team members identified biological and physical indicators. **[Let's get the qualifications of each of these people to do this.]**

On August 31, 2004 field work was done at Lake Mallalieu Dam, Transect 1 and Union Pacific Railroad properties south of the Dam, Transect 2. Team consisted of Dale Holmuth and Molly Shodeen, Minnesota DNR, Dan Seemon, US Army Corps of Engineers; Jim Kleinhans and Emily Lund, Pierce County; Gregg Breese and Eunice Post, Wisconsin DNR.

September 7, 2004 – Kinnickinnic State Park backwater slough area, Transect 1, pier area, Transect 2. Team consists of Molly Shodeen, MN DNR; Dan Seemon, US Army COE; Jim

Kleinhans and Emily Lund, Pierce County; Dem Konkell, Gary Lepak, Dan Helsel, and Eunice Post WDNR.

5/17/05 – City of Prescott property at north end Lake Street, Transect 1, and south end of property line, Transect 2. Team consisted of Bob Rolle, Francis Ogden; Jayne Brand and Jerry Killian, City of Prescott; Jim Kleinhans and Emily Lund, Pierce County; and Eunice Post, WDNR. Also present were Paul Montgomery, Paul Mosby, Mike Hadrian, and Charlie MacDonnell.

5/18/05 – Rolle property at approximately 600 feet from north end of property, Transect 1, and approximately 1,150 feet from north end of property, Transect 2. Team consisted of Bob Rolle, Francis Ogden; Lepak and Post, WDNR; Bill Tilton. Jim Kleinhans and Emily Lund, Pierce County, present to identify soils but could not do so.

5/19/05 – Twin Springs boat landing, south of landing, Transect 1, and north of landing, Transect 2. Team was Buzz Marzoff, Bob Rolle; Tom Nelson, former St. Croix County Zoning Administrator; Randy Ferrin, US Nat'l Park Service; and Lepak, Konkell, and Post from WDNR.

6/22/05 – Lepak and Post re-visit field sites to do follow-up survey work; “however, water levels were significantly high enough to prevent surveying.”

6/30/05 – Lepak, Conservation Warden Dave Hausman, and Eunice Post took pictures of field sites from the river and other indicators such as barge dolphins at the King power plant, bridge piers and abutments, rip rap.

7/12 & 13/05 – Gary Lepak and Eunice Post re-visit some field sites to survey additional indicators. Also surveyed water stain on the rip rap on the Stillwater bridge causeway, area immediately south of Mallalieu Dam, downstream embankment and Prescott field site.

“These sites were selected for a variety of reasons. The sites are fairly equally spaced [deny], they provide examples of the shoreline diversity in this region of the river [deny], minimal trespass concerns, did not unduly inconvenience private land owners, and two sites requested to be evaluated. The Department did receive other requests to have the OHWM evaluated [which ones besides Tilton?], but logistically could not conduct the field work and meet the August 31 public hearing deadline [deny] Page 113.

“The Department has also received public input that four of the five field sites are ‘disturbed’ and that only the Rolle property is ‘undisturbed.’ Department staff disagree. A site is ‘disturbed’ if OHWM indicators have been eradicated by artificial alterations and can not be found. Sites with artificial alterations can have OHWM indicators, usually when the alteration is fairly old and unchanged so that natural forces can leave marks or re-vegetate over time.” Compare this with Eunice Post on November \_\_, 2004 saying that they couldn’t do OHWM at my property because for approximately 100 feet it was “disturbed,” and she pointed out a patio and steps that probably were built in the 1930s and a boathouse foundation from the same era. It then goes on on page 114 to make a variety of explanations as to why the disturbances at Twin Springs, Lake

Mallalieu, Union Pacific Railroad, Kinnickinnic Park, and Prescott were not disturbed enough to prevent OHWM determinations.

“The task of the field teams was to find physical evidence to locate the OHWM according to the guidance in chapter 40, Water Regulation and Zoning Guidebook (see Exhibit B.01). We followed the Guidebook as closely as possible [deny]; however this is a guide book and does not address every situation. We also used the Wisconsin Supreme Court definition of OHWM in Diana Shooting Club v. Hustings (1914) and other relevant case law (see Exhibits B.02-B.05). The scientific parameters and indicators used to find the OHWM as identified in the Guidebook: Water marks (stains), Erosion marks (scars), Destruction of terrestrial (upland vegetation) [deny], Soils, Morphological plant adaptations [is this in Diana or chapter 40?], Plant stress [?], Water level records [chapter 40 says minimum of 30 to 70 days], Water body size (area, slope of bed) ([ ]), Artificial physical alterations of the bed and bank (not naturally occurring, man-induced disturbances).” Where is the complete data for each site? I do not believe they collected anywhere near this kind of information for each site. And they ignored some of the most important indicators in Diana Shooting Club v. Hustings (“terrestrial” “aquatic” . . . and most of the criteria in chapter 40. Page 114.

Field work information is apparently summarized on pages 115 through 118. It is here where it becomes clear that the investigators started to use criteria that are not at all found in Diana Shooting Club nor in chapter 40. They start talk of “hydric soils.”

Twin Springs Boat Landing, Transect 1: Moss growth very predominant, including up tree trunks. Chapter 40 lists moss as the first biological indicator of OHWM, but the moss is not identified, and moss is almost universally ignored as an indicator by this team. They talk about “biological indicators were one tree with exposed, and a pipe elbow root that Bob Rolle asked that we note.” They go on to point out that the “top of exposed root elevation 681.76 which is in contradiction to chapter 40, which notes that they should be measuring the bottom of a pipe elbow root or exposed roots. They also mention “trees with multiple trunks,” although I can’t find that as an OHWM indicator in any source.

Twin Springs, Transect 2: “Vegetation was all hydric from 0 to 30 feet . . .” No explanation as to the relevance of “hydric.” Note that there was “moss growth up tree trunks (top of moss elevation 682.07).” But chapter 40 says that they should be measuring the bottom of the moss. Also states, “Biological indicators were some trees with multiple trunks and a few trees with buttressed roots.” But no source mentions multiple trunks or buttressed roots as an indicator or OHWM.

Lake Mallalieu Dam / Union Pacific Railroad, Transect 1. “The principal indicator at this transect is the water stain on the 70 year old dam abutments. We observed three distinct stains on the abutment: a grey band at the top, a bleached area in the middle and a grey area at the bottom. Using the Guidebook, the OHWM is located at the line between the lighter color and the top dark band [check this]. This location on the dam abutment was found to be elevation 681.5 (see Exhibit C.16).”

Transect 2 – Union Pacific Railroad property (Exhibit C.17). Talks about hydric soils and hydric vegetation. What is the relevance in the definition of these? “At 80 feet vegetation change from hydric to invasive, exotic species: poison ivy, buckthorn, honeysuckle.” Relevance? “Physical indicators from 0 - 80 (elevation 682.01) were exposed tree roots (all trees), drift lines 30 (elevation 677.92-679.41) and 33 feet from debris caught on vegetation from flowing water [relevance?], water stain on tree trunk cottonwood with exposed roots elevation 682.73) and an erosion line at 85 feet (elevation 683.61 at the bottom.) Biological indicators from 0 to 80 feet (elevation 682.01) were shallow root systems of trees, multiple trunks of trees . . . , and adventitious root, buttressed roots.” Comment: none of these items are used in Diana Shooting nor in chapter 40.

Bob Rolle property: no soil borings. “Physical indicators were bleaching on lower portion of some tree trunks and possible water stain on natural rip rap. . . . Trees had exposed roots. Biological indicators . . . were one tree with pipe elbow roots was noted at water level that day per Bob Rolle; trees had shallow root systems, and we found two trees with buttressed roots.” None of these indicators should be relevant.

Rolle Transect 2: No soil borings. Vegetation was hydric. Cedar tree at 26 feet at the top of what we thought might be a light stain. We determined, per Francis Ogden’s request, that it is an eastern red cedar that has exposed roots. Doesn’t say the elevation of the eastern red cedar at its base. “Physical indicators . . . trees had exposed roots . . . debris line . . . photographed the natural rip rap for water stains, but could not survey because of the weather. Biological indicators . . . trees had shallow root systems. Bob Rolle asked that we note two trees at the water line that day that had pipe elbow roots.” Note that the water level was too high that day to do an ordinary high water mark determination. Rolle and Tilton pointed out to them that moss

– TAPE ENDS

**Law**

**DNR’s Failure to Meet Its Own Goals in the Study**

**DNR’s Bias in Its Design & Execution of the Study**

**How the Field Data Contradict the DNR’s OHWM Conclusion**

DRAFT -

Bill TILTON - 612-867-7473

MEMORANDUM

TO: OHWM File  
FROM: WLT  
DATE: October 3, 2005  
RE: Continuation re OHWM Study for 10/4/05 Mtg w/Biologist

The report is rife with examples of (A) poor science, (B) poor data collection, (C) use of irrelevant or second-best data, (D) purposely ignoring data contrary to a desired result (or failure to gather data), (E) implications of missing data w/held from the report, (F) misunderstanding of the purpose of the study to begin with, (G) failure to follow announced procedures.

*(A) failure to confirm/prove theory in field*  
As an example of A above, Failure to Follow Announced Procedures, the August 18, 2004 announcement about in June-July 2004 it will develop field report identifying OHWM findings, share with partners, compare to historic elevations and data gathered from the public, @ but none of those three things were done at the July 31, 2005 meeting in Hudson. They actively refused to identify any OHWM findings, preliminary or otherwise, so this obviously could not be shared with partners, nor could it be compared to historic elevations or to data gathered from the public. In fact, the report never compares any A data gathered from the public @ because it is all dismissed as irrelevant, at least the Tilton data is.

This 8/18/04 announcement says Gregg Breese will be the project coordinator at gregory.breese@dnr.state.wis.us. Signed by Daniel Baumann, Water Leader West Central Region. Housed with Scott Humrickhouse, Regional Director, West Central Regional Headquarters, 1300 West Clairemont Avenue, P.O. Box 4001, Eau Claire, WI 54702; telephone: 715/839-3700.

- (1) poor science
- (2) poor data collection
- (3) use of irrelevant or second-best data
- (4) purposely ignoring data contrary to a desired result (or failure to gather data)
- (5) implications of missing data w/held from the report
- (6) misunderstanding of the purpose of the study to begin with
- (7) failure to follow announced procedures

Skipped to Kobs memo and tape goes blank several minutes >til here:

Note that the water level was too high that day to do an OHWM determination. Rollie and Tilton pointed out to them that  
Side 2.

Pages 170-171 are photocopies of entries in a notebook, in part dated 8/3/94 and containing the names Coke and Koich. Question: Is this the only data from past determinations of the OHWM by the DNR?

Page 172+ is Chapter 40 of the Waterway and Wetland Handbook, A Ordinary High Water Mark. @

Pages 183-193 are the Wisconsin v. Trudeau case, 139 WI 2d 91 (1987)

Pages 194 - 200 are the Diana Shooting Club case

Pages 201 - 204 are the Lawrence v. American WP Co. case

Pages 205 -208 are State v. McDonald Lumber case. In this case the court said that in lieu of a natural high-water mark, the appellant offered proof as to the average of the high-water level of the Great Lakes as determined by the United States army corps of engineers for the period 1860-1959. @ The state used a 581 foot mark for Lake Superior. But the trial court said that the burden of proof rests upon the plaintiff to prove that the area which constitutes a nuisance and its abatement must be established with reasonable certainty @ and the state failed to do so.

Pages 209- 231 are the photos from Lake Mallalieu Dam site August 31, 2004 investigation, including power point presentation stuff about who participated. Not one of these photos do the DNR people use arrows or a line to indicate where on the photo any particular elevation is. The Lake Mallalieu dam site is on Union Pacific Railroad property. First field study done 8/31/04. People from Minnesota DNR, USCOE, Pierce County Zoning, and Wisconsin DNR. Water=s edge was 675.3 feet. There is a photo on page 213 which suggests there are mosses growing on some of the rocks away from the water, but no indication that any moss data was gathered at this site. Page 215 talks about vegetation in the area after the rock/cobble area A consistent of water dependent species. @ See category C above. Page 216 is a photo of herbaceous (non-woody) vegetation 15 feet from edge of water. Identifies the species. Does not state the elevation of those species nor whether they are considered to be terrestrial. Page 218 lists several plants in the vegetated area and says all A were hydrophytic (water loving). @ See Category C above. Page 219 shows the color of soils. Category C again. Page 222 is a photograph including lots of trees talking about how A the dense water dependent vegetation ended and changed to a sparsely vegetated area beginning at 33 feet from the water=s edge. @ It looks like trees are ignored here. See page 223. Are these trees the A area of sparse woody vegetation which also included other physical indicators of the presence of water: the exposed tree roots of woody vegetation, adventitious root, debris caught on vegetation, ultimately changing to area vegetated by predominantly upland vegetation at the beginning of the poison ivy growth @ Question: Is upland vegetation / poison ivy the site of 681.5 feet? What values were given to these various areas on the photos? See page 228 indicating A physical indicators (easily identified characteristics) showing the presence of water . . . exposed tree roots. @ Was elevation taken of these roots? Does the fact that they are slightly exposed mean that Eunice Post assumed that this tree which is at least two feet thick was not terrestrial at its base? Page 230 talks about A predominantly woody vegetation . . . listed below: black willow . . . silver maple . . . green ash . . . eastern

cottonwood. @

Pages 232 - 250 are photos and power point items on the Kinnickinnic State Park site, September 7, 2004. Again, lots of photos with no indication where the 681.5 OHWM would be in relation to the things photographed. Page 233 shows nicely how much of the area they worked in is fairly new, given that it was a dredge disposal site for the Army Corps of Engineers. Page 237 talks about an ice ridge Avegetated with water dependent plants @ such as sand bar willow, green ash and lake sedge. Question: Are those three Aplants @ aquatic or terrestrial? Where is the OHWM on that photo? Last deposit of dredge material done in the 1980s. There is also a boat ramp. Page 241 B photos of Aadventitious root growth. @ Category \_\_\_\_\_. Page 242 B Aa close up look at the water stains on the trees. @ Category \_\_\_\_\_. Page 244 mentions Anotice the indicators of continuous water: dead tree stumps and water dependent vegetation. @ Category \_\_\_\_\_. From the corps disposal area they went to the park boat ramp and pier area. AThe water stains on the rip rap is very distinct. @ Page 248, Category \_\_\_\_\_. On page 249 is a photo of the undisturbed shoreline upstream from the park pier containing natural rip rap. Trees are growing out of it fairly close to the water. No OHWM line drawn there. Page 250 is another photo that states the height of the rock and the start of the vegetation remains consistent, but no number is given for the elevation at the start of the vegetation. Page 251 reference materials used: **KMBsee if you can get this.** Wetland Plant and Plant Communities of Minnesota and Wisconsin, 2<sup>nd</sup> Ed. 1997, from the St. Paul District US Army Corps of Engineers authored by Steve Eggers and Donald Reed; Munsell Soil Color Charts, 1998 revised edition; Field Indicators of Hydric Soils . . . . Plus Chapter 40 of the DNR=s Handbook.

Page 252 B map purporting to show the even distribution of the field site locations. However the star for the Rollie property is out of place, several miles north from where it actually is. This implies the spacing much more even than in fact occurred.

Page 253 B from Twin Springs Boat Landing, Transects 1 and 2. It shows exposed roots and an erosion line. Bob Rollie is pointing to a root of an American Elm. What are the altitudes of these items?

Page 254 is Lake Mallalieu Dam showing water stains and trees with exposed roots. Category \_\_\_\_\_.

Page 255 Bob Rollie property. Mentions water stains on trees and on rocks, dark and then light and then dark again. Category \_\_\_\_\_. The photo from here also shows trees in the water that day, the water level was so high on that May 2005 date.

Page 256 is a photo of Kinnickinnic State Park. So is page 257. Notice water stain on the rocks and the Abrowse line @ in the upper photo. Category \_\_\_\_\_. Page 258 B photo of City of Prescott property. Page 259 states soil samples at places other than Rollie=s Awere hydric soils in areas of other indicators; such as, exposed roots, water stains, or predominance of hydrophytic vegetation. @ Category \_\_\_\_\_. Page 260 B photo of Bob Rollie=s property where Awe documented presence of trees with exposed roots and trees without and their locations. @ But we have never seen this data. Plus, the photos clearly show extensive moss, which is mentioned predominantly in Chapter 40 but ignored here. Yet they say, AWe inventoried vegetation and its

location. @ Page 261. A To determine locations of vegetation, stains, erosion lines, exposed or adventitious roots, drift and debris lines, we use both horizontal and vertical measurements. @ Category \_\_\_\_\_. What elevations were registered for what items?

Page 262 B Twin Springs tree over a foot thick and they are documenting water stains. How could water stains up the trunk of a thick woody tree indicate something that wasn't terrestrial, given that the terrestrial tree couldn't live there if it wasn't a terrestrial area. Page 263 is the only mention that the July meeting of the OHWM receipt from Bill Tilton. No comment whatsoever is made upon it. It also says, A We have been asked about the presence of moss in this evaluation B that is being further researched by DNR, but we would appreciate any additional information that others might have. @

Page 264 is elevations of various findings from the Twin Springs Transect 1, May 19, 2005 water level 678.80 at 10:15 a.m. This indicates that many of the water stain data is taken from 20" and 24" thick trees and still the data is in the 681 foot range. There is a measurement for the top of an exposed tree root at the 681.76, but no measurement of the bottom of the tree root. No measure of the base of any of the trees. No attempt to find moss.

Page 265 is apparently heights of A physical indicators @ (Category \_\_\_\_\_) south of the Twin Springs Transect line that they couldn't survey on May 19 and so did July 12, 2005. They do then get the ground of the base of two maple trees at 680.40 and 679.56. They measure the A top of moss @ on above maple at 681.77 feet. Category \_\_\_\_\_.

Page 266 is soil pit data from Twin Springs 1. 267 is identification of a variety of species based upon number of feet from the water=s edge. At Twin Springs there are two silver maples within ten feet of the water=s edge. This all seems to be based upon categories of plants for purposes of determining wetlands. Category \_\_\_\_\_.

Category C.06 starts at about Page 269. This seems to be Twin Springs Transect 2, photos from 269 - 276. It looks like trees are growing out of the water. Page 270 Bob Rollie is pointing to a pipe elbow root of an American Elm. Page 271 clearly looks like trees are in water that day. See page 272. And 273. Yet, they are measuring water stains over two feet up on the trunks of trees that themselves are almost two feet thick. On Pages 277 and 278 are elevations of various items found for Twin Springs Transect 2. Due to high water on May 19, 2005, they re-surveyed on July 12, 2005. Page 277: A Top of moss line elevation 682.07. @ Category \_\_\_\_\_. Also mentions hydrophytic vegetation and hydric soils. Page 278 mentions the elevation of the bottom of exposed roots of Green Ash at 680.34. 280 - 281 are species indicators in increments from the water=s edge.

Page 282 starts section C.10. Pages 283 - 286 are photos of what=s not clear \_\_\_\_\_ [Lake Mallalieu?]. Page 283 shows trees in standing water. Not clear when the photos were taken either. Page 287 has elevations for Lake Mallalieu Dam Transect 1, water level 676.440 at 10:00 a.m. on July 13, 2005. Exclusively deals with stains on rip rap.

Page 288, Lake Mallalieu Dam Transect 1. Again, entirely stains.

Page 289, Union Pacific Railroad property south of Dam gives elevation space of Cottonwood at 678.28, T Gravel drift line, drift line, base of the erosion line, older erosion line. . . .

Page 290 is the beginning of C.12. 291 - 292 are photos of apparently Lake Mallalieu Dam showing some water stains. Page 291 in reverse shows how they identified the very top of water-stained areas to be at about 681.51 feet, clearly much higher than the water was that day and higher than trees in the background.

293 is C.13, Union Pacific property near Damn, Transect 2, water level 676.38 on July 13, 2005. Seems to indicate that the trees stop at about 679.41, but then a good part of the treed area as noted have physical indicators which imply that it=s not terrestrial including A trees with exposed roots, cobble (band) drift lines, morphological plant adaptations, adventitious roots, water staining on tree trunks.@ Category \_\_\_\_\_.

Pages 295 - 296 are wetland species categories for that area.

Page 297 is the beginning of C.16. BoB Rollie property elevations Transect 1 from May 18, 2005, water level 678.45. Talks about hydrophytic vegetation. No mention of the moss which we pointed out to the people. Pages 298 - 299 B the wetland indicator stuff for Rollie=s property.

Page 300 is the beginning of C.18, which I don=t know what it is.

Pages 301 - 304 are photos apparently of Bob Rollie=s property. 304 shows a tree in the water. 305 is the elevations of various indicators. It shows an exposed root of an American Elm 8" thick 7' from the water and elevation of 679.95.

306 is the wetland indicators for Rollie=s vegetation. Pages 308 - 311 might be more Rollie photos. Look at the picture at the bottom of 309, showing a tree with its base in the water and the reverse side said that the water level is 678.45. The upper photo shows trees in the water on 6/22/05 when the water level was 681.3

A couple of stars there B if that doesn=t cinch it I don=t know what should.

Page 312 is elevations for various things at Kinnickinnic State Park from September 2004, water level 675.55'. Does not show the elevations of the base of trees. 314 - 317 are wetlands indicators species categories for Kinnickinnic.

318 B the beginning of section C.25. 319 - 325 are photos from Kinnickinnic. 319 talks about dead oak as first instance of terrestrial vegetation at 682.8 feet.

323 is the beginning of Section C.26.

# Memo

✓  
⑤

**To:** Riverhouse file  
**From:** WLT  
**Date:** 11/11/04  
**Subject:** Site Meeting with Jenny Shillcox, St. Croix County Zoning; Eunice Post, DNR; Gary Lepak, DNR Floodplain Engineer; and Pete Kling, County Land Conservation Department/Stormwater Erosion Control

*Saved as 1wltNonT&R\RiverHse\Memos\SiteMtg*

The four of us toured the site. It was a bit cold. They never came in the house. They had to rush off to another meeting. I did invite them inside. I showed them the original cabin, which I wanted to floodproof by putting it on stilts. I told them I would put it on fill if they insisted, but for obvious reasons did not want to do so.

We had a spirited discussion (mainly between me and Eunice Post) regarding the ordinary high water mark. From all appearances, there is no Rule or Regulation. Rather, Dan Coich (?) and Ed Brigette (?), from the DNR, set it in the 1980s when the Marsavs (?) made an application. There was some dispute in the group as to what the ordinary high water mark was. Jenny Shillcox thought it was 682.5. Eunice Post said she was pretty sure it was 682. But she was unwilling to make any sort of definitive statement about anything.

I asked if today we could review the property to see if the ordinary high water mark could be set for my property. Eunice Post said at first that that could not happen because the property was not undisturbed. Therefore, they may have to go to adjacent property. She said the property where we were standing, at the beach, has a groin of rock (the rock pile where rocks have been thrown over the years), a firepit, a couple of steps, and, in the beach area, the willows have been removed. Therefore, my property area was not undisturbed. She pointed out that the DNR is in the process of re-evaluating the ordinary high water mark from Arcola to Stillwater, going through a declaratory ruling, which should be done by September of 2005.

I asked whether I had a right to a determination of the OHWM on my own property. She said she would have to defer to legal. She mentioned the names Nina Cavanaugh, Mike Cane, in the legal department, or Dan Baughman (?), the Water Division supervisor.

Jenny Shillcox volunteered that she had no expertise herself in determining the high water mark and, therefore, would be deferring to the DNR.

I pointed out to Eunice Post that I own 400 feet of shoreline and asked them to walk past the beach to look at the area that clearly was undisturbed and asked her whether the DNR would be able to make a determination from that part of my property as to what the ordinary high water mark was.

She had pointed out to her the many trees. I reminded her of the fact that we had a survey of many trees. She still did not want to state whether the OHWM could be determined from my property. She talked about needing soil samples. She said terrestrial is upland vegetation, but they would also look for something she called Hydric soil.

I asked her whether elm trees were terrestrial or aquatic. She said elm trees can live in wet conditions. I told her that wasn't my question. I asked whether they were terrestrial or aquatic. She was unwilling or unable to say. She did admit that oak are generally terrestrial, depending....

Peter Kling said that the issue of the woody vegetation, he thought, we could "key out" now. This followed-up my discussion with Eunice that the absence of leaves at the time of our meeting made it impossible to determine whether these trees were terrestrial or aquatic.

Peter Kling said that even with leaf off conditions, you can look for leaf scars or other things to determine what type of a plant it is.

Towards the end of the meeting, Eunice Post excused herself. So, for a few minutes, I talked with Shillcox, Kling, and Lepak. Shillcox asked what difference it made regarding OHWM. I told her I was simply operating on the advice from Bob Raleigh that I had to be more than 75 feet from it to do what I wanted to do. She wasn't sure about that. Earlier, Eunice Post had said that the OHWM issue is relevant, depending upon County regulations. They would have to review the County regulations with each other.

Gary Lepak was mainly present to deal with the flood-proofing issue. He acknowledged that in the past they have generally favored using fill, but he appeared sympathetic to my plaint that it would be more environmentally sound, etc., to put it on stilts.

During our meeting, I recall asking Eunice Post for specifics on what types of variations on plants would be terrestrial versus aquatic. She could not name one aquatic oak nor one aquatic elm, nor any other woody plant that would be considered aquatic under the definition of the Supreme Court. I pointed out to her that the DNR manual talks about mosses being a terrestrial plant and a good indicator of where the ordinary high water mark was. I showed her the moss growing out of an obviously very old tree and a pile of rocks waterward from the big cottonwood tree in front of the house. She hardly

wanted to look at it. She immediately started to say that there were mosses that were aquatic. She started talking about doing soil borings, as if somehow soil borings were all of the issue. She really didn't look at the moss at all, to notice how thick and obviously old it was. I pointed down the beach to where the stakes remained in the ground from the mid-October visit by Barr Engineering and Ogden Engineering. She showed no interest in looking at them. I offered to show her trees that were 3-5 feet thick. She showed no interest in looking at them. Even though it appears that she has been one of the primary officers enforcing the ordinary high water mark, she really could not specify what kind of \_\_\_\_\_.

She had no rudimentary idea of the foundation of the determination of 682, why it was determined, what the supporting documentation is. She was unable to give any specifics as to what she would look to to make a demarcation.

WLT:nrs

Jennifer Shillcox

**From:** Post, Eunice A. [Eunice.Post@dnr.state.wi.us]  
**Sent:** Wednesday, December 15, 2004 12:48 PM  
**To:** Lepak, Gary T.; Jennifer Shillcox  
**Subject:** RE: Tilton

**COPY**

Jenny, please accept this email as the Department comments for the Tilton property.

#### Floodplain

The Tilton property is currently in the floodway of the St. Croix River. Floodway means no residential development is allowed. In addition, any fill or structure expansion in the floodway will likely cause an increased obstruction to flood flow and increase flooding on others. For that reason, expansion of existing floodway structures are strictly regulated by state and federal regulations which are reflected in St. Croix County's Floodplain Ordinance. Within the Ordinance there are steps that allow the developing property owner to supply detailed hydraulic analysis. If the analysis shows an alteration to the floodway location wouldn't cause increased flooding to another property, the project may proceed after the floodway maps are amended following the steps within the Floodplain Ordinance. Increases in the flood elevation may occur if all the impacted property owners enter into a legal agreement with the developing property owner.

Barr Engineering has supplied the required floodway re-alignment analysis for the Tilton property. It shows that by re-aligning the floodway to allow for the 15-ft perimeter fill around the structure as required in the Floodfringe section of the Floodplain Ordinance, there isn't any change to the flood elevation. To complete the floodway re-alignment, Mr. Tilton should request the County to proceed with amending the floodway location and adopt an appropriate map that represents the new floodway location at the Tilton property.

If the Tilton property is altered or expanded beyond 50% of the structures value, the entire structure needs to be floodproofed or elevated to 2-ft above the regional flood elevation that is at 691.6 ft MSL.

#### OHWL

The ordinary high water mark at the Tilton property is 682 1912 Corps adjusted elevation datum. The Department is currently in the process of reviewing the ohwm of the St Croix River through the declaratory ruling process. If the ohwm at the Tilton property changes, it will be changed through that process.

Given that the Tilton house is within the ohwm setback of the St Croix Riverway ordinance, it is a nonconforming structure. It is my understanding that the county's position is that it does not regulate nonconforming structures. If that is the case, then how will Mr. Tilton's proposed alterations to the house be reviewed so that compliance with the purpose of the riverway ordinance is obtained? If my understanding is not correct, please let me know.

Jenny, I apologize for sending this on such short notice and thanks for your patience.

Eunice

12/15/2004

EUNICE POST 1/13/05

## Lower St. Croix National Wild and Scenic River Ordinary High Water Mark Evaluation Information

The entire study area extends from Houlton, Wisconsin, down river to Prescott, Wisconsin, on the Wisconsin side. Within this reach of the river we were able to work at two sites in the late summer growing season: Mallalieu Dam site on the Union Pacific Railroad property between Hudson and North Hudson, St. Croix County and the Kinnickinnic State Park, Pierce County.

The purpose of our work was to locate, identify and document the physical characteristics of each site to learn where the presence of water occurred so frequently that it was the deciding factor in the type and condition of the soil, the types and condition of the vegetation, and left easily seen physical signs. We were also looking for areas where water was present less frequently and areas where water was not a factor on landscape at all. This is the information we needed to evaluate the site for the location of the ordinary high water mark using the State of Wisconsin's definition.

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No MENTION  
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sup. of decision  
for Chap. 40

At both work sites, we started at the water level and worked our way inland. While each site had its own unique features, there were some similarities. Both sites had a non-vegetated beach area, which changed to an area vegetated by water dependent plants. This vegetated area then changed to a sparsely vegetated area where we found the physical signs of the frequent presence of water: exposed roots, debris lines, water stains, and multiple tree trunks, to name some examples.

olhwm →

= all plant

As conditions got drier, we found the differences in the two sites.

So what?

At the Mallalieu site, which was relatively undisturbed, we saw the beginning of plants usually found in drier areas: poison ivy, sumac and buckthorn, to name a few. We also found an erosion washmark at the base of the 12-foot high bank.

At the Kinnickinnic Park site, the drier area was a former disposal site for material excavated by the U.S. Army Corps of Engineers for the maintenance of the federal navigation channel. The most recent

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disposal was in the 1980s. This sand deposit area had both water dependent plants, but there was also switch grass, which prefers dry conditions.

When we looked at the area of the park pier and boat ramp and farther upstream, we found other signs of water: water stain on the ramp riprap, natural erosion due to water and wave action, and dense vegetation growth above the erosion.

What we have seen so far and are showing here is not an all-inclusive "list" of the information. This is only what we have found so far. Because we started in late summer/early fall, we will need to revisit these sites to make sure we collect all of the available data, and will be doing work at other sites as well. We have not yet identified new work sites, and would appreciate any input about site selections.

*Was the  
Revisit  
Done?*

*Huh?*

We will resume our field work in spring 2005 and we would appreciate any offers to participate and/or other input that can be used to evaluate different areas of the river so the ordinary high water mark is identified as accurately and definitively as possible.

*Yeah,  
right*

January 10, 2005

**Experience**

Tom MacDonald has experience in a broad variety of hydrology- and hydraulics-related projects. His work at Barr focuses on stream and river classification, assessment, monitoring, and restoration. He has performed numerous studies to evaluate stream and river erosion, sediment deposition, and physical habitat. Tom's experience at Barr includes:

- Designing stream restoration for the St. Francis River in the Sherburne National Wildlife Refuge. The river had abandoned a large meander bend and was causing erosion near the refuge headquarters building. The meander bend was restored and low-impact measures were used to reduce bank erosion.
- Designing rock vanes, root wads, and boulder toe protection to stabilize eroding streambanks at four sites on the Rum River in Anoka County.
- Designing channel naturalization measures for Shingle Creek in Brooklyn Park, Minnesota, as part of a stream corridor improvement project. Measures include rock vanes and riffles, as well as bank toe protection utilizing boulders and fiber logs.
- Managing the development of plans and specifications for the removal of the Orienta Dam, a 50-foot high reinforced concrete structure located on the Iron River east of Superior, Wisconsin.
- Designing rock channel stabilization measures for the removal of a dam at Buffalo River State Park near Glyndon, Minnesota.
- Designing a channel diversion for the South Fork Crow River at Hutchinson, Minnesota. The design relies on rock vanes and native vegetation to divert the channel into an abandoned oxbow, in order to move the channel away from a closed municipal landfill.
- Designing bank stabilization measures for the East Fork Beaver Creek near Olivia, Minnesota, as part of a pollutant trading program.
- Analyzing effects of mine tailing transport on the erosion rate of the Fly River in Papua, New Guinea, for OK-Tedi Mining, Ltd.
- Analyzing non-native sediments in two estuaries on the St. Louis River adjacent to U.S. Steel's Duluth Works site. Work included sediment-core collection, physical description, chemical analysis, and determination of the existing native sedimentation rate. Performed preliminary design of stabilization measures.
- Performing a feasibility study to investigate removing a 90-foot Ambursen dam on the Blue Earth River in southern Minnesota. The study included

Tom MacDonald (cont.)

management alternatives for 11 million cubic yards of sediment that have accumulated behind the dam, and preliminary design of the restored channel.

- Performing analysis and design for sandbar removal and spur-dike construction on the Minnesota River at Northern States Power Company's Wilmarth, Minnesota, power plant.
- Designing bank protection measures for the Boone River in Webster City, Iowa, to protect the river banks at a contaminated soil mitigation site.
- Designing a stream diversion, energy dissipator, and bank protection for Duschee Creek near Lanesboro, Minnesota, for the Bureau of Water and Soil Resources.
- Evaluating options for fish passage at a hydropower dam located in Marquette, Michigan. Prepared conceptual drawings and summary reports; also worked with the client and state agencies to identify stream-bed modifications that would provide improved fish-spawning habitat.
- Assisting with the review and evaluation of a lamprey weir at a dam removal site. The weir prohibits lamprey migration upstream while allowing passage of trout and salmon from Lake Superior for spawning.
- Designing a low-flow diversion for a residential stormwater system. The diverted flow enters a wetland where it is treated prior to discharge to Battle Creek Lake.
- Measuring bottom elevations of the Minnesota River below a dam at Granite Falls, Minnesota. Measuring was performed before and after 1997 flooding.
- Determining location of leakage through a dam in Zumbro Falls, Minnesota, by using dye tracing.
- Performing physical classification of Nine Mile Creek and recommended methods to improve stream quality as part of a use-attainability analysis for the Nine Mile Creek Watershed District.
- Conducting field investigations and classifying three stream systems by using the Rosgen stream classification method, for Riley-Purgatory-Bluff Creek Watershed District.
- Conducting more than 60 bridge scour evaluations for the Minnesota Department of Transportation. Duties included channel surveys, hydrologic analysis, hydraulic modeling, scour analysis with HEC-18, and evaluation and recommendations.
- Designing stormwater diversion for a new alum-treatment facility as part of a plan to improve water quality in Tanners Lake, located in St. Paul, Minnesota.

**Tom MacDonald (cont.)**

- Analyzing surging problem associated with 12-foot-diameter stormwater tunnel draining Interstate 35W in Minneapolis.
- Participating in preparing a stormwater management plan for the city of Lakeville, Minnesota. Duties included watershed modeling with HEC-1, stormwater quality analysis with PONDNET, water quality/NURP pond design, and storm sewer design.
- Designing storm sewer for the city of Mankato, Minnesota, to reduce erosion in a ravine environment.

Tom's previous work experience includes:

- In 1997, volunteering for three months in Nepal to evaluate rural irrigation systems in the Himalayan foothills.
- As a research assistant at St. Anthony Falls Hydraulic Laboratory, working on an inventory of erosion and shift in Minnesota streams and rivers, in cooperation with the Minnesota Department of Natural Resources. Developed a computer program for stream shift analysis; prepared a manual on stream erosion for use by state offices.
- As a student intern at another consulting firm, drafting, surveying, and inspecting various municipal projects. Also designed erosion control structures and assisted in hydrologic analyses.
- Participating in a 10-day workshop in Kenya, Africa, to explore preservation strategies for the Tana River wildlife area.

**Education**

M.S., Civil Engineering, University of Minnesota, 1991  
B.S., Civil Engineering, University of Minnesota, 1989

**Registration**

Professional Engineer: Minnesota, Wisconsin

**Presentations/  
Publications**

Presentation at the Stream Geomorphology Workshop, sponsored by the Minnesota Pollution Control Agency and the Minnesota Department of Natural Resources, February 26, 1997.

Presentation on physical classification of Riley, Purgatory, and Bluff Creeks, Minnesota Water '96, sponsored by the University of Minnesota, May 20-21, 1996.

"Inventory and Analysis of Stream Meander Problems in Minnesota." St. Anthony Falls Hydraulic Laboratory, University of Minnesota. 1991.

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**JAMES H. STABERG**  
**Senior Survey Design Technician**

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**Experience**

Jim Staberg joined Barr in 1988 as an engineering technician and surveyor. He provides a wide variety of field services, including:

- **Construction Staking.** Surveying offset stakes, grades, cut sheets, etc.; reading plans and specifications for storm and sanitary sewers, water mains, and roads.
- **Landfill Cover Operations.** Soil testing; sand cones, densities, and moisture content; and construction documentation reporting.
- **Bridge Scour Investigation.** Surveying.
- **Hazardous Waste Sites.** Survey and split-spoon soil samples.

Jim's work as a survey staff coordinator entails:

- Coordinating work with engineers and staff at Barr
- Estimating technical costs
- Giving instructions and training to the survey crew and interns
- Learning and implementing new technology as it applies to Barr
- Surveying: construction, topographic, cross-section, and control
- Providing construction observation and developing reports
- Performing soil testing and analysis
- Completing computations and other technical activities

Before joining Barr, Jim worked for eight years with a private land surveyor as a layman, instrument man and crew chief performing section breakdowns, property surveys, building staking and utilities staking.

**Equipment  
Experience**

All types of electronic total stations  
GPS systems survey RTK  
TDS Ranger CE  
TSCI Trimble electronic field book  
LDD/AutoCad  
Map software providing an interface between electronic field books and plotter

**Education  
and Programs**

St. Cloud State University  
Dunwoody Industrial Institute: Surveying Math and Public Record Course  
Health & Safety for Hazardous Waste Operations  
Univ. of Wisconsin, Madison: Introduction to Global Positioning Systems." 1996.  
Trimble RTK Training. January, 2003.

211463

**Kelly Bopray, P.S.S.**  
**Soil Scientist**  
**Wetland Specialist**



**Overview of Professional Qualifications**

Mr. Kelly Bopray is a licensed Professional Soil Scientist with 19 years of experience with environmental projects for both public and private sector clients. Mr. Bopray's area of expertise is in characterizing soils, wetlands and landscapes for purposes of evaluating the suitability and potential impact of a project on the environment. The main types of projects he is involved with are wetland delineation and permitting for development projects, land application of wastewater and sludge, and environmental site assessments.

**Project Experience**

Mr. Bopray has conducted hundreds of wetland delineation projects throughout the Upper Midwest. These projects ranged from a simple wetland edge of an individual lot to complex monitoring of disturbed wetland conditions. Mr. Bopray has prepared or evaluated more than a dozen land application plans for various municipal and industrial clients. His experience includes preparation of EAW and Phase I environmental audits. Examples of his experience include:

- Identified and delineated wetlands for development projects throughout the Twin Cities Metro Area, greater Minnesota, and western Wisconsin.
- *Elk River Crossing* – Associated Developers Inc. Evaluated the extent of existing wetland drainage and mining impacts on a 90-acre commercial property and established the extent of regulatory jurisdiction under disturbed conditions. Negotiated wetland permits, including restoration of 5.5 acres of wetlands and construction of 4.7 acres of new wetlands. The project has proceeded with nearly the full commercial development that was originally proposed.
- *Retail Development in Forest Lake* – Wal-Mart Stores Inc. Delineated wetlands on a 17-acre commercial property in Forest Lake, Minnesota. Negotiated a Corps of Engineers individual permit for 5.7 acres of wetland impacts and 11.4 acres of off-site mitigation. Negotiated wetland approvals with local government units for both sites. Monitored construction of the mitigation site and erosion control practices on the development property.
- *Land Application Management Plan* – Del Dee Foods Inc. Prepared a management plan for the land application wastewater from a food processing facility in Appleton, Minnesota. Application rates and nutrient loading were designed to accommodate the production schedule and the Minnesota Pollution Control Agency's requirements. Demonstrated compliance with environmental concerns in order to renegotiate the facility permit to increase production capacity. Prepared annual reports on the land application operation.

- *Marianna Ranch Residential Development* – Lyman Development Company. Prepared a wetland delineation on a 153-acre property with seven wetlands and numerous closed depressions. Conducted preliminary soil investigation and on-site wastewater treatment system sizing for the planning phases of preliminary plat. Coordinated on-site soil testing of each lot and final site layout based on the soil testing results.
- Developed permit application material including evaluation of alternatives and wetland impacts, evaluation of existing wetland functions and values, and developed wetland mitigation plans under the Corps of Engineers 404 wetland permit, the Minnesota Wetland Conservation Act, and Wisconsin DNR.
- Delineated jurisdictional wetland limits, and established limits of regulatory authority on severely disturbed wetland sites in numerous MN and WI areas.
- Provided Wetland Conservation Act (WCA) administration assistance for the Cities of St. Michael and Mound, Minnesota.
- *Wastewater Treatment Operations* – AMPI. Developed a wastewater treatment biosolids management plan for a Minnesota dairy processing plant to guide the land application of biosolids and whey. Investigated construction and operational records of a wastewater treatment pond in Wisconsin to determine compliance with Wisconsin wastewater pond regulations.

#### **Professional Registrations and Affiliations**

- Soil Science Society of America
- Soil and Water Conservation Society
- Minnesota Association of Professional Soil Scientists, Executive Officer 1999-2001
- Society of Wetland Scientists
- Wetland Delineators Association
- University of Wisconsin-River Falls; Adjunct Associate Professor

#### **Education**

M.S., Agronomy: Emphasis – Soil Science, South Dakota State University

B.S., Agriculture: Major – Soil Science, University of Wisconsin, River Falls

