



2025

**SURVEYORS'**  
*Conference*


# Riparian Boundaries

Jeffrey Horneman, PLS (PA, WV, NY)/GISP

**Tuesday, 14 January 2025**  
**1015-1145**



JANUARY 12-15, 2025 | HERSHEY, PA

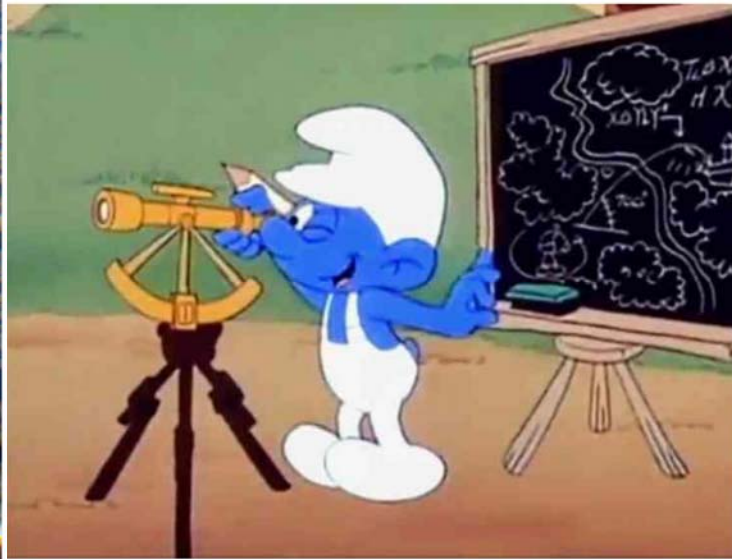


THIS IS A CONDENSED  
VERSION OF THE SAME  
PRESENTATION GIVEN  
AT THE PSLS 2024  
CONFERENCE WITH  
DAVID AND DON  
HOUSLEY





# INTRODUCTION



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**WE ARE NOT  
ATTORNEYS!!!**





# REFERENCES

- Boundary Retracement Principles and Procedures for Pennsylvania, A Guide for Professional Land Surveyors by Knud Everett Hermansen, Ph.D., PLS, PE
- Riparian Boundaries and Rights of Navigation: Rivers, Lakes and Seas by Kristopher M. Kline, P.L.S., G.S.I.
- Brown's Boundary Control and Legal Principles by Robillard & Wilson
- Ladner on Conveyancing in Pennsylvania with Forms by Clark, Ladner, Fortenbaugh, & Young
- Survey Reference Manual by Cole and Harbin
- Black's Law Dictionary by Bryan A. Garner, J.D., L.L.D.



# CLASS OUTLINE AND OBJECTIVES

## OUTLINE

- LEGISLATION AND CASE LAW
- NAVIGABLE vs. NON-NAVIGABLE
- PRE-JOB FUNDAMENTALS
- RETRACEMENTS OF NAVIGABLE AND NON-NAVIGABLE
- RESEARCH
- CONCLUSION

## OBJECTIVES

PROVIDE INSTRUCTION AND DISCUSSION ON THE PREPROJECT RESEARCH, DELIVERABLES, AND THE PROCESS OF RETRACING PROEPRTY LINES ALONG RIPARIAN BOUDNARIES.



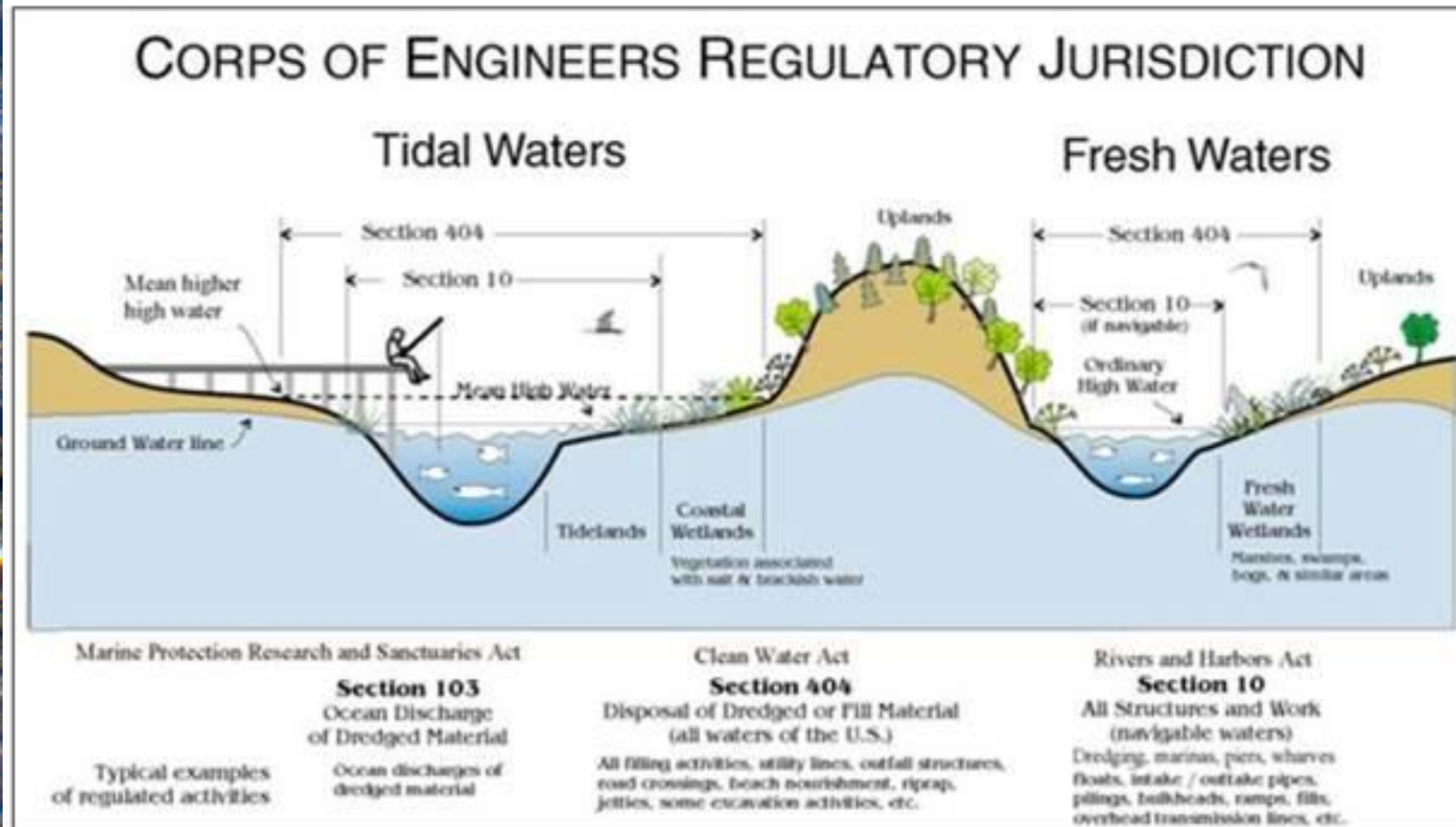


# LEGISLATION AND CASE LAW

## Case Cites

- Freeland v. Pennsylvania R. Co., 197 Pa. 529, 47 A. 745 (1901)
- Gibson v. Hoffman, 310 Pa. 51, 164 A. 783 (1933)
- Cole v. Pittsburgh & L.E.R. Co., Pa., 162A. 712 (1932)
- Smoulter v. Boyd 209 Pa. 146, 58 A.144 (1904)
- Cryer v. Sawkill Pines Camp, Inc., Pa. Super., 88 Pa. Super. 71 (1926)
- Shaffer v. Baylor's Lake Association, 392 Pa. 493, 141A. 2d 582 (1958)
- Edwards v. Woodruff, 25 Pa. Super. 575 (1904)
- Wainwright v. McCullough, 63 Pa. 66 (1869)
- Lakeside Park Co. v. Formsmar, 396 Pa. 389, 153 A. 2d 486 (1959)
- Leaf v. Pennsylvania Co., 268 Pa. 579, 112 A. 243 (1920)
- Poor v. McClure, 77 Pa. 214 (1874)
- Hartley v. Pa. 486 (1876)
- United States v. Pennsylvania Salt Mfg. Co., 16 F. 2d 470 (1926)
- City of Johnstown v. Fearl, Pa., 176 A. 20 (1935)
- Edwards v. Woodruff, 25 Pa. Super. 575 (1904)
- Scholl v. Emerich, 36 Pa. Super. 404 (1908)
- Gibson v. Hoffman, 310 Pa. 51, 164 A. 783 (1933)
- Palmer v. Farrell, 129 Pa. St. 162, 18 A. 76 (1889)
- Houseman v. International Navigation Co., 214 Pa. 552, 64 A. 379 (1906)
- Black v. American International Corporation, 264 Pa. 260, 107 A. 737 (1919)
- [Commonwealth, DEP v. Espy, 4 Pa. D. & C.5th 25 \(2007\) Riparian Legislation](#)

# LEGISLATION AND CASE LAW

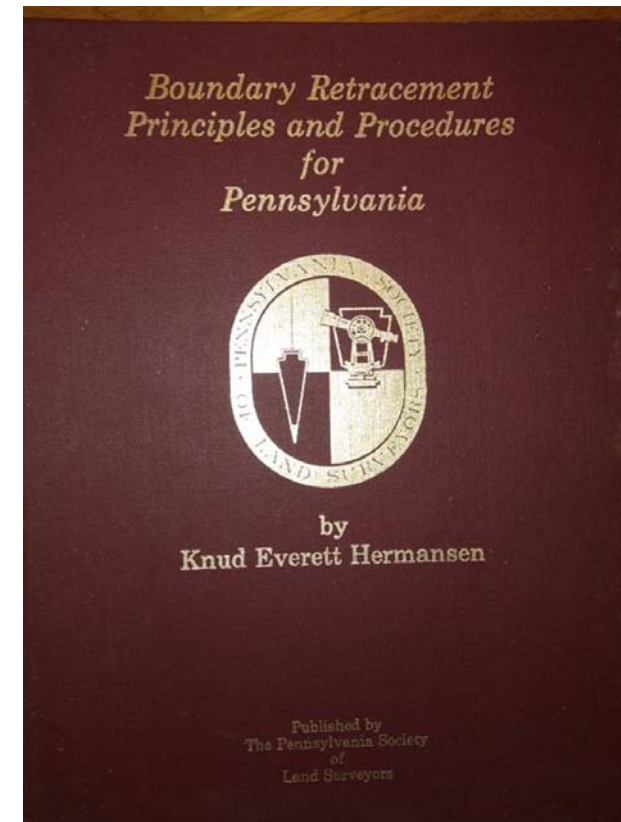




# LEGISLATION AND CASE LAW

Boundary Retracement Principles and Procedures for Pennsylvania (June 1986 Edition)

Knud Everett Hermansen, Ph.D., PLS, PE





# LEGISLATION AND CASE LAW

## 4.8.1 Riparian

- In transfers along bodies of water, the case-law assumption is that title was meant to extend to the edge or the center of the water. Of course, the assumption is dependent upon the circumstances. To rebut this assumption, the draft or deed must identify a physical mark or an express exception must be used. For example, a call for the high- or low-water mark or scars caused by the water (e.g., bank of the stream) may stop the title at the specified call. Ambiguous words or words that do not establish a specific location will not control the case-law assumption that title extends beyond the record measurements.
- ...when a return of survey calls for a stream ... or to run by, along, up, or down it, the title will run to the stream, and the marking of trees to identify the lines run to the river, as well as the return, of courses and distances measured along the margin (of the stream)... will not restrain the title to the bank or margin only. (Free land v. Pennsylvania R. Co., 197 Pa. 529, 47 A. 745 (1901).)
- An express exception is required in the grant, or some unequivocal declaration or certain immemorial usage to limit the title ... to the edge of the river. (Gibson v. Hoffman, 310 Pa. 51, 164 A. 783 (1933).)
- Presumption ... is rebuttable ... where deed described south boundary as 'along bank' of river.... (Cole v. Pittsburgh & L.E.R. Co., Pa., 162A. 712 (1932).)
- In applying the rules of law pertaining to riparian title, certain categories of water are treated differently. The main difference is between navigable and non-navigable waters (at the time of the original survey).





# LEGISLATION AND CASE LAW

## 4.8.1.1 Non-Navigable Waters

- Ambiguous grants from the Commonwealth for land along non-navigable waters convey title to the center of the stream. The general principle is that all land shown bordering non-navigable water will carry the title to the thread of the stream (where water flows during the driest season).
- It is no doubt the settled law of this state that a grant of land bordering on a non-navigable or private stream extends... (to the center of the water). The conveyance . . . gives him the ownership of the soil to the middle of the current. (*Smoulter v. Boyd* 209 Pa. 146, 58 A.144 (1904).)
- Non-navigable lakes or ponds are not as liberal in application. Conveyances along ponds and lakes subsequent to the original conveyance (from the Commonwealth) are frequently limited to the shore line. In other words, a conveyance between private individuals for land bordering a lake or pond does not always convey the title to the center or provide any rights to use the water by implication. A conveyance along a lake or pond is limited by wording or previous conveyances. For example, general words such as "to the pond" convey title to the middle, if the grantor owns to that extent. Words such as "to the pond's edge" will generally limit title to the shore of the pond... one who had conveyed away to others, by deeds calling for the pond as a boundary . . . without reserving to himself the land under the pond, will be held to have parted with his title to the land covered by the waters of the pond, and that each riparian owner's title extends to the centerline of the pond. (*Cryer v. Sawkill Pines Camp, Inc.*, Pa. Super., 88 Pa. Super. 71 (1926).)
- In case of non-navigable lakes or ponds where land under water is owned by others, no riparian rights attach to the property bordering on water and an attempt to exercise any such rights by invading water is as much a trespass as if an unauthorized entry were made upon the dry land of another. (*Shaffer v. Baylor's Lake Association*, 392 Pa. 493, 141A. 2d 582 (1958).)



# LEGISLATION AND CASE LAW

## 4.8.1.1 Non-Navigable Waters

- Pennsylvania recognizes two categories of navigable waters: navigable "in fact" or navigable "by law" (i.e., an act of the legislature). Water is navigable "in fact" if in the natural condition, the body of water can support transportation in the driest periods. As such, very few rivers are considered navigable "in fact." Navigable rivers (in fact) have been generally limited to the Delaware, Susquehanna, Ohio, Allegheny, and Monongahela. It must be conceded that as a general rule the creeks and streams of the state are not navigable by nature. The cases all seem to limit such navigable streams to the great rivers and of the state. (*Edwards v. Woodruff*, 25 Pa. Super.575 (1904).)
- The Allegheny, Monongahela and Ohio rivers are rivers naturally navigable, and have been classed with the Delaware and Susquehanna. (*Wainwright v. McCullough*, 63 Pa. 66 (1869).)
- Furthermore, a body of water, to be navigable "in fact," must be used transportation or have been used for commercial it must have been used as a "public road" for the transportation of goods between centers of commerce and not just a source of recreation. This definition of navigability excludes all but the Commonwealth's largest lakes as navigable waters. Concept of navigability should not be limited alone by lake or river or by commercial use, or by size of water or its capacity to float a boat, but should depend upon whether water is used or usable as a broad highroad for commerce and transport in quantity of goods and people, or whether water remains a local focus of attraction and the basic difference is that between a trade route and a point of interest, with the first being a public use and the second private. (*Lakeside Park Co. v. Formsmark*, 396 Pa. 389, 153 A. 2d 486 (1959).)
- Bodies of water other than the major rivers and large lakes are presumed to be non-navigable. Non-navigable water may be declared navigable by an act of the legislature (i.e., navigable "by law"). Such an act, to all intents and purposes, gives these lesser waters the same consideration as the larger waters in the State.
- The rule ... applies to rivers actually navigable, or made so by legislature; in the former, the test is navigability in fact . . . (*Leaf v. Pennsylvania Co.*, 268 Pa. 579, 112 A. 243 (1920).)
- Transfers along navigable water limit the title to the low-water mark (rivers) or water's edge (lake). The title to the soil beyond the low-water mark (under the waters) was never meant to be granted to private citizens. Furthermore, the absolute title of the riparian owners is fixed at the high-water line. Therefore, the area between the high- and low-water line is a conditional title in favor of the public.
- The beds, gravel and sand-bars of the navigable rivers of Pennsylvania, are not subject to private appropriation under the ordinary land laws. (*Poor v. McClure*, 77 Pa. 214 (1874).)





# LEGISLATION AND CASE LAW

## 4.8.1.1 Non-Navigable Waters

- Ordinary high-water mark is the absolute title, ordinary low-water the qualified right. (Hartley v. Pa. 486 (1876).)
- If a stream is in fact navigable, or has been declared a navigable stream by the Legislature, grantee of land ... takes title merely to the low-water mark ... (Leaf v. Pennsylvania Co., 268 Pa. 579, 112 A. 243 (1920).) What this means is that a landowner may exercise unlimited rights over the land down to the high-water mark. Between the low-water mark and the high-water mark, there is a gray area where the riparian landowner and the Commonwealth each have some right of control. In this area, the riparian landowner may perform acts of ownership but may be ousted or limited at the pleasure of the Commonwealth (easement in favor of the public). The private citizen may use only as much as the public does not immediately require for fishing and transportation and does not wish to use for improvement of the channel. Beyond the low-water mark, including all the soil under the water, the Commonwealth retains title for the benefit of the public ... the law of Pennsylvania ... stated (a) that a riparian landowner has no property rights ... (as a) landowner beyond low-water mark (b) that the title to the land below low-water mark is in the Commonwealth (c) that the title to the land of the riparian owner between high-water mark is subject to the control of the police power of the state (d) that the control be low low-water mark is in the state, both because of its police power control over navigable water highways and also its ownership of the land under the water and (e) that whatever easement rights (private or public) that exist or may be acquired in and over navigable waters and the lands under them are subject to the control of the police power of the state ... (United States v. Pennsylvania Salt Mfg. Co., 16 F. 2d 470 (1926).)
- If the conveyance out of the Commonwealth was (1) a long water not considered navigable in fact and (2) prior to the act of the legislature declaring the stream navigable, the landowner did not have his or her (implied) title to the thread of the stream divested by act of the legislature. An act of the legislature cannot remove or divest rights (without just compensation) previously received from the Commonwealth. Parcels conveyed prior to the act will be treated as if they border non-navigable streams.
- Act declaring non-navigable creek a public highway did not take title to bed of stream from owner of riparian land. (City of Johnstown v. Fearl, Pa., 176 A. 20 (1935).)
- ... although the stream may subsequent to the grant be declared a public highway, that does not divest the property previously acquired by a grant from the Commonwealth. (Edwards v. Woodruff, 25 Pa. Super. 575 (1904).)
- Act of the legislature declaring a stream navigable does not affect the rights of grantee under previously made grant... (Leaf v. Pennsylvania Co., 268 Pa. 579, 112 A. 243 (1920).)

# LEGISLATION AND CASE LAW

## 4.8.1.3 Canals and Ditches

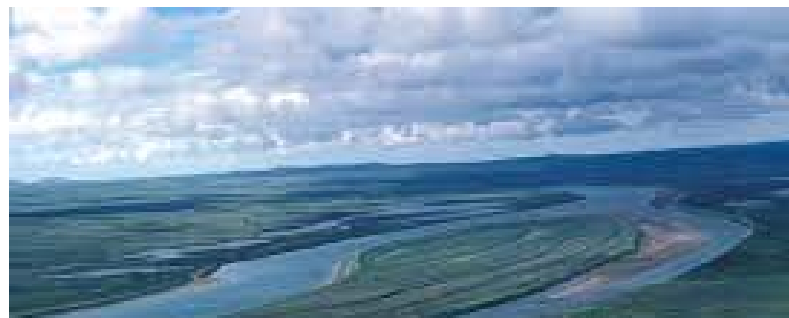
- Artificial channels of water include, but are not limited to, canals, ditches, slews, drainage channels, etc. When a deed or other document of title conveys land bounded by artificial channels, title by implication extends to the center of the channel. In this regard, an artificial channel is entitled to the same case-law assumption as a non-navigable stream.
- A grant bounded by either will take the title to the center, provided the grantor owned to that extent . . . land bounded by an artificial ditch extends to the center of the ditch. (Scholl v. Emerich, 36 Pa. Super. 404 (1908).) As is often the case with ditches and canals, sometime in the past, common ownership extended across the channel. How else could anyone have constructed an artificial channel without trespassing? Regardless of this fact, a subsequent conveyance calling for the channel passes the title to the center and no further.
- This rule is applicable even though title to a small sliver of land on the other side of the artificial channel is retained by grantor . . . (ownership passes to the center and no further, for) this is the rule in Pennsylvania, whether the grantor owns the fee in the entire . . . way, and nothing upon the other side, or whether the grantor owns land extending beyond the other side . . . (Scholl v. Emerich, 36 Pa. Super. 404 (1908).)



# LEGISLATION AND CASE LAW

## 4.8.1.4 Flats

- Sometimes, between high and low tidal water and a long navigable streams, there is a considerable area known as “flat land.” In contrast to “flat land” is land commonly referred to as “firm,” “fast,” “meadow,” or “upland.”
- This is land above the high water and lying along tidelands or river valleys. Flat land is meant (to imply) land between high and low water mark ... Meadow land is firm land above high tide. (Gibson v. Hoffman, 310 Pa. 51, 164 A. 783 (1933).)
- The case-law assumption does not treat flat land differently from low-water lines. Flat lands are included with fast lands (by implication) in any nonspecific transfer. The character of this kind of property is such that land bordering on the flats and the flats naturally go together. Their most beneficial enjoyment is derived from the connection; and it is inconceivable that any man ... would intentionally separate . . . and convey the meadow to one . . . and the flats . . . to another. It is for this reason that an express exception is required in the grant, or some unequivocal declaration, or certain immemorial usage, to limit the title of the other in such cases to the edge of the river. (Palmer v. Farrell, 129 Pa. St. 162, 18 A. 761 (1889).)

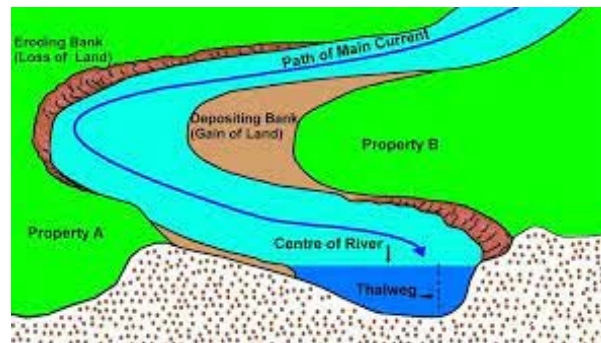




# LEGISLATION AND CASE LAW

## 4.8.1.5 Alluvion and Accretions

- Under certain conditions, a riparian owner will actually gain or lose land through no fault or express intent for which the landowner can account. The loss or the addition of land to a riparian owner's title must be brought about by a gradual and imperceptible process. The process must be unnoticeable to anyone observing the action for a short period of time (i.e., days/weeks). Such loss or gain is possible by erosion (depletion), reliction, or accretion. The imperceptible recession of shore line is known as reliction and is generally confined to lakes and ponds.
- The process of gradual and imperceptible deposition of silt or soil upon a riparian owner's bank is known as accretion. Alluvion (alluvium) is the accumulation or result. Accretions, or the gradual and imperceptible additions . . . become a part of the original . . . (Houseman v. International Navigation Co., 214 Pa. 552, 64 A. 379 (1906).) Alluvion has been defined accumulations of sand, or gravel brought down spread out . . . from what to be those earth, and loose stones by rivers, which, when is called 'alluvial land.' It is the addition made to land by the washing of the seas or rivers, and its characteristic is its imperceptible increase, so that it cannot be perceived how much is added in each moment of time. (Freeland v. Pennsylvania R. Co., 197 Pa. 529, 47 A. 745 (1901).) The title to alluvion and soil exposed by reliction is limited to the deposits that occur naturally and imperceptibly. The deposits that result from sudden changes, shifts, or the direct intervention of man cannot extend or diminish the boundaries of fast land into the river or lake.
- A riparian owner on a public navigable river becomes the owner of the natural accretions to his land from the imperceptible deposits of alluvion along his riparian front, but does not become the owner of land made by human agency by depositing material on the river bottom. (Black v. American International Corporation, 264 Pa. 260, 107 A. 737 (1919).)





# NAVIGABLE vs. NON-NAVIGABLE

KEEP IN MIND WE ARE NOT COVERING TIDAL LANDS

ONLY CONGRESS CAN MAKE A WATERWAY NAVIGABLE OR NON-NAVIGABLE

["Navigable PA Waters-AJH-JAHupdate.xlsx"](#)



# NAVIGABLE vs. NON-NAVIGABLE

## PA List Matrix

- PA Report of the Department of Fisheries (Public Highways) – 1915
  - Page 134 “Free or Public Waters”
- Boundary Retracement Principles and Procedures for Pennsylvania by Knud Everett Hermansen (1986)
  - Appendix D. Navigable Rivers
- PADEP Streambeds
- USACE List (Regulatory) – note – these are NOT defining for cadastral law, but define their authority for permitting
- PA Waterways by US Coast Guard - note – these are NOT defining for cadastral law, but define USCG authority





# NAVIGABLE vs. NON-NAVIGABLE

NAVIGABLE DOESN'T MEAN 'NAVIGABLE IN FACT'

DEFACTO AND DEJURE

NAVIGABLE WATERS AS AN AGENCIE'S OR AUTHRORITY'S  
DEFINITION

(COAST GUARD, USACE REGULATORY, ETC.)



# NAVIGABLE vs. NON-NAVIGABLE

## De Jure (from the law) vs De Facto (from the fact)

- ***de jure***(waterways that were designated as public highways by an act of the PA legislature in the 18th or 19th century. Many de jure waters are still listed, but no longer used for transportation in any manner.
- Those that are navigable may be called ***de facto*** (small group of large sub-set of the de jure 'navigable' waterways).





# PRE-JOB FUNDAMENTALS

## KEY POINTS/QUESTIONS

RESEARCH?

KNOW THE TYPE OF STREAM OR RIVER?

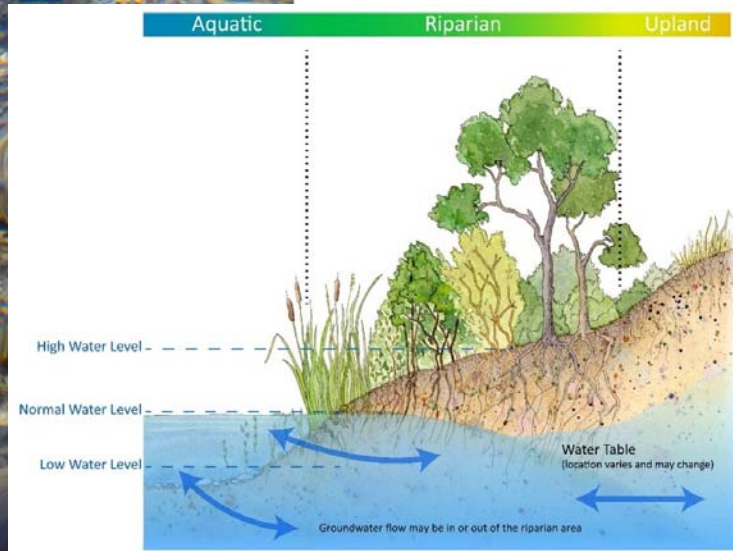
LEVEL OF ACCURACY EXPECTED?



# RESEARCH

## Definitions

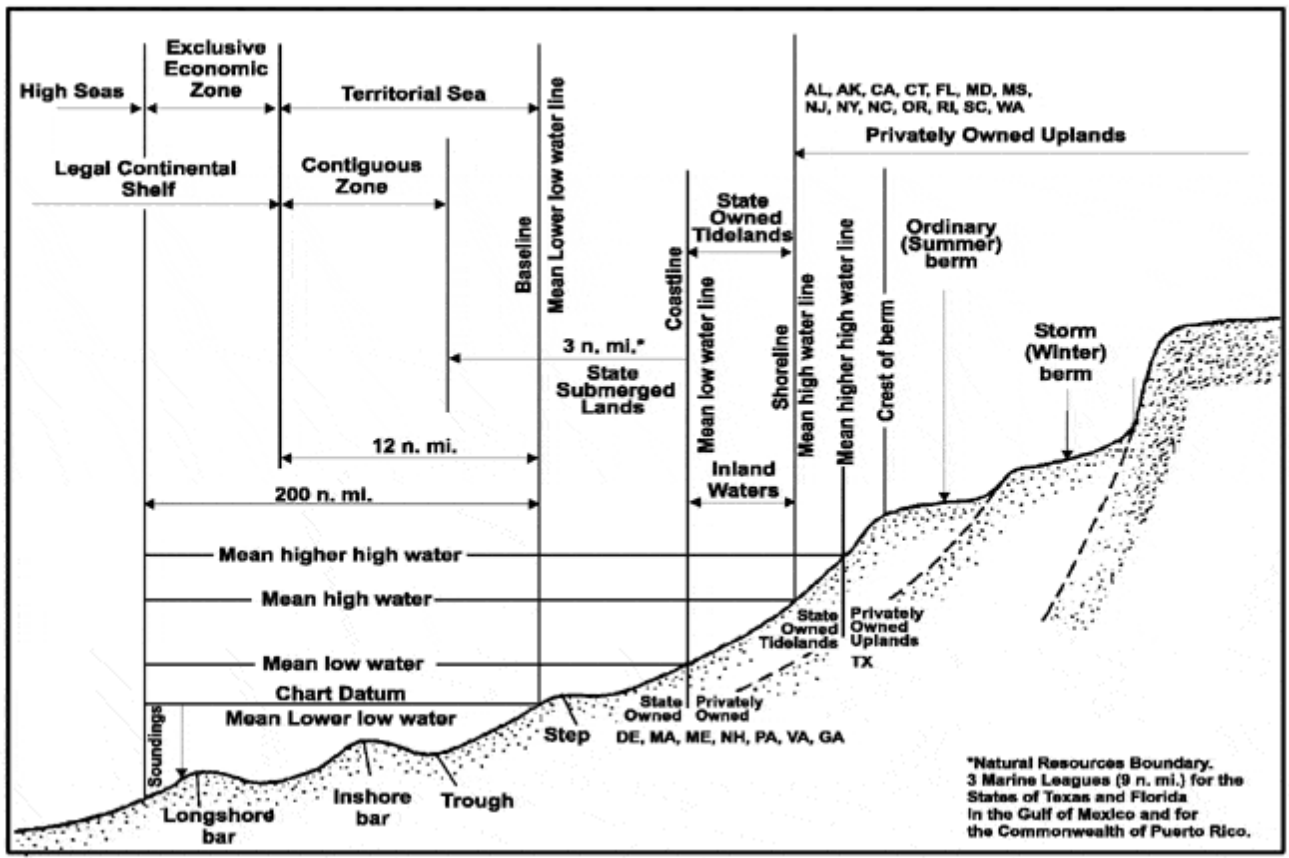
- <https://www.ecfr.gov/current/title-33/chapter-II/part-329#part-329>





# RESEARCH

## DATUMS







# RESEARCH

## Riparian vs. Littoral

### Riparian Rights River

*The right of a landowner whose land borders on a stream or watercourse to use and enjoy the water which is adjacent to or flows over the owner's land.*



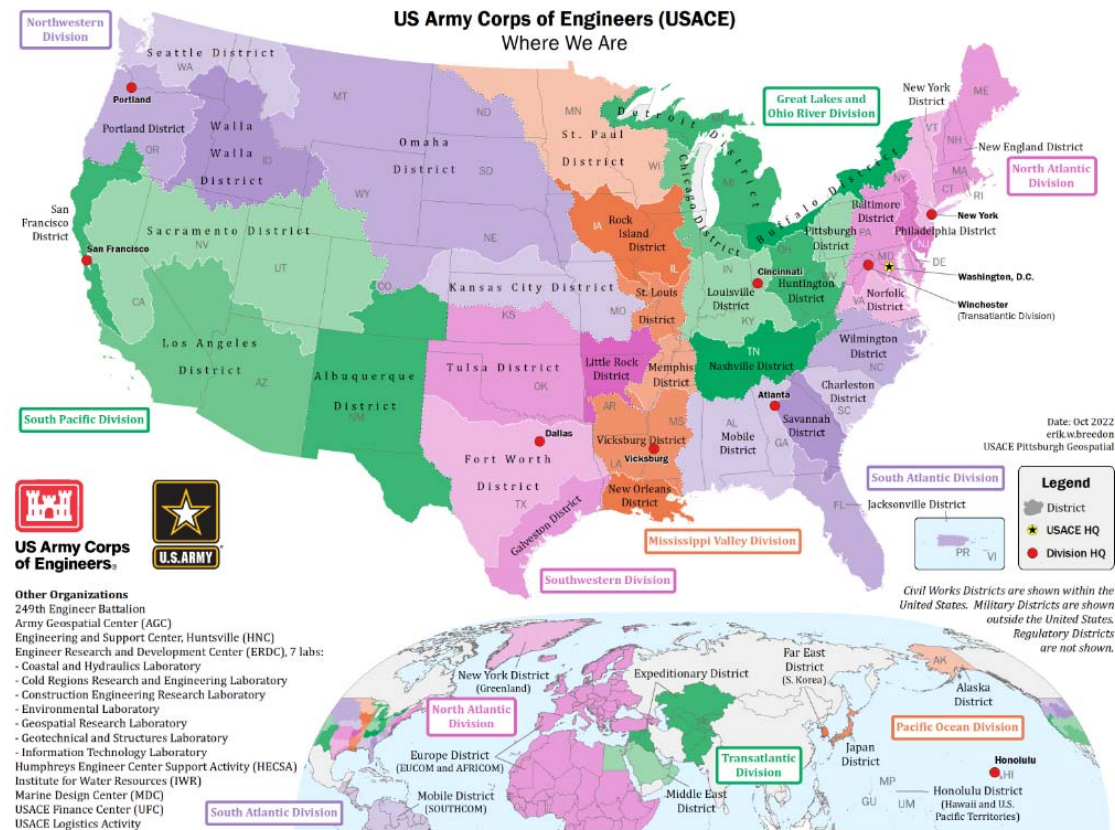
### Littoral Rights Lake

*The right of a property owner whose land borders on a body of water, such as a lake, ocean or sea, to reasonable use and enjoyment of the shore and water the property borders on.*





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# RESEARCH



## PITTSBURGH DISTRICT FOIA REQUEST FORM

Complete, SAVE and Print this document.  
Mail, FAX or E-Mail completed document to:

Agency is generally allowed 20 business days  
to respond to requests.

FOIA Officer/Service Center Representative  
USACE, Pittsburgh District  
Office of Counsel  
1000 Liberty Avenue, 22<sup>nd</sup> Floor,  
Federal Building  
Pittsburgh, PA 15222-4186  
E-mail: [patricia.kitchen@usace.army.mil](mailto:patricia.kitchen@usace.army.mil)  
Fax: (412) 644-4113 (ATTN: FOIA Officer)  
Phone: (412) 395-7407

Date of Request: \_\_\_\_\_  
Requester: \_\_\_\_\_  
Name/Company: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_

Please Check Type of Request ☐ Individual ☐ Commercial ☐ News/Education

1. Pursuant to the Freedom of Information Act, 5 USC 552, I request these record(s): (Include any information to locate records, such as file number, permit number, address, location information or parties involved. Use back of form or additional pages if more space needed.)

\_\_\_\_\_  
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2. Requester understands that fees may be charged for search, review, and/or duplication of records requested. Fees are \$24 per hour for clerical level search and review, \$48 per hour for professional level search and review, and \$110 per hour Executive level. Copies are \$ .15 for each printed side of a duplicated copy and \$.25 for each printed side of a microfiche copy. (Please check one)

- ☐ Requester agrees to pay any statutory costs for records.
- ☐ Requester agrees to pay up to \$ \_\_\_\_\_ (fill in dollar amount) for records. Please notify if fees exceed this amount.
- ☐ Notify Requester if there will be any charges before fulfilling request.

3. Please check one:

- ☐ Call Requester to pick up records.
- ☐ Mail records to Requester.

\_\_\_\_\_  
Signature of Requester and title if representative of organization

Freedom of  
Information Act  
(FOIA)







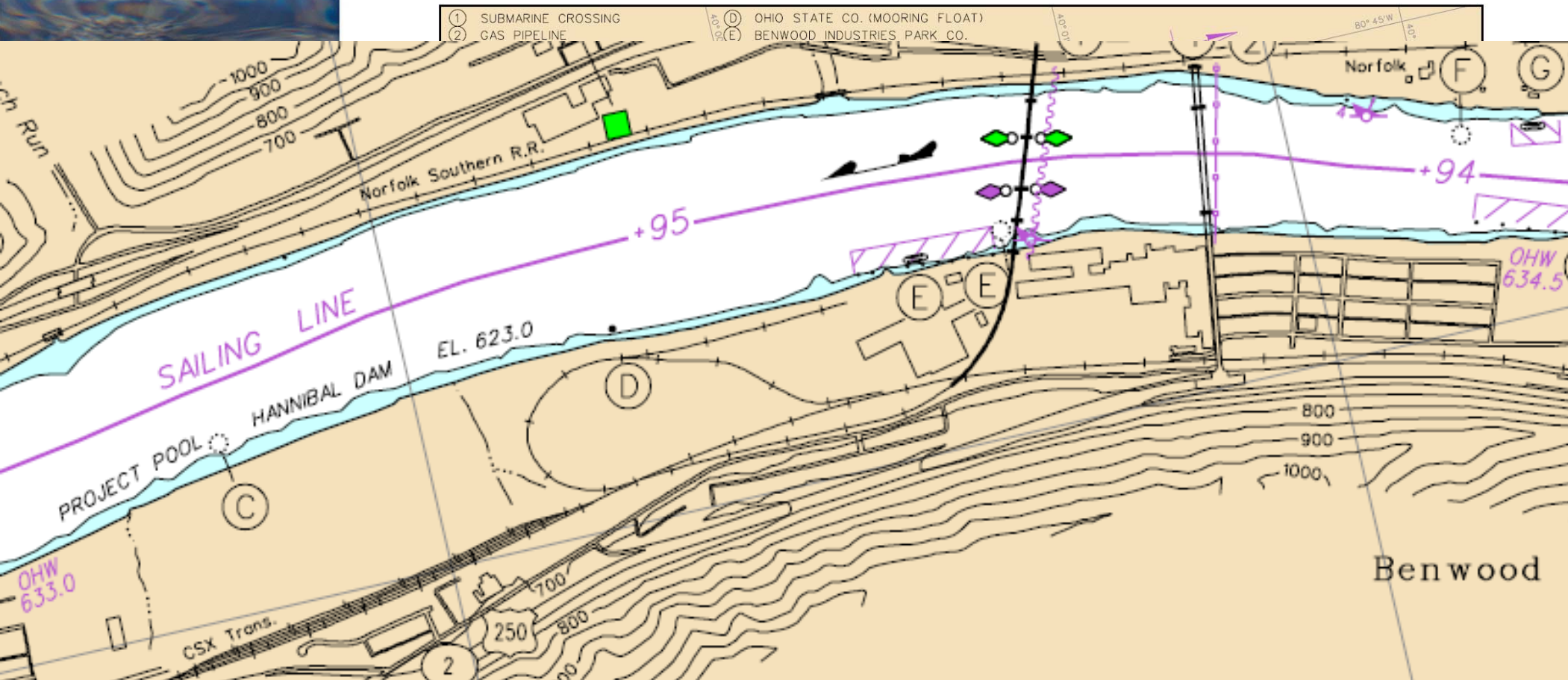






# RESEARCH

## River Navigation Charts



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APPROVAL RECC

P. A. Perrine

# ENGINEER.

LT. COL., CORPS

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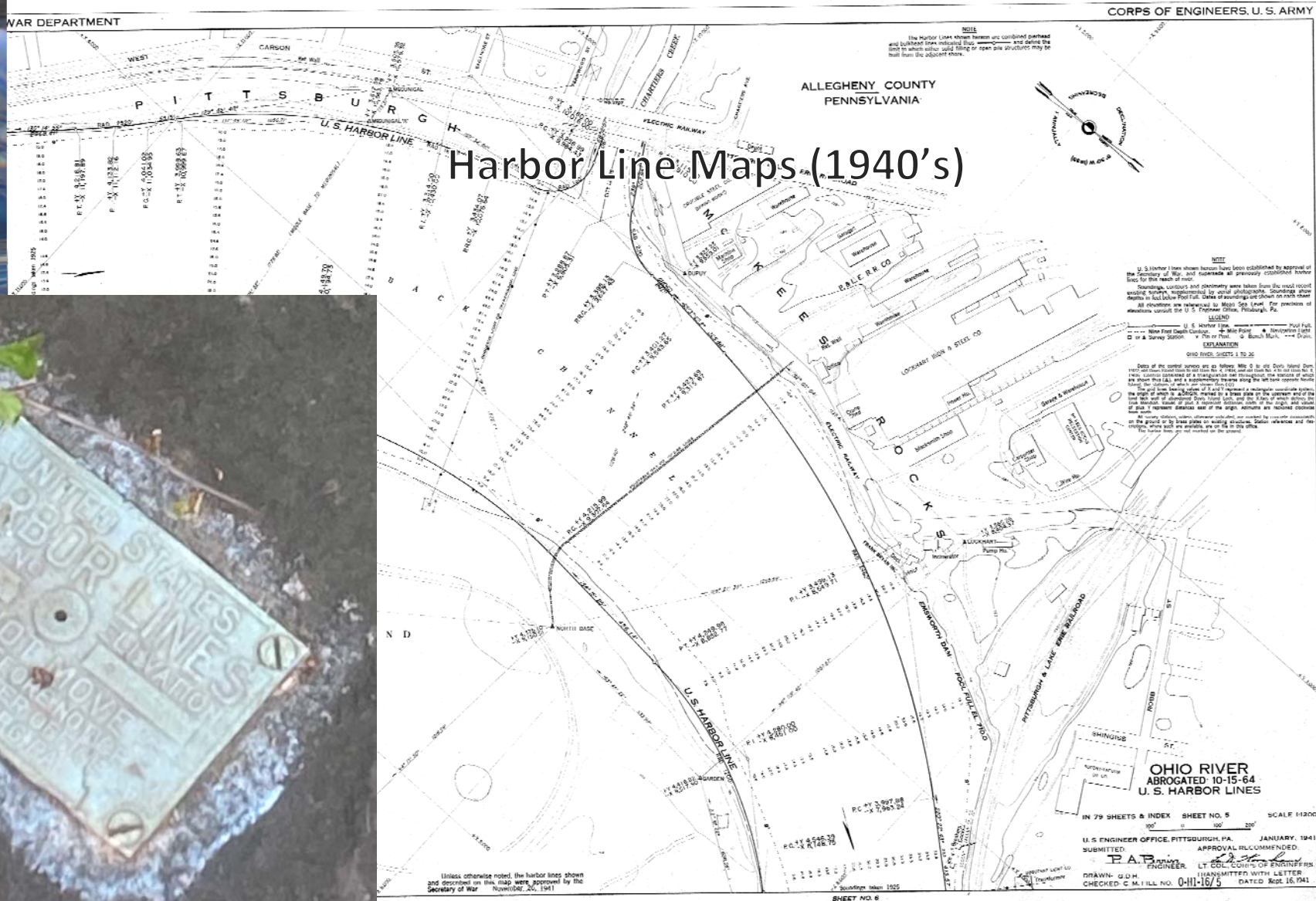
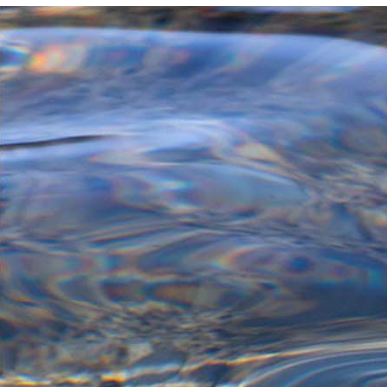
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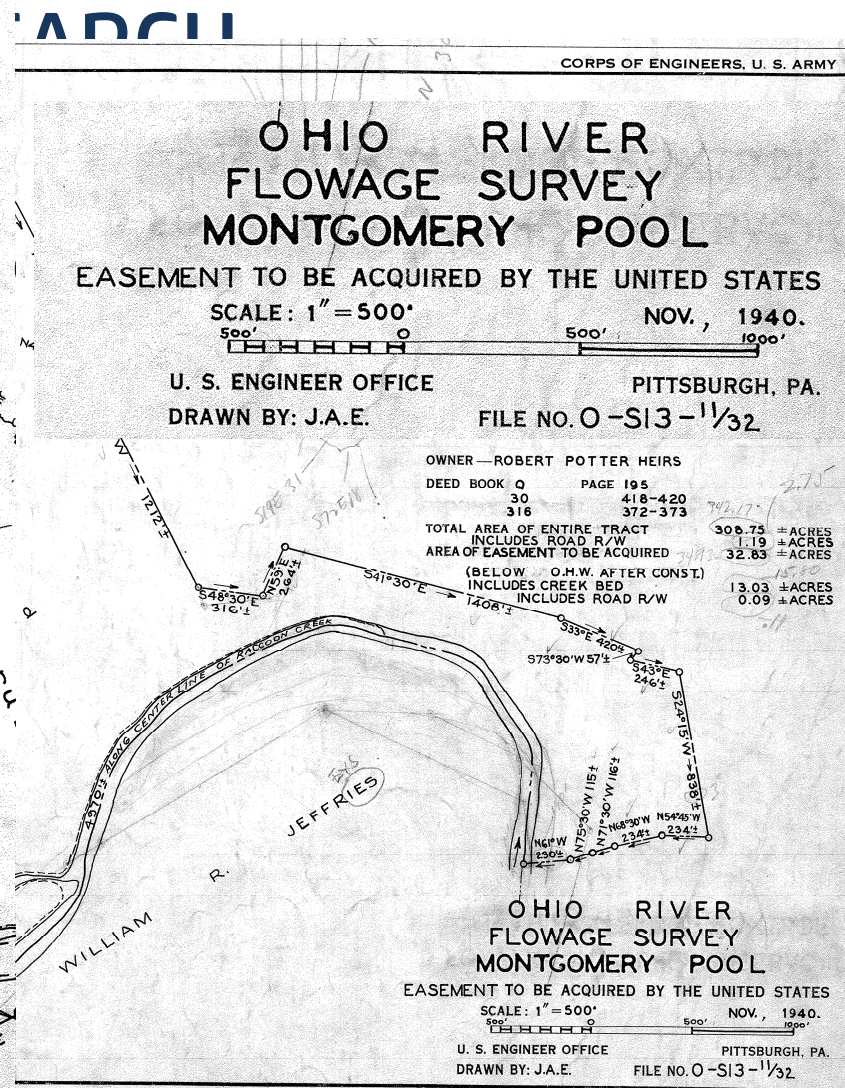
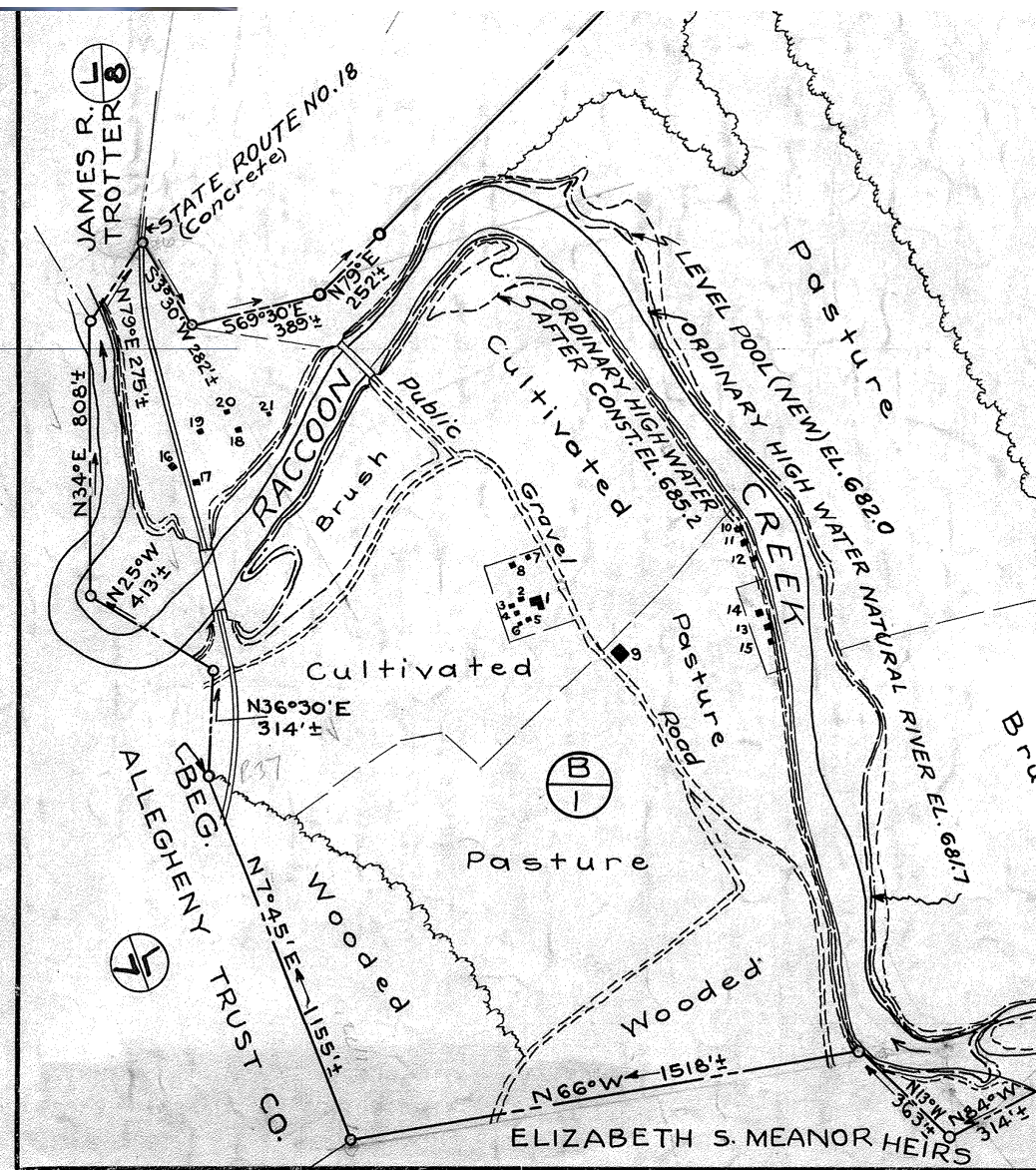
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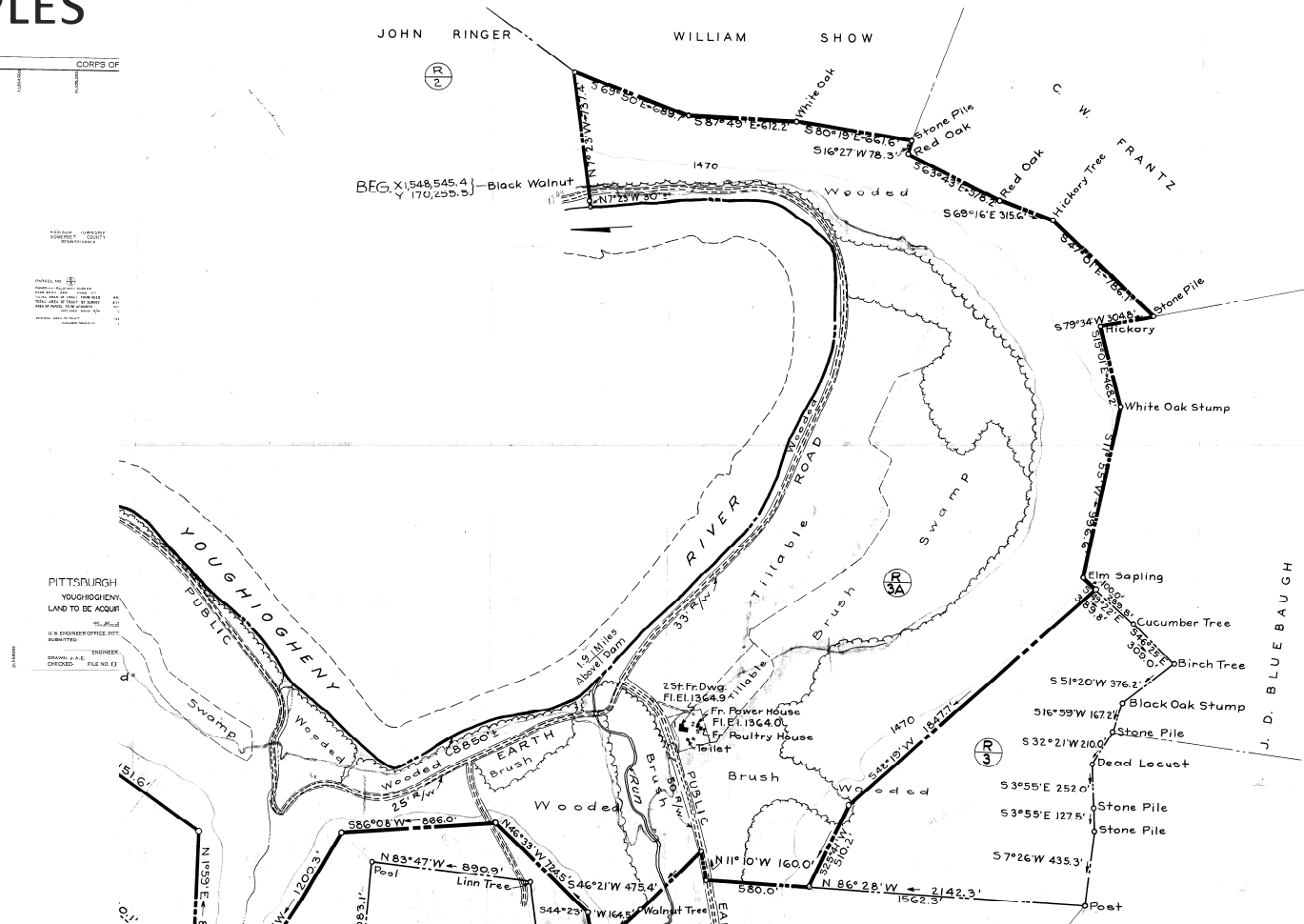
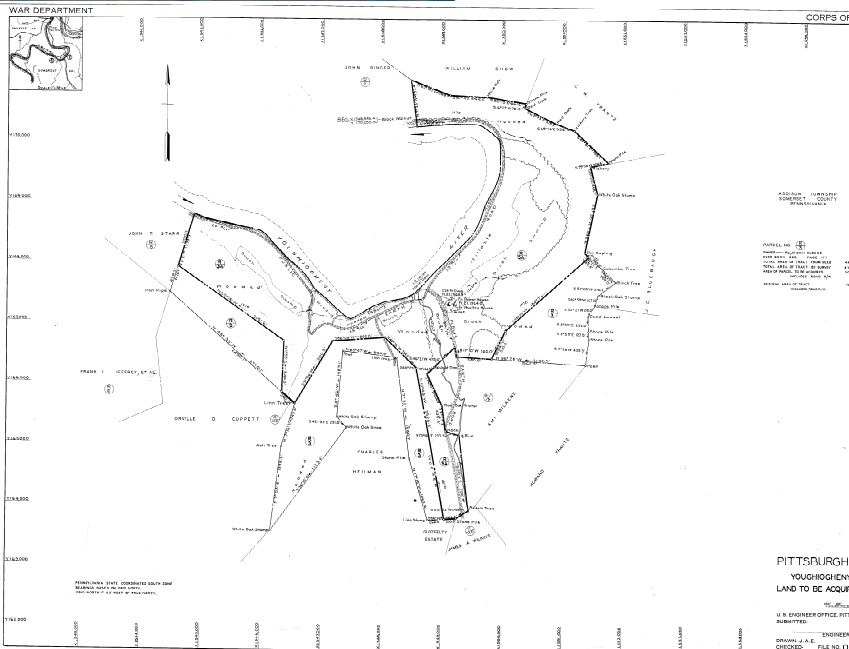








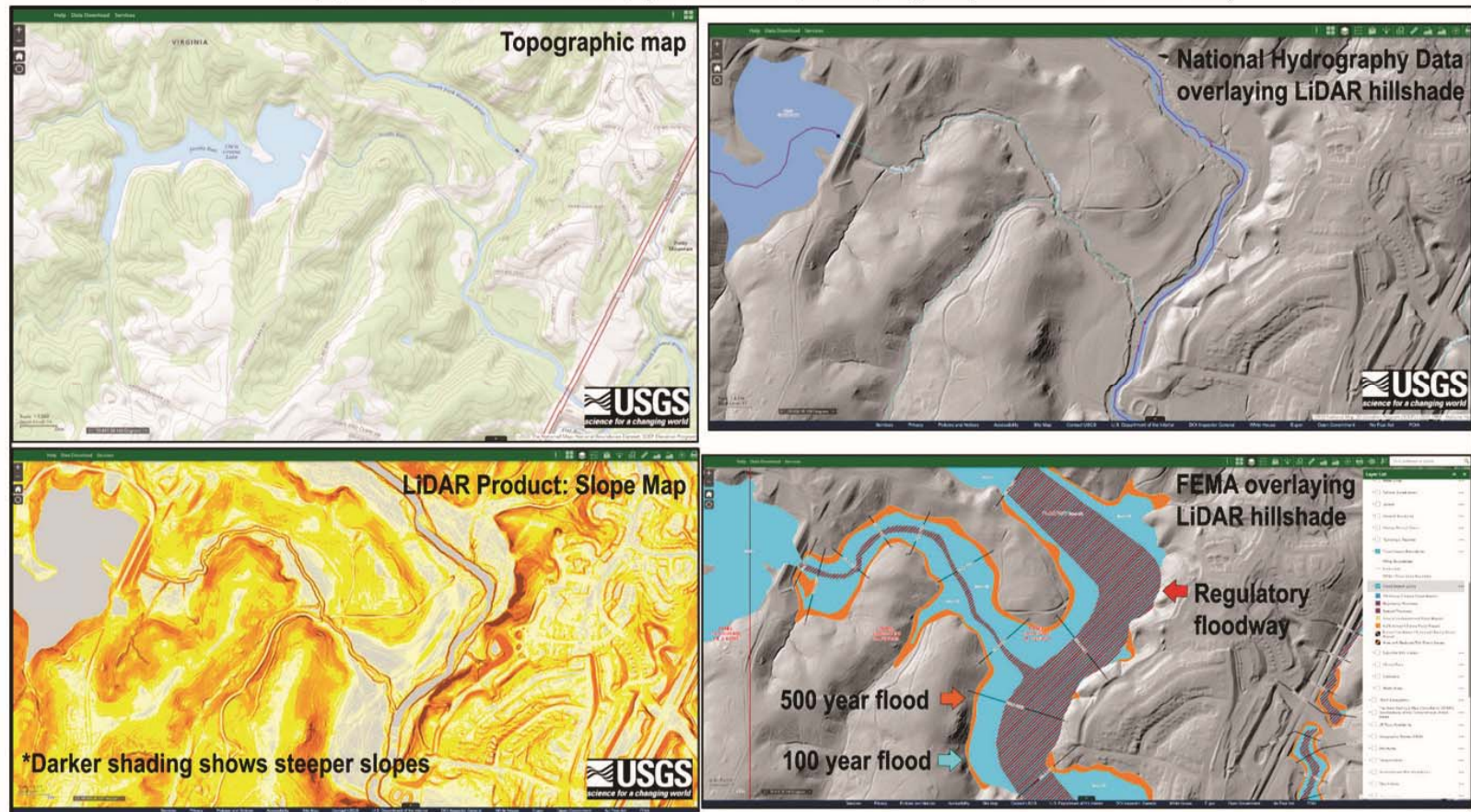
## EXAMPLES



# RESEARCH

# RESEARCH

Figure 81. Other resources available through the USGS National Map Advanced viewer include topographic maps, lidar products such as hillshade and slope maps, and maps (such as FEMA maps) that can be Imported. (Images reproduced from USGS n.d.c.)

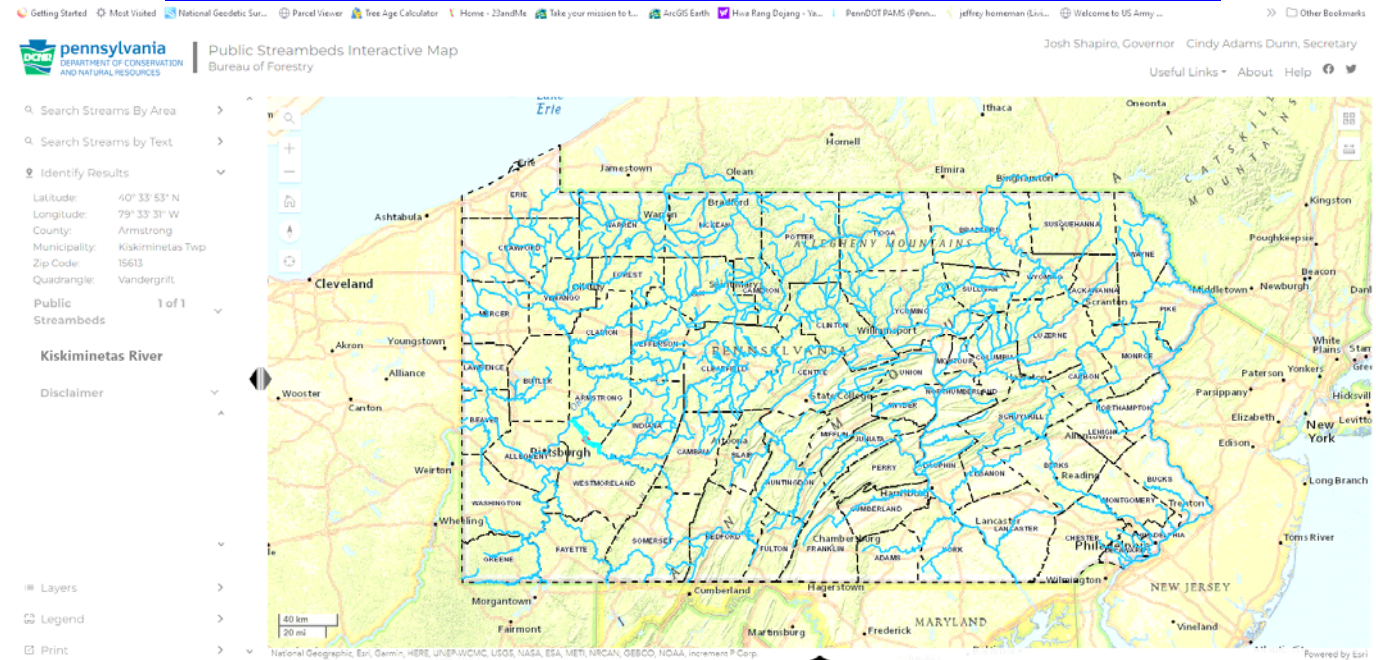






# RESEARCH

- <https://gis.dcnr.pa.gov/publicstreambeds/>



The waterways identified herein as having publicly-owned streambeds have been compiled by the Commonwealth over time from various sources. Identification is based upon information believed to be reliable and persuasive evidence of such ownership. The identification of a waterway as having a publicly-owned streambed herein is not intended to be a final determination that the waterway is navigable under state or federal law. Moreover, other waterways not identified herein may be navigable under state or federal law, in which case their streambeds would also be publicly-owned. The Commonwealth reserved the right to add or remove waterways identified as having publicly-owned streambeds as additional information becomes available. Sources: Publicly-Owned Streambeds – PA DEP’s Lists of Stream Subject to the Submerged Lands License Program, 09/2003. Streams – USGS National Hydrography Dataset, 06/2005.



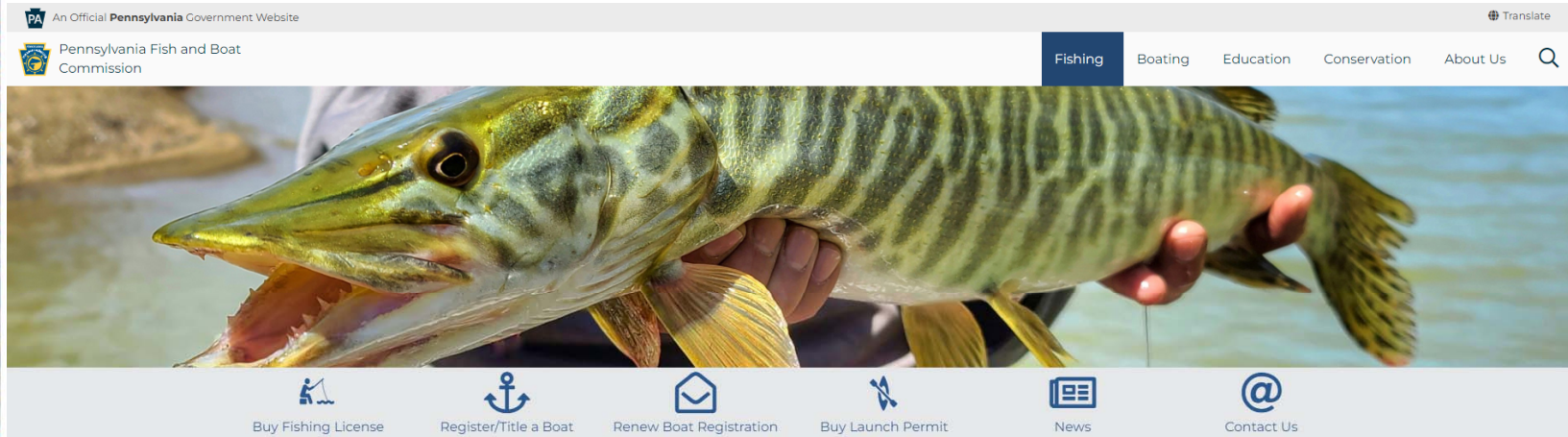


# NON- NAVIGABLE

WHO OWNS THE BED?

WHO OWNS THE WATER?

# NON- NAVIGABLE



[Home](#) > [Fishing](#) > [Where to Fish](#) > Public / Private Access

## PUBLIC ACCESS TO WATERS AND RIPARIAN RIGHTS



# NON- NAVIGABLE

Public rights to and on the water is a complex area of Pennsylvania law. In Pennsylvania, the public's rights to fish in a particular stream depends in large part on whether the stream is "navigable." In general, the public has the right to fish in a navigable waterway. The accepted test of navigability is whether the waters are used, or are susceptible to being used, in their ordinary condition, as highways for commerce. If the water met the navigability test at any point in its history, it remains a legally navigable waterway. There is no single published listing of all the navigable waters in Pennsylvania.

Although the public has the right to fish in a navigable stream flowing through private lands, this does not mean that the public has the right to cross posted private lands to get to the stream. [Learn more about landowner relations.](#)

## FREQUENTLY ASKED QUESTIONS

### **Are Pennsylvania's waters considered public and therefore open to legal fishing and boating?**

Some are; some aren't. In addition to the legal status of the waterway itself, the status of the adjacent - or "riparian" - lands play a significant role in determining who has what rights. Unfortunately, a brief answer cannot comprehensively address this complex subject, which has generated major court decisions and lengthy law review articles.

### **So which waters are considered to be public?**

Public waters include the great or principal rivers of the Commonwealth. The Pennsylvania Supreme Court in *Shrunk v. Schuylkill Navigation Company* in 1826 defined the great rivers to be the Ohio, Monongahela, Youghiogheny, Allegheny, Susquehanna, and its north and west branches, Juniata, Schuylkill, Lehigh and Delaware. Public waters also include "legally navigable" rivers, streams and lakes.





# NON- NAVIGABLE

## **What makes a river, stream or lake navigable for legal purposes?**

Waterways must be regarded as "navigable in law if they are navigable in fact." According to the United States Supreme Court in *The Daniel Ball* in 1870, waterways are "navigable in fact" when they are used or are susceptible of being used in their ordinary condition as highways for commerce over which trade and travel are or may be conducted in customary modes of trade and travel on water.

## **Does that mean that a waterway must currently be used for commercial purposes in order to be navigable?**

No. The test for navigability is not a contemporary test. It's a historic test that goes back to when William Penn was granted charter to Pennsylvania. Pennsylvania courts place particularly emphasis on a waterway's use during the late 18th and early 19th centuries – prior to the invention of modern modes of transportation and at a time when the only significant routes of travel, trade and commerce were on waterways.

## **What if a water that was used for commerce during the late 18th and early 19th centuries is no longer used for commercial purposes today?**

It doesn't matter. The test of navigability is rooted in its historical use.

## **Does significant recreational use make a waterway navigable?**

No. Only commercial use is considered by the courts.

## **Does the Fish and Boat Commission determine which waters are navigable and therefore public?**

No. Only a court can decide. No agency, including the Fish and Boat Commission, is authorized to determine navigability by administrative action.



# NON- NAVIGABLE

## **Who owns public waters?**

The title to the beds of public waters is held in trust by the Commonwealth of Pennsylvania for the benefit of the public. In case of rivers and streams, the Commonwealth's ownership extends to ordinary low water mark, and the adjacent riparian landowner owns above the low water mark. An easement exists in favor of public between high and low water marks. That easement includes the right to fish. In case of lakes, Commonwealth's ownership encompasses the mean pool of lake.

## **How much of a navigable waterway does the Commonwealth own?**

When it comes to navigable waters, Pennsylvania courts have said that the Commonwealth's ownership extends to the ordinary low water mark, and the adjacent riparian landowner owns above the ordinary low water mark. An easement exists in favor of public between the high and low water marks. That easement includes the right to fish.

The courts have defined the low water mark in this context as the height of water at ordinary stages of low water unaffected by drought and unchanged by artificial means. The best advice is to tell the public to stay as close to the water as possible or if they want to be safe to stay in the water. If they don't venture on to upland properties, they'll be OK. The fact that a waterway is deemed navigable does not give the public unfettered access to people's riparian lands nor permission to trespass in order to gain access to a waterway.

## **What rights does the public have in public waters?**

The rights of the public in public waters are quite broad and extend to fishing, boating, wading, floating, swimming and otherwise recreating.





# NON- NAVIGABLE

**Do the rights of the public include being able to cross private property to gain access to the public waters?**

No. The public does not have a right to cross on private property to gain access to public waters. However, if you enter a public waterway lawfully (e.g., through a public access point), you can wade, boat, float or otherwise be in the waterway where it passes through private property.

**Can riparian landowners prevent members of the public from floating or wading in public waters that flow through their property?**

No. However, a riparian landowner can prevent the public from crossing his or her land to get to the public water.

**Can riparian landowners prevent members of the public from fishing in public waters that flow through their property?**

No.

**Is there a list of public waters?**

Unfortunately, no.

**What waters are considered to be private?**

Private waters are non-navigable rivers, streams and lakes.



# NON- NAVIGABLE

## **What waters are considered to be private?**

Private waters are non-navigable rivers, streams and lakes.

## **Who owns private waters?**

Title to the beds is held by the adjacent riparian landowner. If the adjacent riparian landowner owns property on only one side of a non-navigable waterway, he or she owns to the middle. When a non-navigable waterway flows through someone's property, he or she owns the entire bed of the waterway.

## **Can a riparian landowner prevent members of the public from fishing or wading in a non-navigable water?**

Yes.

## **Can a riparian landowner prevent the public from boating or floating in a non-navigable stream?**

No, because there's a "navigation servitude" that gives the public the right to use the water for purposes of navigation only. This servitude does not extend to fishing.

## **Can a riparian landowner string a cable across a non-navigable stream?**

Yes, as long as:

- the landowner owns property on both sides of the stream; and
- the cable doesn't interfere with navigation.

However, from a liability perspective, it may not be a good idea.





# NON- NAVIGABLE

- Navigation servitude is a type of right that allows the government to regulate commerce on ***navigable water*** without having to pay compensation for interference with private ownership rights. It can also refer to an easement that allows a state to regulate commerce on navigable water and provide limited compensation for interference with private ownership rights. This type of servitude is important for protecting navigation and commerce on waterways.

(<https://www.lsd.law/define/navigation-servitude>)



# NAVIGABLE/LEVEL OF DETAIL


- PER AERIAL
  - VEGETATION LINE (COMMON PRACTICE)
- CORPS POOL ELEVATION (EXPEDIENT METHOD)
  - “CORRECT WAY”



# NAVIGABLE/LEVEL OF DETAIL


## EXPEDIENT OHW

<https://www.lrp.usace.army.mil>



← ↻ 🏠 🔒 <https://www.lrp.usace.army.mil/Missions/Navigation/Navigation-Charts/> 🔍 🔄 📄 ⭐ 🌐 ⚙️ ⋮

🇺🇸 An official website of the United States government [Here's how you know.](#) ▾

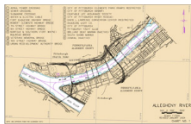
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US Army Corps of Engineers Pittsburgh District Website

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### Navigation Charts



Navigation Charts are 8½" x 14" scaled color maps that indicate important navigation features of special interest. Features shown on the charts include channel sailing line, U.S. navigation lights, daymarks, arrival point marks for locks, normal pool elevations, mouth of tributary streams, location of bars, channel buoys, bridges, aerial and submarine crossings, docks, terminals, landings and navigation structures. No soundings are shown. A listing of small boat harbors, ramps, landings and commercial river terminals are included at the back of each navigation chart book.

**Download Pittsburgh District Inland Electronic Navigation Charts (IENC)**

The Inland Electronic Navigation Charts (IENC) are digital charts referred to as "cells". The cells are updated on a monthly basis to allow the general public to stay up-to-date. There are [RSS feeds](#) set up for each of the cells. The USACE does not require anyone to create a Login to download IENC data, but we do ask for some basic information from the requestor to be used for statistical purposes. The cells are currently available in three different formats, linked below:

[Google Earth KML](#)

[IHO S-57 cells](#)

[ESRI shapefiles](#)

**Download Pittsburgh District Navigation Chart Books (PDF)**

USACE Navigation Charts are maps that indicate features important for navigation on the waterways. Features shown on the Charts include: channel, sailing line, navigation lights, daymarks, arrival points for locks, normal pool elevations, tributaries, location of bars, channel buoys, bridges, aerial and submarine crossings, docks, terminals, landings, and more.

[Allegheny River Navigation Charts](#)

[Monongahela River Navigation Charts](#)

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### Related Links

[How the Corps uses Hydrographic Surveys](#)

[Pittsburgh District Hydrographic Survey Data](#)

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### Publicly Accessible GIS Sites

The **U.S. Geological Survey (USGS)** collects hydrologic and water-quality information and provides access to water data, publications, and maps, as well as to recent water projects and events. Their website is located at: <http://www.usgs.gov/pubprod/>.

The **Pennsylvania Spatial Data Access (PASDA)** is the official public access geospatial information clearinghouse for the Commonwealth of Pennsylvania and has served for fifteen years as Pennsylvania's node on the National Spatial Data Infrastructure, Geospatial One-Stop, and the National Biological Information Infrastructure. PASDA was developed by the Pennsylvania State University as a service to the citizens, governments, and businesses of the Commonwealth. PASDA is a cooperative project of the Governor's Office of







# NAVIGABLE/LEVEL OF DETAIL

“CORRECT WAY”

CRITERIA NEEDED TO PROPERLY SET THE ORDINARY HIGH-WATER (OHW) MARK

1. Various Geomorphological Features
2. Vegetation
3. Soil Characters
4. Hydrological Evidence



# NAVIGABLE/LEVEL OF DETAIL

## National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams

- 1.1 Background
- The ordinary high water mark (OHWM) defines the lateral extent of non-tidal aquatic features in the absence of adjacent wetlands in the United States. The federal regulatory definition of the OHWM, **33 CFR 328.3(c)(7)**, states, **“The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.”** The OHWM has been used to delineate the jurisdictional limits of certain aquatic features since the Rivers and Harbors Act of **1899**. The OHWM defines the jurisdictional limits for both streams and lakes, but this manual focuses solely on a methodology for identifying and delineating the OHWM in **streams**. In this context, *identification* refers to recognizing evidence at places along the stream, and *delineation* refers to connecting the evidence to arrive at an OHWM determination. Throughout the document, the term *stream* refers to both streams and rivers. Physical features are used as surrogate indicators for identifying the upper limits of semifrequent high-flow events in flowing waters. *Physical features* refers to physical characteristics on the landscape, including flora and geomorphic features shaped by fluvial processes.



# NAVIGABLE/LEVEL OF DETAIL

## OHW FIELD DELINEATION

- <https://www.erdc.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/486085/ordinary-high-water-mark-ohwm-research-development-and-training/>
- [ERC-CRREL TR-22-26 PDF](#)



US Army Corps  
of Engineers®  
Engineer Research and  
Development Center



Wetlands Regulatory Assistance Program (WRAP)

### National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams

Interim Version

Gabrielle C. L. David, Ken M. Fritz, Tracie-Lynn Nadeau, Brian  
J. Topping, Aaron O. Allen, Patrick H. Trier, Steven L.  
Kichefski, L. Allan James, Ellen Wohl, and Daniel Hamill

November 2022

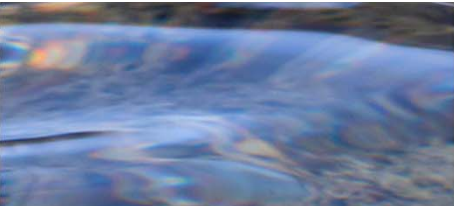


Cold Regions Research  
and Engineering Laboratory

ERDC/CRREL TR-22-26

Approved for public release; distribution is unlimited.





# NAVIGABLE/LEVEL OF DETAIL

Figure 7. WoE approach, summarizing the process used for OHWM identification. Associated steps from the OHWM data sheet (Box 1) are noted below each WoE subcategory. The WoE method is described for the field portion of the process. A WoE approach can also be used for Step 1 (assembling remote and online resources), which will be described separately in Ch. 5

Assemble Evidence		
Gather evidence at the site		
What are the surrounding landscape characteristics that may influence both observations and interpretations of flow indicators?		
Site condition: land use	Site condition: flow	List field observations
Field Data Sheet Step 2	Field Data Sheet Step 2	Field Data Sheet Step 3
Consider the surrounding land use. What land use impacts could affect ability to observe flow indicators?	What are the flow conditions? Do the current flow conditions affect ability to observe high flow indicators?	What physical indicators of flow are observed at this location?
Weight the Evidence		
Assign relative importance to evidence		
Which stream characteristics are reliable high-flow indicators?		
Relevance	Strength	Reliability
Field Data Sheet Step 3	Field Data Sheet Step 3	Field Data Sheet Step 3
Is this indicator left by low flows, high flows, or extreme flows?	Is this indicator persistent on the landscape both up- and downstream, as well as across the channel?  Does this indicator occur at the same elevation as other indicators?	Is this indicator persistent on the landscape over time?  Will this indicator persist across different seasons?
Weigh Body of Evidence		
Arrive at final decision		
What combination of high-flow indicators represent the OHWM?		
Combine weights	Interpret bodies of evidence	Explain ambiguities and discrepancies
Field Data Sheet Steps 3, 4, & 5	Field Data Sheet Step 5	Field Data Sheet Step 5
Integrate lines of evidence. Where do the high-flow indicators co-occur (at what elevation)?	Explain why the combination of high-flow indicators represents the OHWM.	If there are multiple possibilities for the OHWM, explain why there are two (or more) possibilities. Include any relevant discussion on why specific indicators were not included in the final decision.

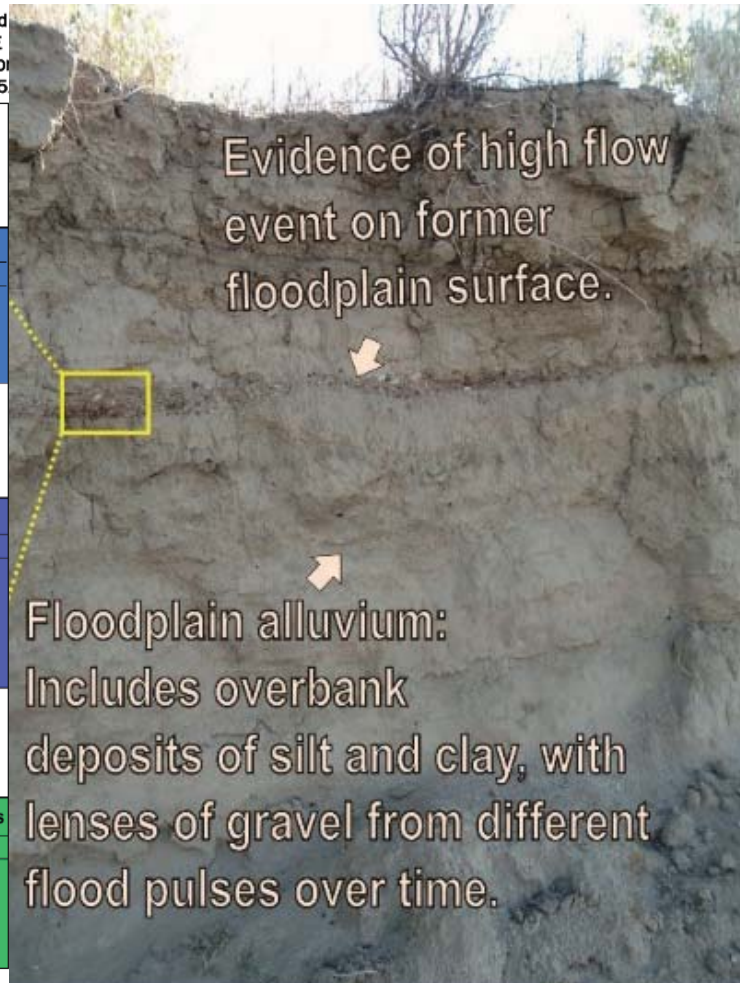


Figure 10. Exposure of overbank deposits along a vertical cutbank on the Powder River, Montana, in the Northern Prairies region of the country. A coarser layer shows the location of gravel transported onto the former floodplain during a high-flow event. The valley bottom marked on the photograph includes both the current and former floodplain (i.e., terraces). The extent of the valley bottom is most easily distinguished in the satellite imagery, whereas the extent of the current floodplain can be better mapped with a field survey. See Moody and Meade (2008) to view the extent of the mapped floodplain.



Floodplain alluvial deposits: Layer of rounded gravel and sand, similar to channel bed, indicates sediment was sorted and rounded by water transport.





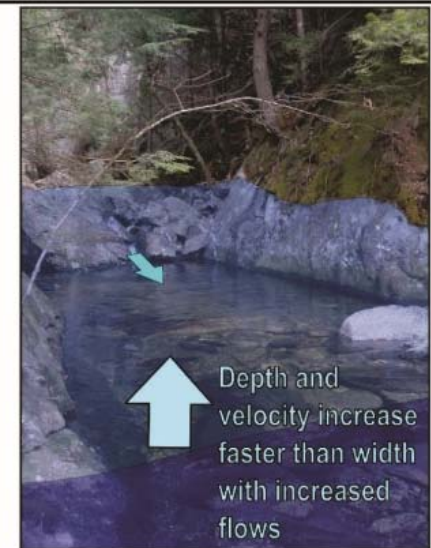
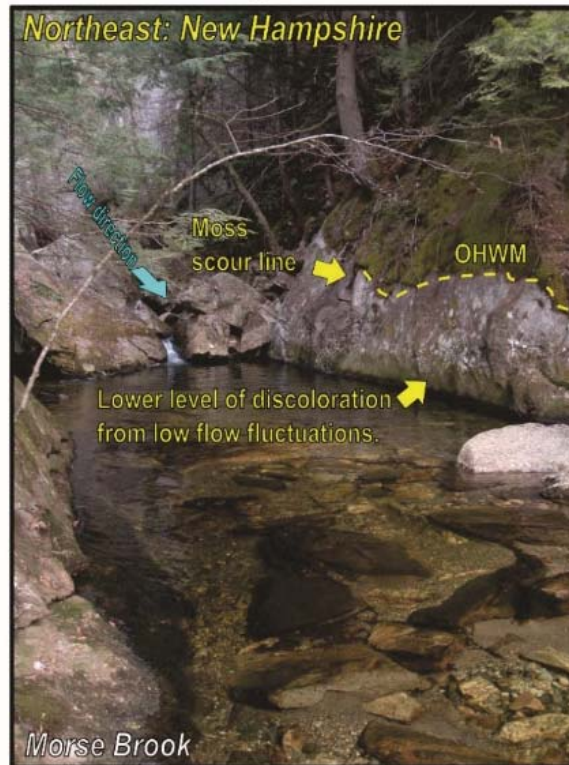


Figure 31. Vegetation transition on channel bars. In these two Northern Prairie streams, the OHWM is identified where the more persistent woody vegetation establishes.



# NAVIGABLE/LEVEL OF DETAIL

Figure 64. Using moss scour lines in a channel with nonerrodible banks. This is a bedrock channel, but the same effect can be seen in concrete-lined channels.



Non-errodible bank channel



Increased depth and velocity with streamflow

Erodible bank channel

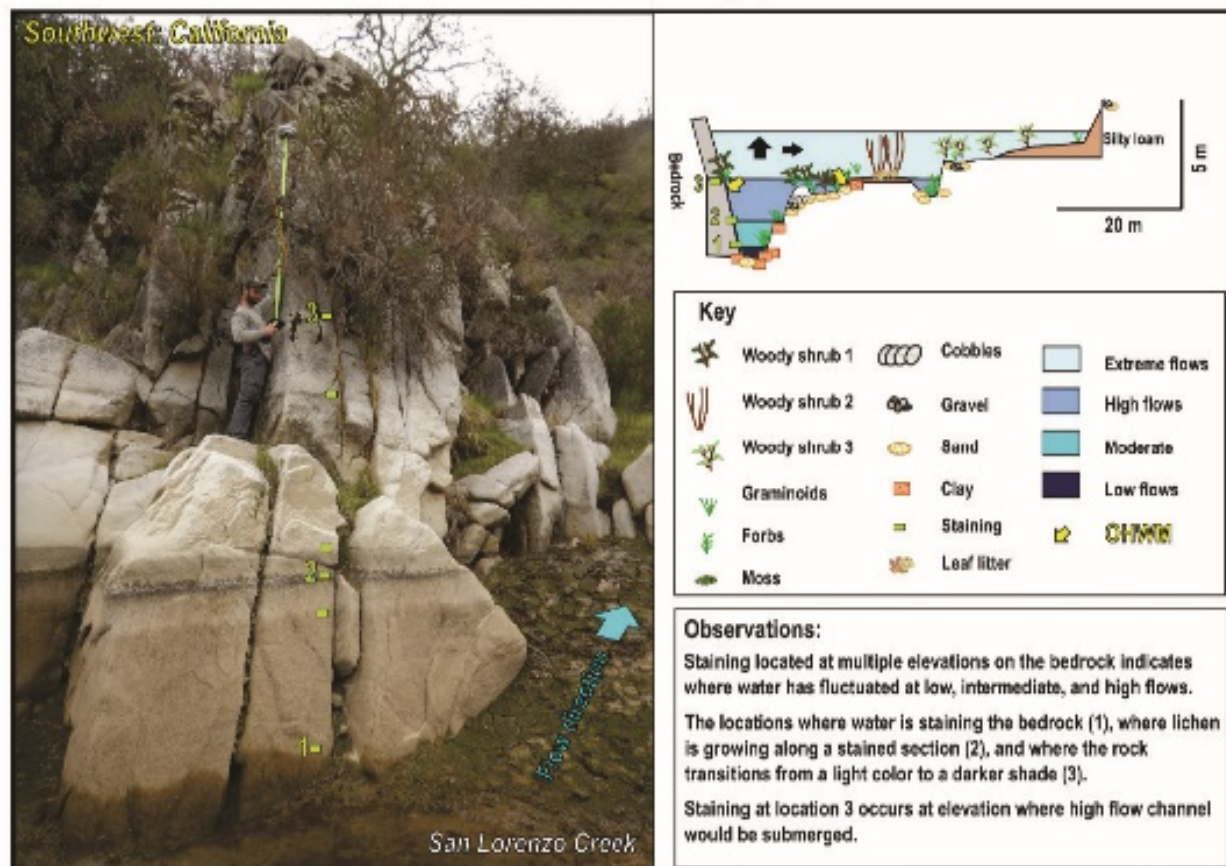


Increased width, depth, and velocity with streamflow

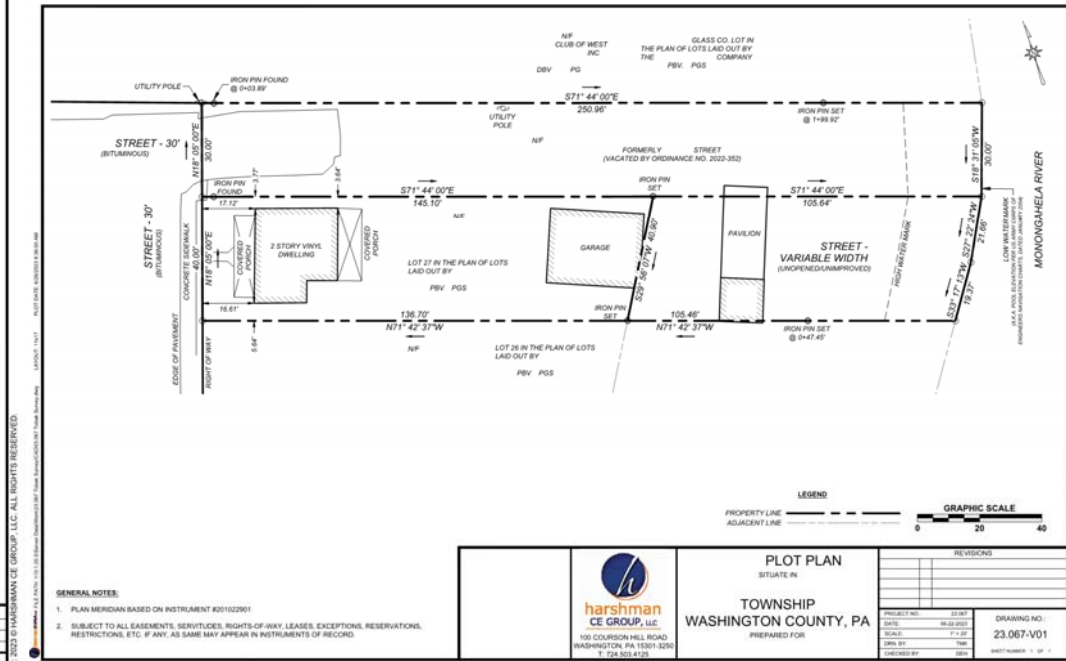


# NAVIGABLE/LEVEL OF DETAIL

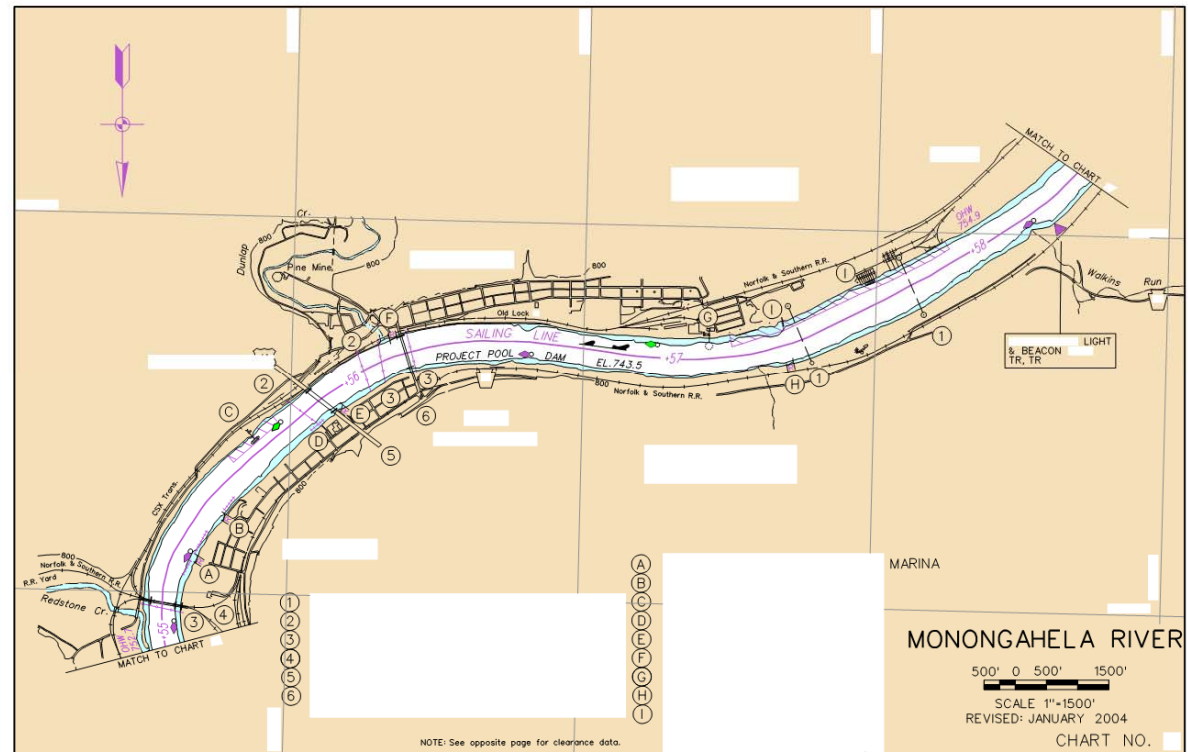
Figure 76. Staining can occur at multiple elevations from a range of flows. The numbers indicate the same location on the photograph and cross section.







# NAVIGABLE/LEVEL OF DETAIL EXAMPLES







# NAVIGABLE/LEVEL OF DETAIL

## EXAMPLES





# NAVIGABLE/LEVEL OF DETAIL

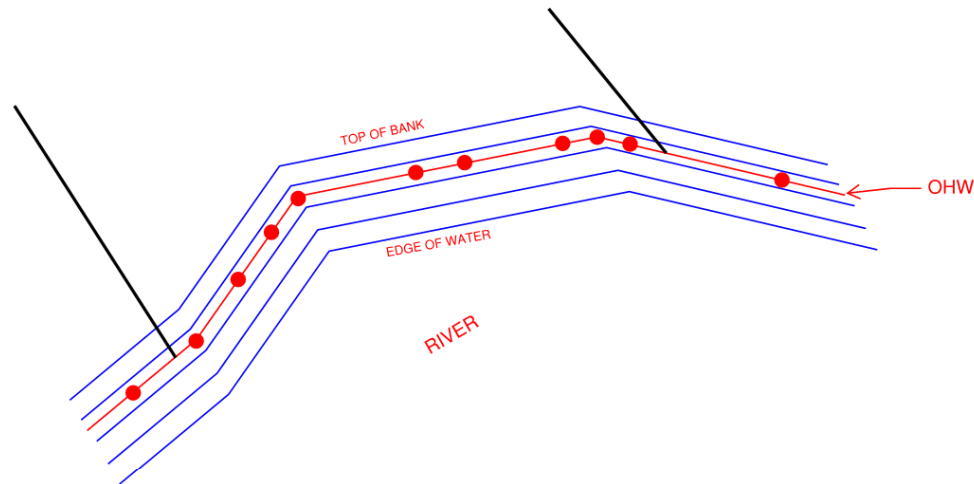
## EXAMPLES



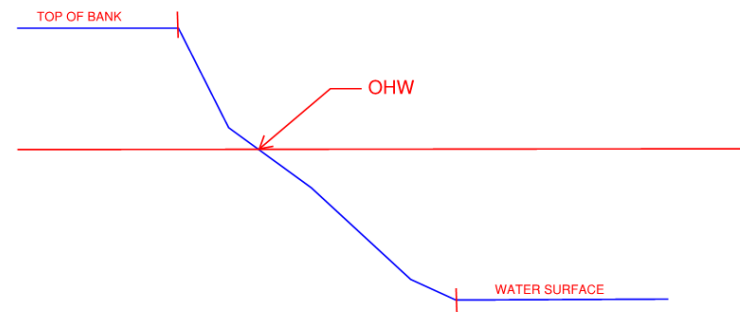


# NAVIGABLE/LEVEL OF DETAIL

## EXAMPLES



ESTABLISH VERTICAL TO DETERMINE HORIZONTAL LOCATION





CONCLUSION/TAKEAWAY

**ASK**  
**QUESTIONS!?!?!?**





# CONCLUSION/TAKEAWAY

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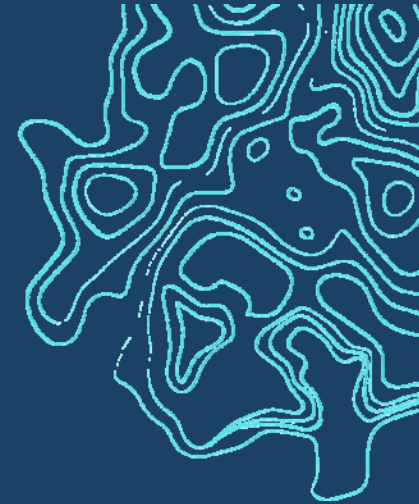


**CONCLUSION/TAKEWAY**

**QUESTIONS?**



# SESSION EVALUATION



2025

**SURVEYORS'**  
*Conference*

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