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Memory Jogger for Inland Water Boundaries

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WHY STUDY THIS SUBJECT?

I started with surveys in Albuquerque in 1947. My first job was part time while going to school. Sooner than reasonable they put me in charge of a crew making resurveys and lot surveys. Most of the work was small tracts that had been mapped by the local irrigation district. I remember one tract that fronted on the Rio Grande River. The base map didn't show as much land along the river as the owner's alfalfa field. Not knowing what to do I cut the survey off where the map showed his property. I didn't know there was such a thing as accretions and didn't measure them. I don't know whether the boss with the license knew. He never mentioned it.

The client got the short end of that stick.

BLM surveyors deal with water boundaries more than the average surveyor. They seem to hit more difficult issues.

Example: Ten years ago BLM was embroiled in a suit concerning land near Port Orford, Oregon (Sisters Rock). 27.5 acres were claimed to be omitted from the original GLO survey in 1875. Part of the controversy involved whether a line on the plat was a meander line; part involved a grant from the State of Oregon for tidelands; part involved a question of an unsurveyed island; part involved whether a GLO surveyor committed gross error.

Example: BLM is authorized to run new meanders along river banks that have changed over long periods of time. But they can only run new meanders (re-meander) on lands the government owns (public lands).

That doesn't mean that non-BLMers don't have to be concerned.

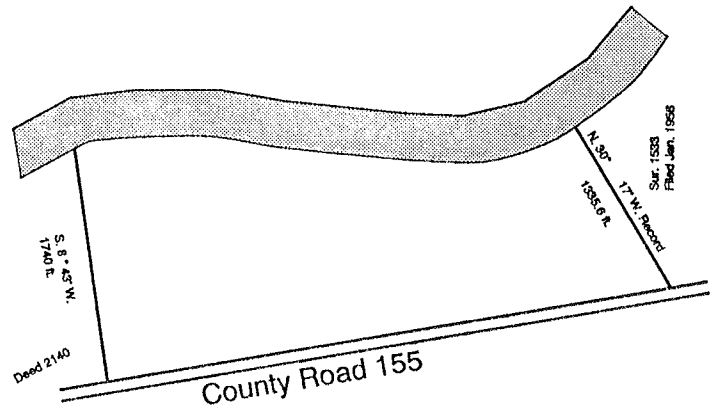
Suppose you set out to run the boundary for a proposed mobile home subdivision that fronted on a highway, was backed up by a river and had recorded surveys on each of the two side lines. Looked really easy until you measured back from the frontage and found the distance to the river was several hundred feet longer than the record. (The river had moved since the adjoining survey.) Now what?

This is not legal advice.

Suppose the other side line was several hundred feet short from the recorded adjacent survey. Now what?

These sorts of situations we will consider today.

It is important to understand that the subject here is river and lake boundaries. *None of this is intended to apply to coastal boundaries or tidal waters.*



NAVIGABILITY

What does that have to do with surveying?

Actually, quite a bit.

It makes a difference in where the boundary is located between the owner of the *bed* and the owner of the *bank*. Isn't that one of the boundaries that we are talking about?

Over two hundred years ago the thirteen states yielded their claims to certain land and some of their rights to the United States. Because each of those thirteen states owned the beds of the **navigable** waters within their charters the individual states wanted to keep them. But each state had found that the general government needed the power to regulate commerce and make treaties with foreign governments. So a division was made; the states kept ownership of the soil under rivers and lakes but gave the federal government the power to regulate navigation. Each new state added to the union was kept on an equal footing with the Original States by a grant of the soil under its waters.

That's roughly why the State of Alaska owns the navigable river beds. And that is why the boundary of an upland owner's land along a river depends on whether the river was navigable when Alaska became a state or was not navigable at the time of statehood.

From this background each state can claim the beds of rivers and lakes that were customarily used in commerce by the usual watercraft at the time of statehood. There need not be a continuous route-- portages around rapids did not make it non-navigable. Even if such use could not be proven, the courts would accept susceptibility to navigation if there was no real need for such commerce at the time of statehood.

A fairly recent case in federal court reinforced the state's claim.

The bed of the lower Gulkana River was conveyed to a native regional corporation, Ahtna, Inc., as part of the Native Claims Settlement Act by BLM. The State of Alaska brought suit claiming the river was navigable at statehood and therefore the bed belonged to the state so that BLM had no ownership to convey.

The facts brought out during the trial and appeal show that in the 1980's the river was customarily used by boats up to 24 feet long, inflatable rafts up to 15.5 feet long, motorized freight canoes and double ended paddle canoes up to 19 feet long.

The river was shown to be only a foot deep at low flows. As much as 4,800 cubic feet per second flow occurred at high water but the average condition was that the lower river was 125 to 150 feet wide and about three feet deep.

But prior to statehood the only use of the river was by hunters and fishermen in small boats. Presumably that is why BLM found the river to be not-navigable.

State of Alaska's suit claimed the river was in the same condition as it had been at statehood and Ahtna, Inc. agreed by stipulation. (Stipulation is an enforceable agreement, usually in writing, that affects the conduct of a trial.)

The Federal District Court found in favor of the state as a matter of law (Summary Judgment) and set aside the Interim Conveyance. Ahtna, Inc. appealed.

Because the ownership of the beds of the rivers is so important to all 50 states, the Attorneys General for Arizona, California, Hawaii, Idaho, Illinois, Missouri, Montana, Oklahoma, Oregon, Washington, Wisconsin and Wyoming joined the dogfight, filing an Amicus Brief with the Appeals Court.

The appellate court decision (*State of Alaska v. Ahtna, Inc* 891 F.2d 1401 (1989)) went through all the background of previous cases. They cited a recent Oregon case on the McKenzie River which turned on use for floating logs, "A river's use need not be without difficulty, extensive, or long and continuous for the river to be a highway for commerce." They also found that the commerce need not be for the purpose of making money—hauling cattle to an island by barge, for instance, implied navigability.

On appeal Ahtna, Inc. brought up a new argument to the effect that the United States held the bed of the river in trust for their future reservation.

The court shot down that claim and affirmed the District court decision: The lower 30 miles of the river was navigable because it was susceptible to use in commerce at the time of statehood. The State of Alaska owned the river bed under dispute.

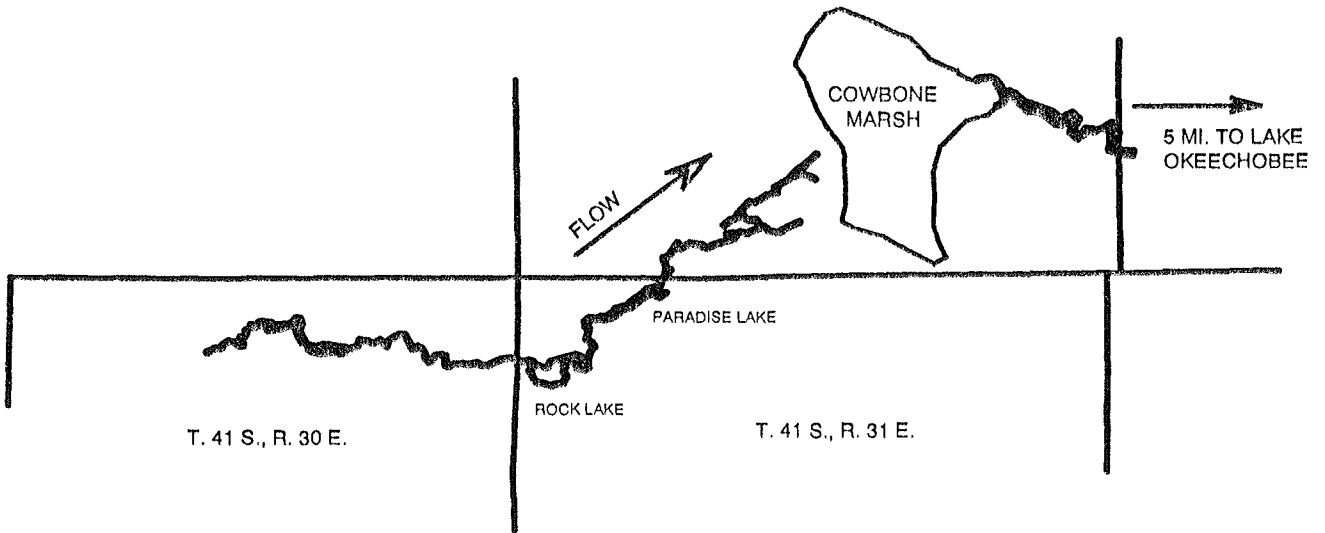
So, if you get a job along a river in Alaska, how do you tell if it is navigable or not?

- a) If the river is really more of creek and has such a low flow that a canoe would be useless- its probably non-navigable. But if it was ever navigable in the past it remains navigable.
- b) Talk to your client's lawyer. The Courts are the only source of declarations of navigability. The lawyer might have a citation of a court decision on your problem river or lake. There is even an Alaska case that decides that use of a lake for landing floatplanes does **not** constitute use in navigation (Slopbucket Lake).
- c) Call the State Lands Commission and see if the state claims the river to be a navigable water body of the state. Their claim would not necessarily make it automatically navigable, but they might be willing to tell you why they think it is navigable. The facts might convince you.
- d) Make a search of the history of your river to see if it has been used as a means of transportation of goods in trade and commerce. Things are beginning to get a little tougher at this stage.

If you think you are going to have to prove navigability the first thing you had better do is to be certain that your client and the client's lawyer agree that is the best course. Such proof is complex and **expensive**.

It is even tougher to prove that a river claimed to be navigable is not-navigable. A few years ago I was called in on a trial in Florida on a narrow little creek (Fisheating Creek). The Corps of Engineers and the State of Florida claimed the stream was navigable. The corporation that owned both sides had blocked fishermen from entry alleging they were poaching alligators and other game.

On inspection, the stream was so narrow in places that the boat bumped the cypress trees on both sides. In other places it widened out to very nice lakes. The original GLO surveys treated it as non-navigable but they did meander it. All of the water filtered through an impenetrable, very dense marsh, Cowbone Marsh. It lay between the contested part of the river and Lake Okeechobee, an obviously navigable lake. The locals claimed that they had traditionally fished and gilled frogs and hauled them to Lake Okeechobee to market them but at trial they produced no one who testified to that claim.



DISPUTED AREA OF FISHEATING CREEK, FLORIDA

Our team was never able to navigate the full length of the contested reach. The land owners had at one time operated tour boats on small parts of the river and one lake, hauling sight-seers around some islands and back to the launch point. The federal court eventually found that the river was non-navigable. (*Lykes Bros, Inc. v. US Army Corps of Engineers*, 90-82-CIV-FTM-17)

CHANGES IN RIVERS

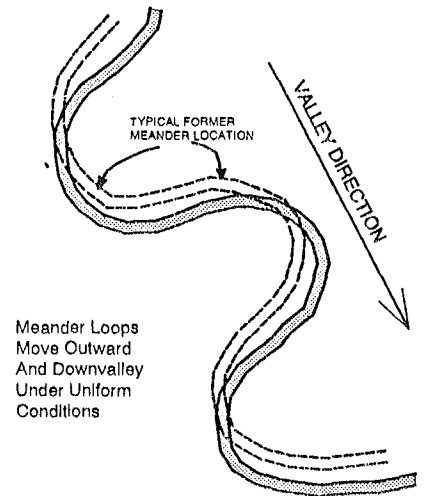
Geologic processes are not usually of much concern in survey work. Permit me to introduce that subject here. No sooner than mountains are squeezed upward by tectonic forces in the earth, the slopes are increased which gives the runoff extra power and running water starts tearing the mountains down.

Rivers seem to have formed more readily along geologic faults where crustal forces have broken the crust allowing the water to chip away a little bit faster. As thousands of years pass the rivers change from fast flowing mountain streams such as the Little Susitna and hundreds of others to slower flowing rivers in wider valleys formed with their own sediments and finally to mature rivers such as the Lower Yukon and the Mississippi.

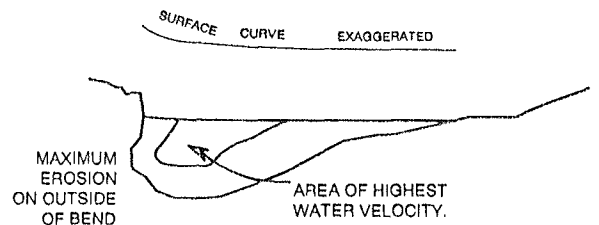
These changes are brought about because the river moved the material in the upper reaches and piled it along the banks in the valleys. After many centuries the river is no longer flowing through rocks, it is flowing through its own sediments. True, some of the sediments in the bottom may be cobbles that the river has rolled along but still they are sediment.

A river that flows entirely through its own sediment is called an alluvial river.

Alluvial rivers wander around— sometimes moving all over their valleys. This wandering is called meandering. Old time land de-



Meander Formation in an Alluvial River



Cross Section of a River Bend

scriptions recite, "thence down the river with its meanders." They referred to the meanders of the river and not necessarily the traverse run by the surveyor.

A naturally straight river flowing in sediment is almost unheard of. I was amazed at the Republican River in Kansas which is in very sandy soil because it was nearly straight for about 1/2 mile near Fort Riley. There may have been a fault just below the surface that caused it.

Meanders move outward and down the valley.

As the water curves around the bend centrifugal force raises the level of water on the outside of the bend. Now the velocity of water flowing in a channel depends on the shape of the cross section, the rate of fall, or head, available and the roughness of the channel floor and walls.

So when the water level rises on the outside of the bend, the shape of cross section becomes more compact and the velocity increases. The more the velocity increases on the outside of the bend the more erosion occurs on the outside. So the river moves over. On the inside of the bend the velocity becomes slower and slower. When the velocity slows, sand and silt drop out of suspension and increases the level of the bed and banks.

As the level of the bed raises on the inside of the bend of a meander, what is called a "point bar" forms.

The technical definition of the beginning of flood is when a river overtops its lowest bank. At that point in the river's rise, overbank flow begins.

When in flood, the river is usually carrying an extra load of sand and silt in suspension because of the increased velocity. But the shape of the cross section of the overbank flow is not as compact as in the main channel. What happens is that the sand and silts begin to drop out of suspension at the bank. When the flood begins to ease, the bank is left higher than the surrounding flood plain. These are called natural levees.

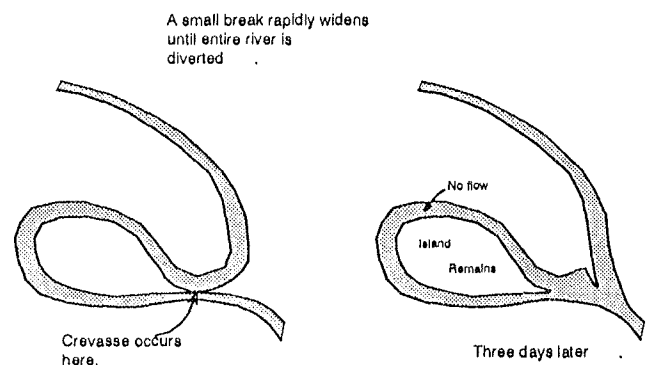


Rivers in Flood Top the Natural Levees and cover the Flood Plain beyond.

Avulsion and Channel Changes

During times of flood rivers sometimes take shortcuts across erodable land. If the amount of flow and the velocity are great enough erosion begins which enlarges the overflow section. When the overflow section becomes larger the velocity and amount of water increase— sometimes dramatically. If the condition of the soil and the geometry of the overflow route is just right, the entire river will divert into the overflow channel.

This is called an avulsion. The term comes from a Latin word for plucking or tearing off.



Classical Avulsion Geometry.

When an extra gravelly or hard clay soil slows down the rate of erosion, the meander bend begins to tighten up. Eventually the bend becomes so tight that a breakthrough occurs. This is a so-called classical avulsion.

This is not legal advice.

Other types of avulsion are called "point bar avulsions", "stream capture avulsions", "back swamp avulsions", "island formation avulsions" and "ice jam avulsions".

PATENTS AND GRANTS

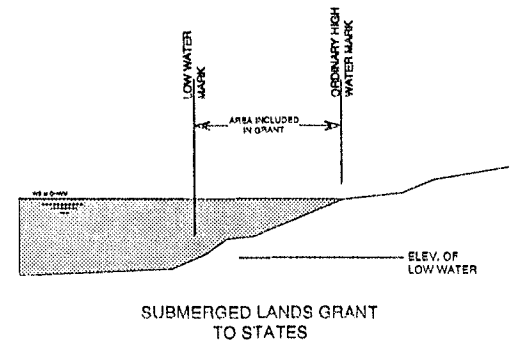
Federal Grants to States

At the time a state was accepted into the union— statehood, Congress usually passed a law called the Organic Act. That act spelled out specific grants that were made to the state. Which sections of a township were to be granted for school purposes were stated. Grants to a state are like patents, so that if the land described was platted along a waterbody, the state got riparian rights.

Various other Acts would specify such grants as swamp and overflowed lands, submerged lands along the coast and special grants of federal lands to the State of Alaska. A good reference for these citations as well as the Organic Acts for the states is Chapter 1 of the BLM *Manual of Survey Instructions*. For Alaska, the citation is 72 Stat. 339. The abbreviation is for United States Statutes at Large.

The Submerged Lands Act of 1953 (43 U.S.C. 1301-1343) essentially quit-claimed to the states all land submerged beneath navigable waters within state boundaries up to the ordinary high water mark. The grant intended to include additions that may have occurred and reclaimed land that was filled in over navigable waters. No patents were necessary or issued to the states for these grants of submerged lands nor were patents issued for state ownership of their river and lake beds.

State governments are not at all bashful about asserting their claims to these grants.



Federal Grants to Individuals, Including Patents

Under the rules developed by the General Land Office as directed by law, anyone who bought land from the government did not have to pay for the area under meandered waters (because it had no use in agriculture or had been given to the states). The area that had to be paid for was calculated from the survey and plat which excluded areas of meandered rivers and lakes.

The meanders were (and still are) not the actual boundary but were an approximation of that boundary along the water body. As the rules further developed, the grantee from the government whose land showed on the plat as bounded along a water body acquired rights to a riparian boundary to that water body. The easiest test to determine if these rights were included is to see whether the federal patent described the land by lots along the water body. If the patent included lots along the waterbody as shown on the plat, those lots were riparian unless those rights were expressly excepted.

If the original riparian lot was subdivided by a previous owner and the subdivision is described in the deed as "along the bank" or "down the river", indicating a natural monument, it probably remains a riparian boundary. The question may hinge on the intent of the grantor as a legal matter.

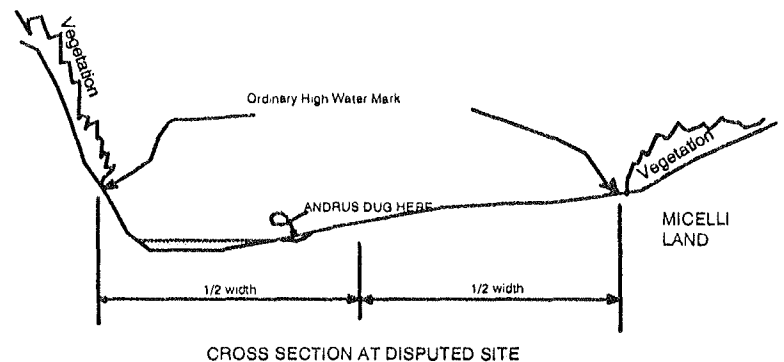
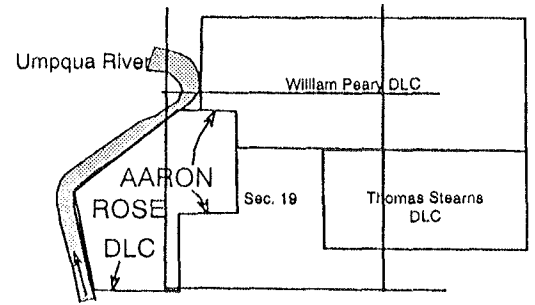
What is unique about a riparian boundary? "As a general rule, unlike other boundaries, a riparian boundary, including one represented by a meander line, is not a fixed boundary. Rather, it is an ambulatory line, i.e., it is a boundary that moves as the body of water or water course changes. It is, in essence, a right to continue to be riparian." John Lindskold, Esq. from his Foreword to *River & Lake Boundaries*.

A federal patentee whose land borders on a non-navigable river has a boundary at the middle of the stream. The middle is generally measured at the ordinary flow.

See an attorney for legal advice.

The Oregon Supreme Court changed that holding for Oregon land owners as a result of a case on the Umpqua River. *Micelli v. Andrus*, 120 Pac. 737 (1912). In that case, Andrus took 100 wagon loads of sand and gravel from the bed of the Umpqua. The pit was on Andrus's half of the river bed but was on Micelli's side of the water.

Andrus lost when the court decided that the thread of the river was to be measured at low flow. This could happen in Alaska. Remember that Alaska Territory used Oregon law until about 1900.



Federal Grants to Indian Tribes

Grants of land to Indians came from Acts of Congress such as the Alaska Native Claims Settlement Act or for the creation of a reservation resulting from a treaty.

The power to make treaties was one of the powers that the Original Thirteen States gave to the federal government. That treaty power, vested in the federal government, came to supercede the states' authority where some of the beds of the navigable waters were concerned. It has also caused scads of lawsuits.

In the 1800s it was easier to describe a reservation by reference to natural monuments like rivers and tops of mountains especially when dealing with Indians having little knowledge of the English language and land ownership customs. As a result, the question of whether the beds of rivers were included within the grant has employed lots of lawyers and surveyors over the years.

The usual problem comes when the reservation was created before the date of statehood and where the ownership of the river bed was not expressed in the treaty. In that situation, the question arises whether the federal government had the power to grant the bed of the river to the Indian tribe or whether the government held the bed of the river for the future state.

A Supreme Court decision in Montana held that the beds of rivers are held in trust for future states. However, if the river (or lake) is found to be essential to survival of the Indians, the courts may find that the beds of waters pass with the reservation. It is even more complicated than that, however.

My advice: If an Indian Reservation boundary is involved in your problem you need legal advice— either from your client's attorney or your own attorney. You should pick one who specializes in Indian Law.

State Grants

Some states such as Michigan, Illinois, Ohio and Wisconsin have given away portions of their grant from the federal government by passing laws that the upland owner takes to the middle of navigable rivers. If you are reading the report of a water boundary law case from one of these states you must remember that this affects the final decision.

Summary: Patents granted riparian boundary rights along water bodies, navigable or non-navigable, if the land was described by lots or by natural monuments. States got the beds of navigable rivers and lakes unless previously granted to others, such as Indian Tribes.

Upland owners on each side generally own to the middle of non-navigable water bodies. We will consider how lake beds are divided later on today.

LEGAL ASPECTS OF AVULSION

Avulsions have been known in law since Roman times.

The law of avulsive changes in rivers is pretty much uniform all over the United States. (Actually, it is pretty much the same in England, Mexico and other Latin American countries as well, I understand.)

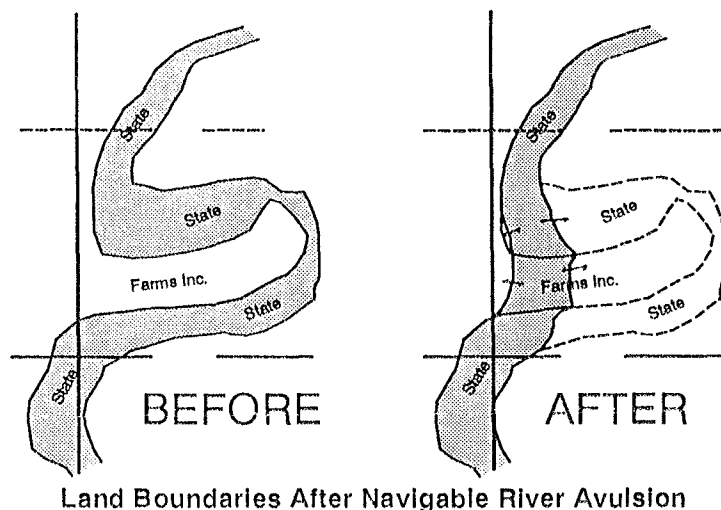
When an avulsion occurs, whether it is man-induced or natural, the boundaries of the owners along the water body become fixed as they were before the change and remain fixed unless the river once again adopts the former channel.

This can create a tough situation for some owners. The former owner who had a dock and shipped by boat may wind up with no river frontage. The owner who was farming may find an unwanted river in the middle of a field and there is no recourse. The law provides no relief. (The State of Oklahoma and states other than Alaska have changed this rule in some respects.)

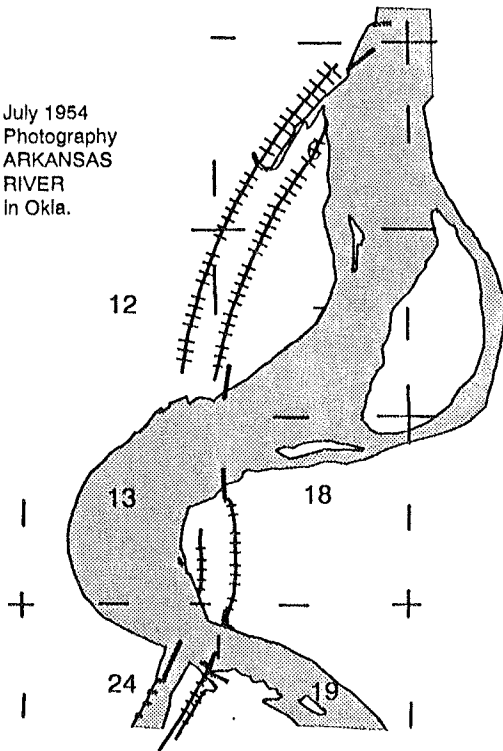
It can be tough on the surveyor in that there is no sure way that I know of to determine just where to begin fixing the boundaries and exactly where they are not fixed at the end of the avulsion.

Many— even most— of the legal decisions and statutes that define avulsion include words to the effect that the river moves "suddenly" and "violently". However, the United States Supreme Court's definition of avulsion adds another requirement. The highest court said that, "Where a stream, which is a boundary, from any cause suddenly abandons its old and seeks a **new bed**, such **change of channel**, termed avulsion, works no change of boundary; the boundary remains as it was, in the center of the old channel, although no water may be flowing therein." *Nebraska v. Iowa*, 143 U.S. 359 (1892). Accent added. What that court cleared up is that in an avulsion the river doesn't just widen out or move laterally-- it finds an entire new bed complete with new left and right banks.

River engineers sometimes design shortcuts for shipping channels. These man-made avulsions are usually effected by cutting a pilot channel with a dragline. When the last plug is cut in the pilot channel the engineers hope that the velocity of flow through the pilot channel will widen out until the entire river runs through the cut. On some rivers they have built revetments alongside the pilot channel ahead of time so that the river is already straight-jacketed. Sometimes these man-made avulsions do not take. In order to avulse, the difference in head across the pilot channel must be enough to create a velocity needed to erode. See series of maps on the next page for an example of pilot channel avulsion. The process of artificial avulsion is treated by most courts identically to a natural avulsion.

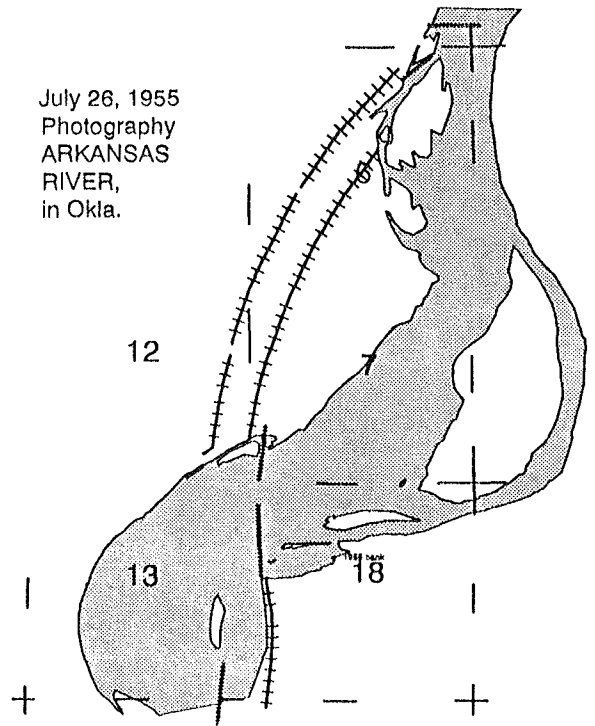


July 1954
Photography
ARKANSAS
RIVER
in Okla.



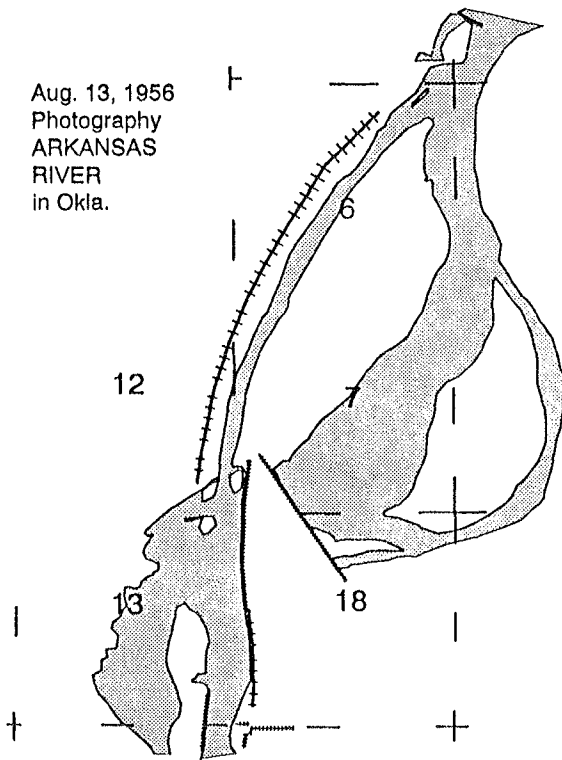
1954: Heavy lines with cross bars show levees constructed on dry ground.

July 26, 1955
Photography
ARKANSAS
RIVER,
in Okla.



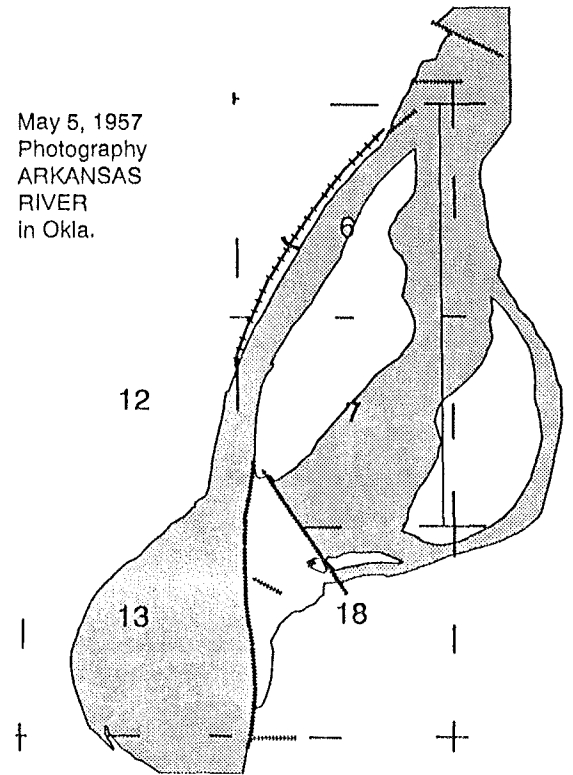
1955: Channel dug through along line of secs 13 and 18. Flow continues in old channel.

Aug. 13, 1956
Photography
ARKANSAS
RIVER
in Okla.



1956: Pilot channel cut along levee and main channel blocked by sheet piling.

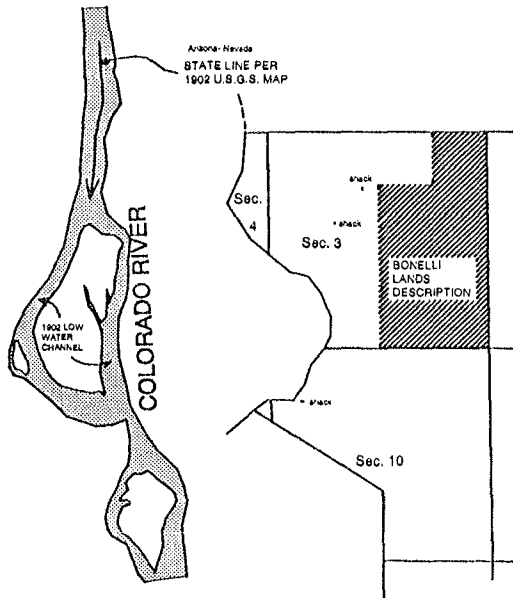
May 5, 1957
Photography
ARKANSAS
RIVER
in Okla.



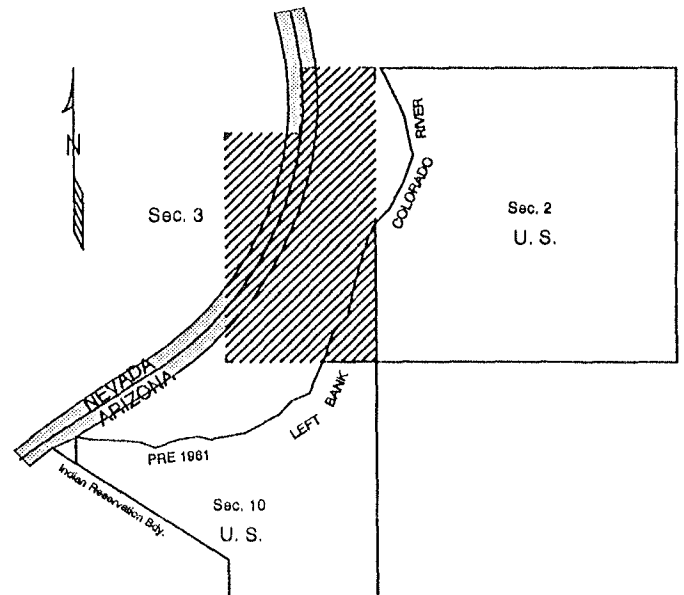
1957: Erosion has widened the pilot channel nearly to design width.

Channelization

The Colorado River near where I live was over a mile wide before upstream dams were built in the 1930s and 1940s. The river forms the boundary between Arizona and Nevada which was the site of the U. S. Supreme Court suit *Bonelli Land and Cattle v. Arizona*, 414 U.S. 313 (1977). The fight was over the ownership of the land left exposed alongside the narrowed channel after the Reclamation Service confined the river. The state lands people thought the narrowing was an avulsion—it was sudden and it left an abandoned bed. Bonelli claimed the area as an accretion to his upland because the disputed lands were within the original patent from the government.



The Bonelli lands were over a mile from the river at the time of the original survey in 1905.



In 1961, after channelization, the river was narrower and passed through the Bonelli patent.

The U. S. Supreme Court settled the matter by ruling that the state had no interest in the newly exposed land (because there was no need for navigation in the dried up bed). The court held the change was accretive—not avulsive and that federal law controlled. Later an Oregon case that went to the Supreme Court modified that decision. The *Corvallis Sand and Gravel v. State of Oregon* and a later Supreme Court Case on the Missouri River switched things back to using state law.

Island Rule

Because of hydraulic changes in a river the main flow sometimes switches from one side of an island to another.

This is handled in river law by the Island Rule. The Island Rule states that when the flow on one side of an island diminishes until the opposite channel becomes the main channel, the state boundary or island ownership is fixed at the position before the change—just as in an avulsion.

Avulsion Identification

The most certain way to determine whether a river change is by avulsion is to see if there is an *identifiable area of upland between an old and a new channel*.

I know of no state that has placed a time limit on the "suddenness" of an avulsion. In most states there is a presumption that a change in a river's banks is by accretion and not by avulsion. Anyone opposing such presumption has to prove that the "location of the line has been changed by the action of the forces of nature." The lesson for surveyors is that if your client is claiming an avulsion, you have to provide proof. Some of the ways of proving it are discussed below.

GRADUAL CHANGES IN RIVER BANKS

Accretion is the grain by grain addition of soil to a shore or river bank. These banks form the famous moving boundaries that fall within the Doctrine of Accretion that lawyers refer to.

"The general rule that a riparian boundary is ambulatory and encompasses the right to continue to be riparian is referred to legally as the Doctrine of Accretion. The boundary of the riparian property changes as the bank of the river moves gradually over time across a flood plain by the action of the river— a physical process known as accretion and erosion. As a legal consequence, ownership of land is acquired as new land is formed by the process of accretion; conversely, ownership of land is lost as land is destroyed by the process of erosion." from *Foreword* by John E. Lindsfold, Esq.

Why does the law tolerate moving boundaries? Wouldn't it be better to fix the boundary?

The Romans started it; the British kept it going and passed it on to us. Under Roman law, if you bought a pregnant cow and it later had its calf, the calf belonged to the buyer because it was a natural increase. So any natural increase in a thing belonged to the new owner. The Latin word for the increase is spelled pretty closely to "accrete".

It really makes a lot of sense, too. A few years back the State of Texas and the State of Oklahoma decided that they had enough of the moving boundary problem along the Red River between the two states. Each state created a commission of a bunch of legislators to study the problem. I was hired to address the Oklahoma Commission, probably because I had done considerable work along that boundary. They had heard that the Colorado River between Arizona and California had a boundary compact and they liked that idea. Those in charge didn't like it when I suggested that they would probably have to spend three or four hundred million dollars to straight jacket the Red River in order to make a fixed boundary work because the river was going to move wherever the floods led it to move. After the river had moved, as it surely would, Texans might own a little bit of land in Oklahoma and some Oklahomans might own a little sliver in Texas. They didn't ask me to come back but I also notice that they haven't come up with a fixed boundary yet.

In short, if the boundary is fixed and the river moves then some owner has land on the other side of the river. It is also possible that an owner on one side of the river couldn't get to the water because the river is no longer nearby.

"If it hasn't broken for 1500 years don't fix it."

But why are there problems with this moving boundary?

The different kinds of problems are:

- a) Was the accretion (or erosion) caused by natural changes in the river or did someone else deflect the flow to cause an increase in the rate of accretion or erosion? An upstream adjoiner could have installed a jetty that accelerated changes.
- b) Was the change that occurred rapidly, say in a week, an avulsion? If not in a week, in a month, or overnight? Where is the cut-off time?
- c) What are proper criteria for the location of the boundary between upland and the bed of the river?
- d) What if an owner's land is completely eroded away and then the river adds the land back? Does the remote owner get the new land?
- e) How is the accretion that occurs to two adjoining owner's land divided between the two owners?

This is not legal advice.

Partial answers to the above:

- a) Most states have case law or statutes that, in effect, say that any owner gets to keep any accretions, provided that he did not induce them for his own benefit. Alaska is believed to follow this rule.
- b) I know of no state that has set a time limit or rate to distinguish erosion from accretion.
- c) What are proper criteria for the location of the boundary between upland and the bed of the river? A very large number of litigated cases have revolved around the proper criteria to determine the boundary between the bed of the river and the upland, or riparian land. After all, if a surveyor is to mark the boundary between the bank and the bed there should be some indicator to rely on.

The litigation started in earnest on the river between Alabama and Georgia. (*Howard v. Ingersoll*, 54 U.S. 381, 1851). The U.S. Supreme Court eventually ruled that the boundary was where the bank was formed and the upland vegetation ceased to grow. Unfortunately the court's language in the decision was not entirely clear. One of the judge's wrote a helpful separate opinion that said the bank was to be found, "by the distinctive appearances they (the banks) present; the banks being fast land, on which vegetation, appropriate to such land in the particular locality, grow wherever the bank is not too steep to permit such growth, and the bed being soil of different character and having no vegetation, or only such as exists when commonly submerged in water."

The line of demarcation has become known as the "ordinary high water mark". The latest BLM *Manual of Survey Instructions* refers to this line as the "mean high water elevation" and the "ordinary mean high-water mark " and other variations but those references refer to the ordinary high water mark. This is learned by reading other writings of Arthur Kidder who wrote the 1930 & 1947 *Manuals* and in conversation with Tom Tillman who prepared the 1973 *Manual*.

It is important to understand that the word "mean" was included in this term because it was used in some archaic legal decisions. Some practitioners have understood that the word implied an arithmetic average. Nothing is farther from the truth. There is no legal basis for mathematical averaging of river or lake stages.

It has not been entirely cleared up in the past 145 years. For instance what distinguishes aquatic vegetation from upland vegetation? Cypress trees, once established, can withstand 6- 8 months submergence of their roots that would kill most upland trees within weeks.

If one finds an aquatic plant growing in a small pond alongside a water body, does that mean the boundary is at the pond? Answer, No. It is the other way around. If you find an upland plant growing and reproducing at a point in a swamp, that indicates that point is upland. (I have added the word "reproducing" because it signifies permanent growth, not a temporary situation.)

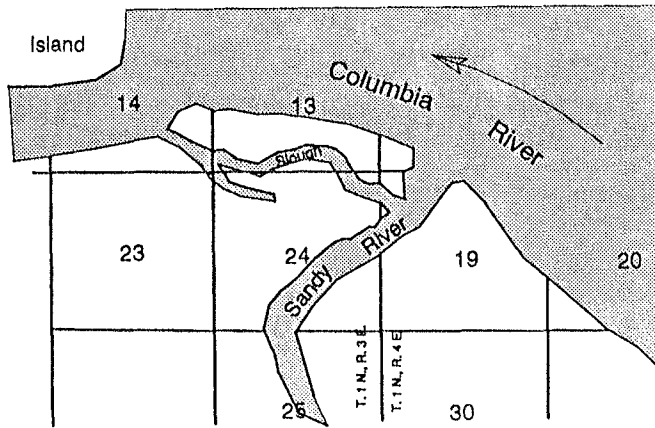
Recent ordinary high water mark litigation has centered around the length of time that an area is submerged based on the probability of flows and stages in water bodies. The method appeals to engineers (particularly the U.S. Army Corps of Engineers) because it seems to be a mathematical means of determining the ordinary high water mark.

Another test that has been written into the statutes in some states is that where the land is not useful for agriculture it is below the ordinary high water mark. This so-called agriculture test is not really definitive and probably came from the definition of swamp and overflowed lands. I've seen cows grazing in water up to their bellies in Florida. At the other extreme I remember the Pend Orielle River in Washington State where there were records of hay cutting on the lower slopes of river banks that would be at low water by any other criteria.

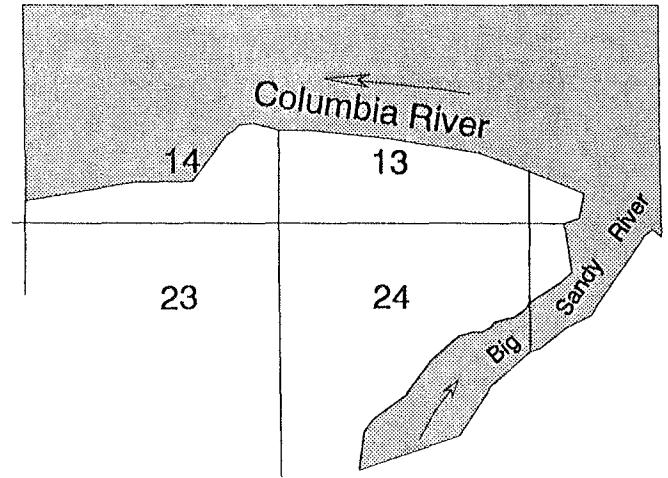
An interesting case in Oregon was tried in 1912. Two surveyors calculated acreage of the May Land Company's ranch at the mouth of the Sandy River. There was 147 acres difference in the areas, mostly by the way they measured the ordinary high water mark along the Columbia River.

One survey left out areas along the beach because there was no vegetation. The original GLO survey described it as "low sandy beach no vegetation." In usual practice, sand bars are considered to be part of the river bed.

The other included the beach which the court described as "from two to nine feet above low water mark" and consisting of "hard, firm sand and gravel, varying slightly from year to year in its general outline for many years past..." The other

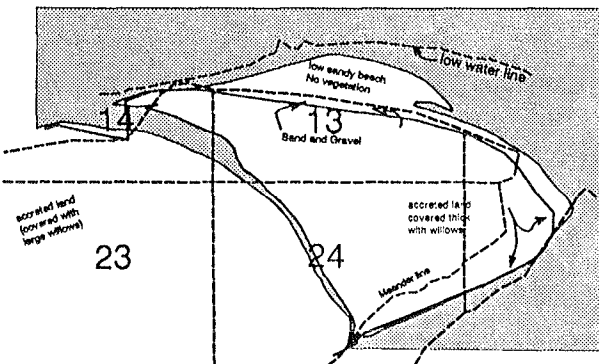


Sketch from 1855 Original GLO Plats.

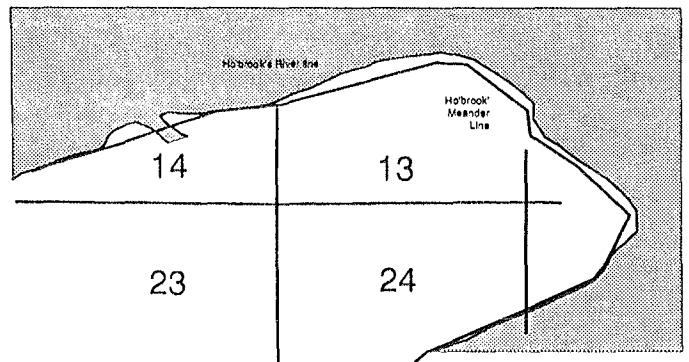


GLO Resurvey Used by the court.

surveyor included it because of its elevation and because it was "permanent". On appeal, the court held that the beach was part of the river bed. So, in Oregon, the vegetation test announced in the *Howard v. Ingersoll* decision is probably more important than the elevation and permanence.



Surveyor Greenleaf's placement of the boundary. From data furnished by Chase, Jones & Assoc.



Surveyor Holbrook's placement of the boundary.

The court's decision mentioned the low water mark on the Columbia. Oregon uses the ordinary high water mark as the boundary between upland and inland water bodies. However, there were some grants of land from the state to upland owners in the 1800s for river beds below the ordinary high water mark (to low water) along some rivers .

Important demarcation lines in some other states are the low water mark and the Gradient Boundary (Texas).

d) If an owner's land is completely eroded and then the river adds the land back? Does the remote owner get the new land?

This is not legal advice.

Different states may have different rules (laws) on this question— known as a re-emergence question. I am unaware of an Alaska case that directly addresses this problem. Some states say that when an owner's land is completely eroded, title is extinguished and the once remote owner becomes riparian. Other hold that "once riparian, always riparian" meaning that when the remote lot is invaded by the river it becomes riparian. As a riparian, that lot could then later acquire any accretions that formed.

BLM surveyors have an interesting problem connected with re-emergence.

During most of the past century the General Land Office (until 1947) and the Bureau of Land Management until 1982 have mostly held against the "once riparian— always riparian" crowd. Some early surveys awarded accretions to lots that were actually eroded remnants of aliquot parts but in the 1930's the *Towl v. Kelly and Blankenship* Interior Decision firmly decided the government position that when areas that were identifiable by survey were raised above the ordinary high water mark they assumed their old identity.

Many old surveys have been approved on that basis since that time.

All that changed when BLM tried to sell some lots on the Missouri River that had once been completely eroded and re-emerged as dry land. The aliquot part owner that had once been eroded protested the sale. On appeal the IBLA announced that the *Towl* decision was expressly overruled and that the Department of the Interior now holds that land, once invaded by a river, becomes riparian. (*Ralph F. Rosenbaum et al.*, 66 IBLA 374, 89 ID 415 (1982))

As things now stand the only way that conditions can return to the previous state would be by a federal court decision. I testified for the government in a federal court case on reemergence three years before Rosenbaum. That was a situation where the land was only identifiable by use of the original survey plat but the Court found that the government lots that were never patented had reemerged. It would now take a similar case to reverse the Interior Department position.

But even prior to Rosenbaum there have been situations where the land re-emerged but on the opposite side of the river. The federal courts have held that land cannot be claimed against the government that re-emerged on the opposite side of the river from its original location. *Beaver v. United States*, 350 F.2d 4 (1965).

e) The division of accretions (partitioning) is covered later. See page 21.

Islands and Sand Bars

Just what is an island? It is usually defined as upland entirely surrounded by water at the ordinary high water mark.

So that when gravel forms on the bed of a navigable stream and sticks up above the water, who owns the gravel? What if the gravel bar stayed in place for many years and bushes began to grow and eventually a tree sprouted and flourished. The vegetation would make the bar fall within the ordinary high water mark and be upland, wouldn't it? Who owns that upland island?

The general rule is that if an island rises from the bed of a river by the slow addition of soil by the action of water, the island is owned by the owner of the bed. In Alaska the State of Alaska would own the island.

Now change that situation to a non-navigable stream. Who owns the island?

Do owners of islands get to keep accretions? Sure— if it is upland and the accretions attach to the original holdings it is just like other upland areas. The question becomes more difficult if the island accretes downstream. (They are not likely to accrete upstream.)

We can guess what would happen if an island accreted downstream such that it completely blocked some upland riparian owner from access to the water. A thorough search of the case law would no doubt turn up something on the subject, however. For any situation it is probable that a legal researcher can find a case *somewhere* that touches on the subject.

BOUNDARY DISPUTES

The basis of most water boundary disputes is ownership of the land in question— in other words, title. Title seems to be one of those magic words.

Surveyors are not considered by the courts and lawyers to be qualified to determine title. Fair enough! By the same token, non-surveyors, including attorneys, are not considered to be qualified to write descriptions of land.

The difference between these situations is that surveyors do not regularly attempt to determine title.

There are times, in water boundary work especially, where the surveyor is really making a call that would affect the title to land. If you are on the witness stand as an expert and you are asked for an opinion that would affect title, it is better never to mention the word "title". Preferably, speak only of the **boundary between ownerships** and not the ownership itself. You see, the opposing counsel can appeal to the court that all of your pronouncements about ownership and title are beyond your qualifications, whether they are or not.

Accretion Versus Avulsion

One side understandably wants the court to rule that the change in banks was avulsive so that they can keep the land. The other side wants the court to rule "accretion" so that they can have it.

Suppose that you were hired by the "avulsion" side and you really believe it was avulsive in spite of a few facts that might indicate accretion. Your job on the stand would be to point out all the reasons that you thought the change was avulsive as a basis for your decision to include the disputed area in your survey. You will also have to be prepared to respond to cross examination with reasons that you discounted the facts tending toward accretion.

Everyone will probably ignore the bald fact that you have already made your own legal decision about title when you prepared the plat. Your decision, effectively, was that the change was avulsive and you show it that way on your plat. Just don't call it a legal decision. These are **first approximations** of a legal decision.

If you were hired by the opposite side but after an investigation and study you really believed that an avulsion occurred the best thing is to explain your reasoning to the client and the attorney. Of course, you might offer to keep trying to find other evidence. They might drop you and search for another expert but letting the job go is the best course.

In actuality, without your initial decision the matter wouldn't even be in court because our system is adversarial.

How do you approach investigating a dispute about accretion versus avulsion?

The most convincing method of proving that an avulsion has occurred is by locating an area on the ground or on aerial photos that lies between the former river channel and the present river channel and that can be identified as existent before the channel change.

When a river moves across land by erosion and accretion it takes away the land grain by grain. Nearly everything in its path is swept away: trees, brush, trash heaps, roads and meander scrolls, for example. If you can identify any thing that was probably there prior to the change— even if a flood had swept over the whole area— it can prove avulsion.

The neatest proof is to age-date the older standing trees by counting annual rings. Aerial photos are excellent proof but they do require interpretation and judges are not always impressed. Old maps and plats are sometimes not too persuasive but they are certainly useful because you can prepare a series of maps at the same scale to show the various changes.

Judges seem to be impressed by "old timers" who claim to remember how things looked. Always interview the locals who might remember conditions. Most of them are eager to talk and if they are asked will often agree to testify provided they are reimbursed for travel and other expenses.

This is not legal advice.

Age-dating soils has been very difficult in the past. The problem is the difficulty of proving that the soil was not washed in at date later than age-dating by carbon 14 shows.

I once found an oil stain in some sand between two channels on North Fork of Red River in Oklahoma. A hot shot soil scientist examined the site, had samples dated and was prepared to testify. I was personally convinced that it was very old but I doubt it could have stood up in a trial. Fortunately we had lots of other evidence.

Ordinary high water mark (OHWM) disputes

These are really tough whatever side you are on.

The tiniest plant that was overlooked can be an indicator of upland. The plant biologists do not even agree among themselves whether certain plants are upland or aquatic. Anyone in this sort of dispute should study the decision in *Borough of Ford City v. United States*, 345 F.2d 645 (1965). That decision held that the vegetation test alone was not enough; shelving, erosion cuts, presence of litter and changes in character of the soil should also be considered.

The character of the soil is not a chemical or laboratory test. The presence of a sloping bank and the shape of that bank is what is referred to. A steep bank that drops off into water with terrestrial plants on the high bank is the ideal combination. A gently sloping bank, such as on a point bar, is most difficult—the vegetation test is better there.

Another important conclusion from the Ford City case is that if the OHWM is not distinct in the disputed area, correlate your site with other places on the same stream. I have used the flowing surface of the water in a river and a lake surface for this correlation and it was accepted by the courts.

Check the entire site for four indicators:

Vegetation-- woody stemmed plants are generally terrestrial. If you have a plant species in doubt as an indicator, see if that plant is also found growing on higher ground in the vicinity. If it is— its terrestrial. The most waterward terrestrial plants define the OHWM; record their location and photograph them.

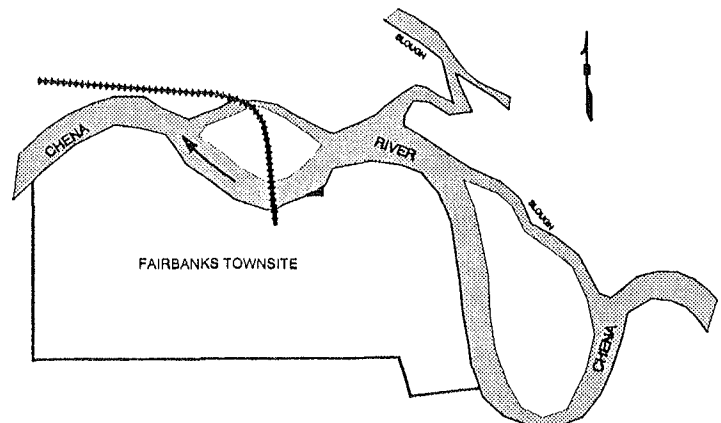
Soils-- Note, measure and photograph all the banks and wave washed shelving in the site. A rule of thumb that I use is that a bank where a fisherman would stand to fish is probably a boundary bank.

Litter-- Most useful on lake shore work but remember that the OHWM on a lake may be higher in elevation on the shore that the prevailing winds and waves beat against.

Agriculture-- Collecting water lily on a lake for food was agriculture in my books. That would mean that the entire lake would be considered upland by the agriculture test. I'd rank the agriculture test results as the lowest priority of evidence.

An early federal lawsuit was *Nordale v. Waxberg* 84 F.Supp.1004 (1949). Nordale owned lot 6 of block 4 in the Fairbanks Townsite. The lot was shown on the Townsite Plat as bounded by the Chena River on the north. Between the 1903 townsite survey and 1948 the river had moved northward some 200 feet.

Waxberg had moved onto the disputed land and claimed that fill had been dumped on the river bed and that it was open to entry. Nordale brought suit to have Waxberg ejected.



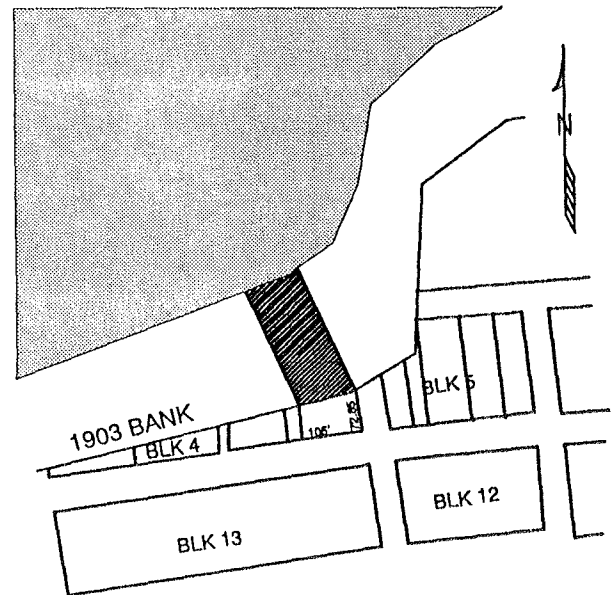
Fairbanks Townsite from the 1913 GLO Plat

Nordale produced deeds that showed his lot to be bounded on the north by the river.

Fred Parker, a previous owner, testified that he had operated a sawmill at that site in 1903. He showed that he and his partner used the river as a log pond and that they built a ramp to haul logs out of the water. The ramp began about 20 feet from the lot frontage and extended down to extreme low water. He said that every year the pond got shallower and shallower.

Waxberg got his chance in court next. He claimed that the meander line showed on the plat of the Fairbanks Townsite and was the true boundary bank of the river— not the lot boundary. In addition he had dug six foot deep pits and discovered tin cans and debris which he claimed was proof that the land had been filled in. One of his photographs showed part of a tree growing on the disputed land.

The Court found that the debris was an extremely small percentage of the added soil and did not disprove Nordales' claim to know nothing about the debris. In addition, the court ruled that the meander line was not a boundary and the river was the northern boundary of the Townsite and its lots. Finally the court found that the land formed gradually and imperceptibly by accretion and belonged to the Nordales.



Nordale Owned Lot 6 of Blk 4 and Claimed Accretions to the Chena River.

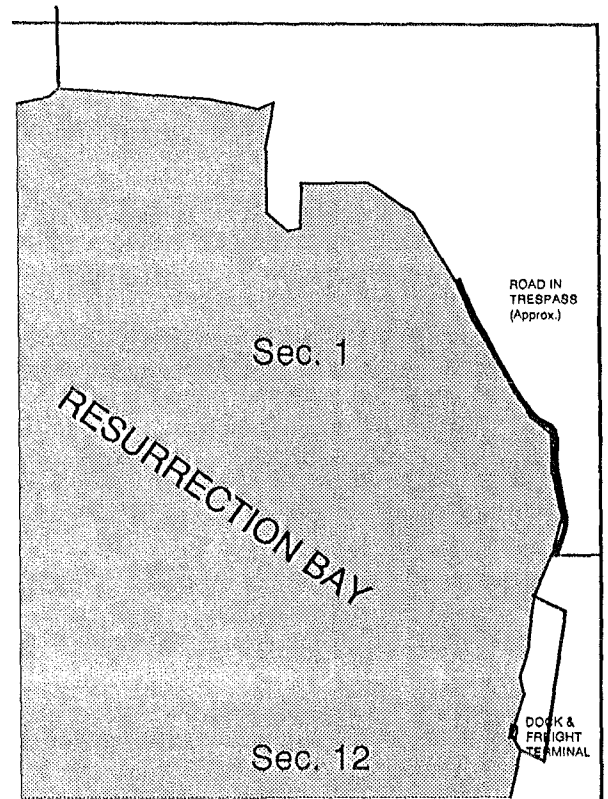
A state court suit involving a meander line was *Hawkins v. Alaska Freight Lines, Inc.* 410 P.2d 992 (1966). Mrs. Hawkins, owned land along Resurrection Bay where the freight line docks were located. She also owned a store in Seward where her son relayed to her the message that he had given permission for the freight company to improve the "cat road", an existing rough trail that connected the docks to the main highway. The trail was 200 to 300 feet above the beach.

What the freight company actually did was to build a new road along the beach across the Hawkins' land. Mrs. Hawkins brought suit for damages and trespass.

The freight company claimed that her son was Mrs. Hawkins' agent and that he had given them oral permission to build the beach road and knew of the location of the proposed construction. They claimed that the Hawkinses knew of the location while \$40,000 worth of work was going on and they did nothing to stop them before it was complete.

The trial court found that although a survey was made of the road location neither party had proved where the "high water mark" (ordinary high water mark or high tide line) was in relation to the constructed road. [Yes, this is an ocean boundary; the court treated it the same as an inland boundary so it is included here.]

During the construction the ordinary high water mark was obliterated; Hawkins's exhibit used the 1911 meander line as their sea-



A Portion of Resurrection Bay Opposite the Town of Seward, Alaska

This is not legal advice.

ward boundary which included the road. Alaska Freight lines contended during trial that it was impossible, now, to tell where the true boundary should be so they should not be liable.

The trial court then found that Hawkins failed to object to the work at the time and were estopped to deny the freight company use of the road.

Hawkins appealed.

First the appeals court ruled that Hawkins' son was her agent only for operation of the store, based on testimony at trial. As to the meander line, the court ruled that the freight company's actions made a survey of the meander line nearly impossible or at least impractical. For that reason Hawkins should not be required to prove that the road was built on her property; the freight company was thus required to prove where the ordinary high water mark was located.

The case was sent back for further trial.

The result of this trial would figure in the subsequent trial which follows.

Omitted Lands and Unsurveyed Islands

Omitted lands fall into one of the gray areas. The federal government has a long line of litigation backing a claim to areas that were "gross and erroneously" meandered such that the original survey left substantial areas of land out of the survey. The most common occurrence of such omission was along the margins of lakes and rivers. A few uncaring contract surveyors either fabricated the meander lines or made some large mistake in running the meander lines. The government then claimed that a fraud had been committed and that the grant to the water's edge, under Schurmeir, was not valid. The resulting litigation has described the areas as Omitted Lands.

Beginning about 20 years ago, the federal courts have made it very difficult for the Bureau of Land Management to succeed in omitted lands claims. For the past ten years I know of no omitted lands litigation that has been initiated. Most of the reasons the courts advanced for ruling for the upland owners in those cases were that the owners had paid taxes on the land for as many as 80 to 100 years. The fact that many of the claims were known and investigated 20 and 30 years prior to filing the suit have also been cited.

Unsurveyed islands are similar to omitted lands except no fraud is necessarily involved and the disputed area was claimed to be an island at the time of the survey and statehood but that the surveyor did not meander it. The government claims that islands that were existent at the time of statehood but not meandered remain public domain. There was no requirement that all islands had to be surveyed, in fact at one time surveyors were instructed not to meander islands if the area was not sufficient to pay for the cost of the survey. There have been unsurveyed island suits filed by the Bureau in the past 10 years and there is a pending U. S. Supreme Court suit in the offing as I understand it.

State of Alaska v. Pankratz 538 P.2d 984 (1975) involved an island in the Chena River.

Pankratz owned land in Sec. 12, T. 1 S., R. 2 W., FM which was on the left descending bank of the river. Following a severe flood in 1967 the river partly filled in the channel between Pankratz's land and the island in question.

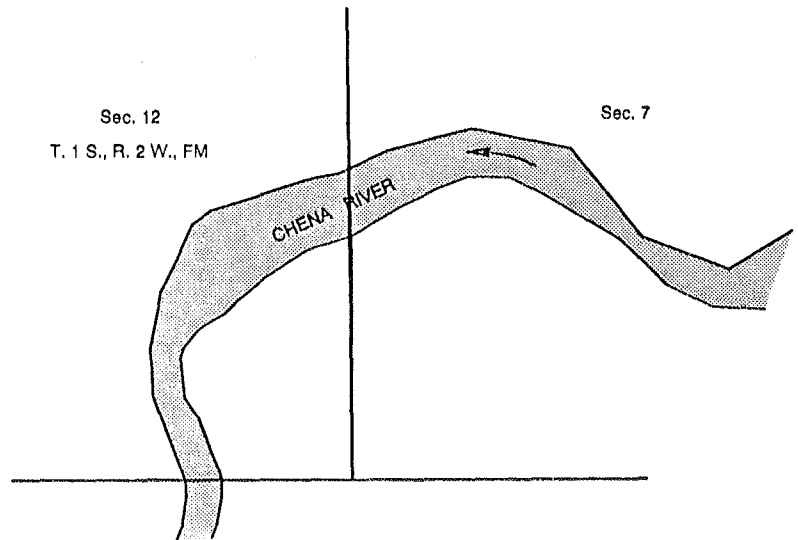
Pankratz entered into the gravel business and obtained a contract from the state to mine gravel just upstream from the island in question and near his own river bank. Pankratz purchased the entire island from Lloyd Pike in May of 1969 as the gravel operation neared the island .

Following the purchase of Pikes Island the state awarded another gravel removal contract to Pankratz. Between the time of the original contract and the second one a gravel bar had built up at the upstream end of Pikes Island. Some of the gravel removed was stockpiled on this gravel bar which became the focus of the lawsuit.

In 1970 the state wrote Pankratz demanding the removal of the stockpile from the gravel bar. Because this was not done the state filed suit in 1971.

The state claimed Pankratz was in trespass storing the gravel on the bar and demanded the defendant open up the blocked channel to the river's flow. They also asked the court to confirm the state's title to the gravel bar.

At trial the Pankratz's surveyor showed how he determined the ordinary high water mark by going upstream in two places and downstream in two places to make ordinary high water mark determinations. Terrestrial vegetation was present in all four locations. He then connected these elevations to the area in question, and from that determined the ordinary high water mark. According to the court record, he believed that he could be more precise than to attempt the determination on the disputed property alone.



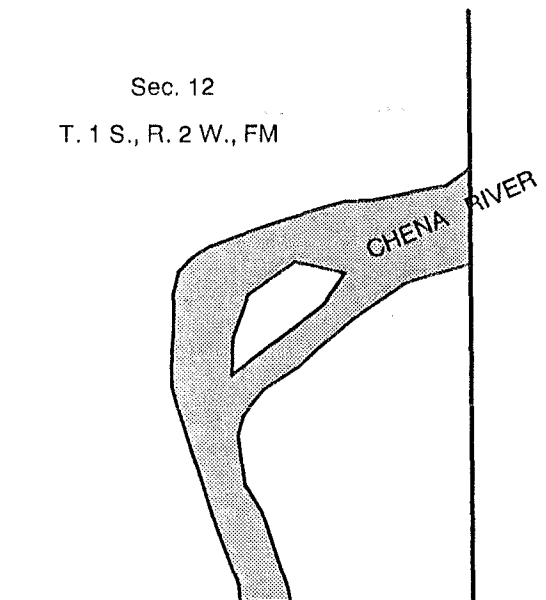
Chena River from 1951 BLM Survey Plats

The state presented one witness who drew vegetation lines on aerial photographs. Another state witness used flow records from USGS data to establish the ordinary high water mark within a plus or minus one foot of its actual location. The trial court had sustained objections to these showings. The problem with the flow records was that the backwater from the Tanana River was not properly accounted for in the computations.

Pankratz was awarded title to the gravel bar but he appealed the decision anyway because the judge did not award him costs and attorney fees. The state cross appealed.

The state's appeal claimed Pankratz's survey did not show the ordinary high water mark was below the gravel bar. The state also claimed that Pankratz's gravel workings had obliterated the ordinary high water mark, making the determination impractical according to the previous rulings in *Hawkins v. Alaska Freight Lines*. They said the *Hawkins* case meant that Pankratz should have the burden of proving where the ordinary high water mark was located.

The appeals court ruled that Pankratz had provided direct evidence of the ordinary high water mark by way of their survey and that the state had failed to contradict the trial finding. They reviewed other witnesses' testimony to the effect that the gravel bar had formed over many years and that the channel was usually dry and only flowed in high water. They held that the judge, improperly, did not describe his non award of costs but found the ordinary high water mark finding was correct and affirmed that part of the decision.



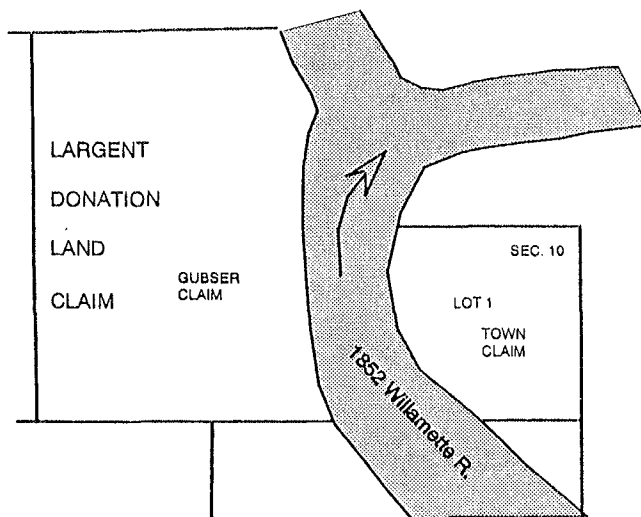
Pike's Island from 1965 BLM Survey Plat of Unsurveyed Island

This is not legal advice.

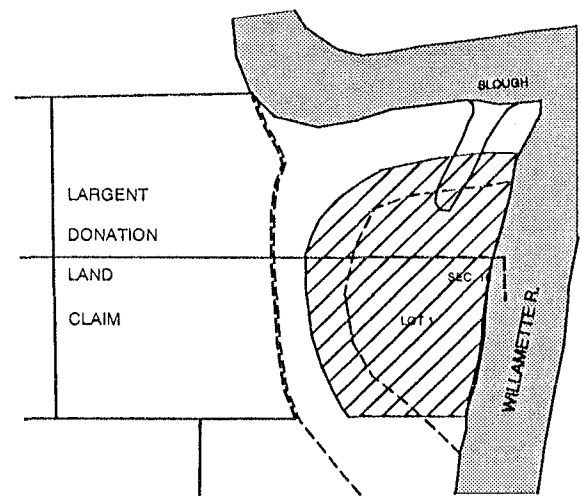
Some of the legal issues in the case are interesting to me. First, the trial was conducted using federal law. The appellate court approved the trial judges' choice of law on the basis of *Hughes v. Washington* and *Bonelli Cattle v. Arizona*. The Bonelli case had just been announced at the time of the appeal but the reversal of position in *Corvallis Sand and Gravel v. Oregon* had not been announced.

Two of the Appellate Judges filed a separate opinion because of the use of federal law. They reasoned that the property in question had already passed from federal ownership into private ownership and the state had already obtained title to the bed. Therefore they believed that state law should have been used. However, they held that federal law and state law in this matter was identical. This finding seems important because there is a great deal more case law available in Federal Law than in Alaska State Law.

Re-emergence Disputes



Gubser's Property was Riparian to the River



Hatched Area Shows the Disputed Lands that Re-emerged on the opposite bank.

An Oregon case, *Gubser v. Town and Stoutenburg*, 273 P.2d 430 (1954) illustrates one aspect of the re-emergence problem. In 1852 Gubser's predecessors obtained a patented Donation Land Claim which fronted on the west bank of the Willamette River. Another patented claim by Town's predecessors was on the east bank of the river. After many years of erosion and accretion the Town's original holding was completely washed away.

Because dry land formed in front of the Gubser property in the same location as the Town property used to be, the Town people tried to move in. In the subsequent trial and appeal the Oregon Courts held that once land is washed away it cannot reappear on the opposite side of the river. This is nearly identical to a Federal Court decision regarding land on the Colorado River that reappeared on the other side of the river, *Beaver v. United States*, 350 F.2d 4 (1965). Because this can be expected to occur in Alaska we should be on the lookout for the same situations.

Ralph F. Rosenbaum et al., 66 IBLA 374, 89 ID 415 (1982) is of importance in dealing with the Bureau of Land Management. Until 1982 the GLO and BLM claimed that when land formed (on the correct side of the river at least) where a surveyed tract had been that it legally reemerged.

Rosenbaum protested the sale of lots in section 32, T. 90 N., R. 49 W., 5th P.M., South Dakota. The lots had been washed away by the Missouri River and reappeared. The government wanted to sell them. Rosenbaum prevailed. The official position of the Interior Department is now "Once riparian— Always Riparian".

Swampland Disputes

Swamps are **upland** in GLO and BLM work. To distinguish between swamp and lake surface with aquatic plants, look at the vegetation. If there are plants growing in the disputed area that **also** grow at higher elevations— it is upland. Sometimes it is unclear whether the area is a swamp or a large number of small islands in a lake.

The BLM Manual states that shallow or poorly defined lakes— even when over 50 acres— should not be meandered (section 3-121). Tundra ponds fit this definition, as I understand it. The Manual's specification makes sense if one considers the tundra area as a large swamp.

Alaska did not receive swamp and overflowed lands from the federal government as did a number of other western states. The state made out pretty well anyway because they could select the high quality lands. Under the states' right to swamp and overflowed lands any subdivision of a section that was over 50 percent "wet and unfit for cultivation" at the time of survey passed to the state.

Congress is understood to have desired to aid the newly formed states and to have encouraged development of unusable swampy land by granting it to the states. The idea was that the state could invest money to improve the overflow from uncontrolled streams or to drain the swamps; they could then sell the land so improved. Very little land was improved. Most of it was sold "as is".

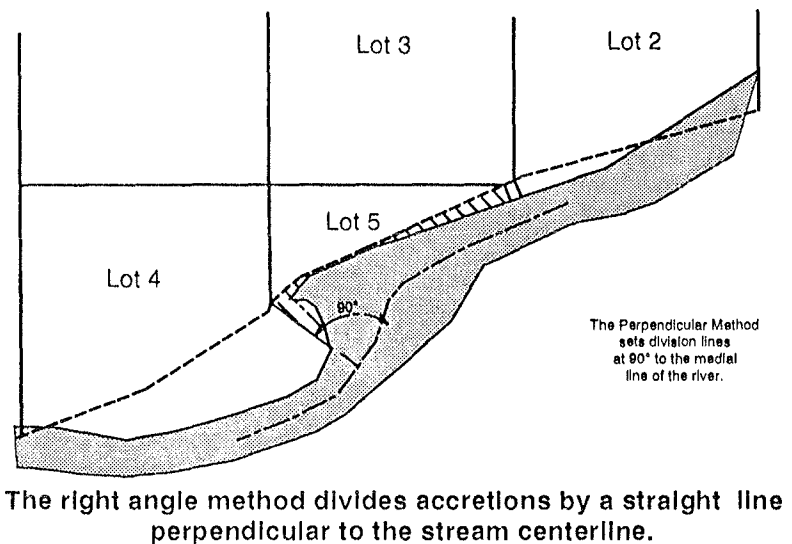
As early as 1850 GLO contract surveyors were instructed not to meander the boundary of swamps but to leave them as unfinished surveys if impassible (Florida instructions). Other instructions at that time seemed to imply that swamps could be meandered.

An 1864 directive from the General Land Office clearly stated that the public land surveys must extend over swamp lands (they were not to be meandered) but the first Manual that prohibited meandering of swamps seems to have been issued in 1881.

The Supreme Court in *Railroad v. Schurmeir*, 74 U.S. 272 (1868) held that meander lines were run to delineate the course of water bodies and to determine the areas of the lots; it held they were not boundaries. So if you encounter a location where the GLO survey meandered a swamp alongside a lake or stream you are merely dealing with a meanderline that was placed distant from the stream. If there is a considerable area of land between the meander line and the actual water body you may have what is referred to as an "omitted lands" situation. If the meander line reasonably represented the water body at the time of original survey, the upland subdivision probably has riparian rights to the river or lake.

Division Of Accretions Between Adjoining Land Owners

A number of methods have been used by the courts to divvy up the land added by rivers. The word "equitable" keeps popping up in the decisions on division of accretion. The two most equitable and widely used methods are the proportionate measurement and the "right angle" method.



This is not legal advice.

The right angle method is easy to apply and doesn't have some of the other methods' problems. The division line is a straight line drawn at 90 degrees to the thread of the stream. Sometimes the line is drawn 90 degrees to the ancient bank.

The proportionate measurement method is specified by the BLM Manual of Survey Instructions with the right angle method as an alternate. This is called the Johnston versus Jones method from *Johnston v. Jones*, 66 U.S. 117 (1861) which required that the new frontage be in direct proportion to the "ancient" frontage—the meander lines.

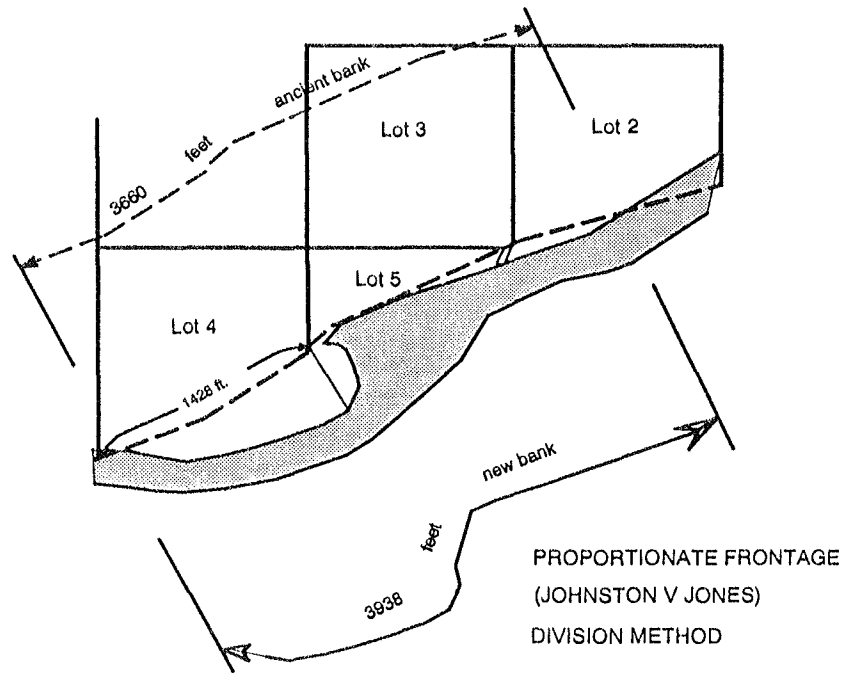
For each foot of total frontage of accretion on the original survey, the method requires that each owner receive frontage on the newly formed lands in direct ratio to the total new frontage. The ratio is to be calculated by dividing the new frontage by the owner's original frontage.

In practice it is often difficult to determine the total new frontage for the following reasons: a) The accretions have many sloughs and bays which would contribute frontage on the water but little distance, b) There is no apparent beginning point or ending point for measurement of the frontage and c) a sinuous river creates inequitable distributions.

Usual solutions include cutting across headlands to smooth out deep indentations on the new frontage for the first problem. The beginning and ending points may usually be determined by creating a perpendicular from the last properties involved. A sinuous river may require that the perpendicular method be used throughout or in strategic places in order to achieve equity.

It has always seemed to me that if the proportionate frontage method sometimes required the use of the right angle method to make it equitable, it is perhaps the more equitable of the two methods. Government surveyors are practically required to use the proportionate method because it is the subject of a 1923 Land Decision. The good sense of the BLM Manual states that the right angle method is an alternate and that a combination may be used. Sections 7-58 and 59.

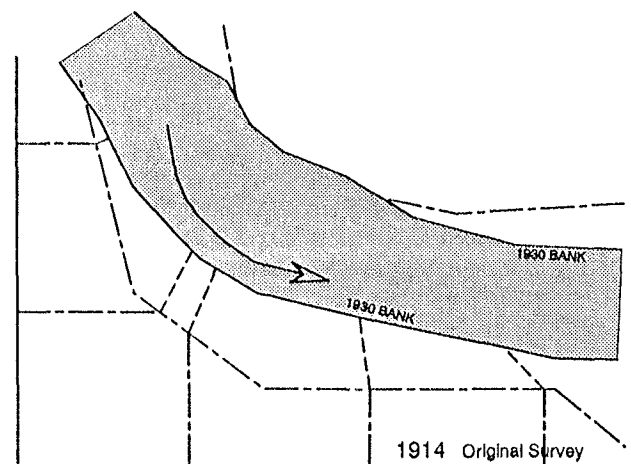
A number of other methods have been used by the courts: Proportionate area, extension of the property side lines, nearest point to the river, angle bisectors and even arbitrary divisions by the judge.



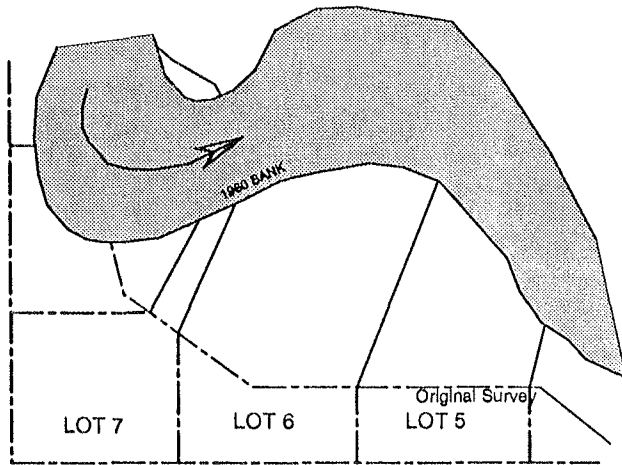
CALCULATION OF FRONTAGES

PARCEL	FRONTAGE	RATIO	RATIO X 3938
LOT 4	1428.0	.39015	1536.3
LOT 5	1414.3	.38636	1521.4
LOT 3	69.3	.01894	0074.8
LOT 2	0748.7	.20455	0805.5
Checksum	3660.3	1.00000	3938.0

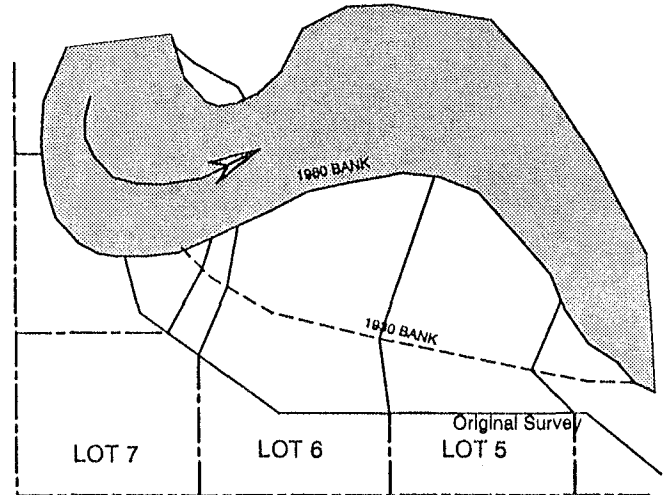
Johnston v. Jones Method of Apportionment



Assume a resurvey made in 1930 apportioned accretions on an earlier 1914 survey.



In 1995 the same area was resurveyed again. If the original plat's lottings are used the 1995 division would be as shown here. Lines are drawn to the special meander corners (SMCs).



But if the 1914 resurvey is considered as the "ancient" bank the division lines would each have an angle point.

There have been arguments on both sides about what should consist of the so-called ancient frontage. Reading the court decisions it is almost certain that the writers had the original meander lines in mind. But some surveyors claim that any intermediate survey that apportioned the frontage qualifies as ancient frontage so that the division line could be a broken boundary. If one accepts that premise, the next question is, "What constitutes an intermediate survey?"

Does an aerial photograph constitute an intermediate survey? How about a private survey that was never filed of record? Would a map made for another purpose be acceptable? These questions have no answers until a trial is held in all the jurisdictions.

Division of Lake Relictions

While reliction is a different process than accretion, the law seems to treat the two situations identically so this is a good place to discuss division of relictions.

The division of relictions of non-navigable lake beds has caused difficulty in eastern Oregon where lakes were meandered by the General Land Office. Because of climate changes or other reasons the lakes since dried up.

If, and only if, no patents had been issued for land binding on the lakes (riparian to the lakes), the government could go back in and remeander those lakes if some water remained. If the lake was completely dry the government could claim to the center as could any other riparian owner.

In the late 1800s there was a lot of confusion in the General Land Office as to whether completely dried up beds of lakes remained government property even if patents had been issued. There was extensive litigation between the United States and Oregon concerning land around Malheur Lake. First was the question of navigability. Oregon had passed a law that claimed the beds of **non-navigable** lakes for the state. Because of that statute and the school sections granted to Oregon, the state claimed the entire lake bed as non-navigable. The court found Malheur lake to be non-navigable but also decided that no state law could deprive the federal government of title to unpatented land.

Dried lake beds are classified as relictions. Reliction is treated the same as accretion because it results from the slow additions to upland. So, if an owner takes to the center of a lake or to the median line of a long lake, there remains the matter

This is not legal advice.

of how to establish the division lines. There is a pretty thorough treatment of these problems in the *Casebook of Public Land Surveys*. That book could probably be examined in any BLM survey office. It is covered in somewhat less detail in *River & Lake Boundaries*. Briefly, a round lake may be divided up like a pie. A long lake may be divided along a medial line with the division lines set by proportional measurement or by establishing normals, whichever is more equitable to all parties. These methods could be combined if it would achieve a more equitable solution.

U. S. Mineral Survey Accretions

The earlier discussion on patents and grants left unsaid the sometimes troublesome subject of fixed boundaries along water courses. The lawyers refer to those fixed boundaries as *Ager Limitus*— Latin for a limited field or farm.

When a deed located near a water body was intentionally restricted to the soil only with no riparian rights, that is *Ager Limitus*. Usually the description in the deed reads from point to point, monument to monument but not along the stream. It all really depends on the intent of the grantor. The trouble begins when the intent to grant only the soil is not explicitly set out and the intent is inferred by the courts from reading the deed description.

If a description began at some monument then gave bearing and distance to a series of monuments without ever making reference to a river or lake, the court might read the intent of the grantor to give the soil only. Actually they could try to determine the intent from statements made by individuals with knowledge of the transaction (parol testimony).

The field notes of a Mineral Survey of a lode claim usually includes a boundary description that reads from point to point-- in other words: *Ager Limitus*.

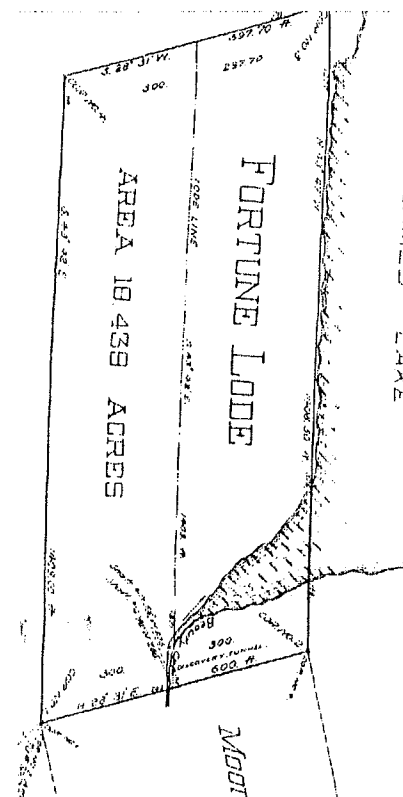
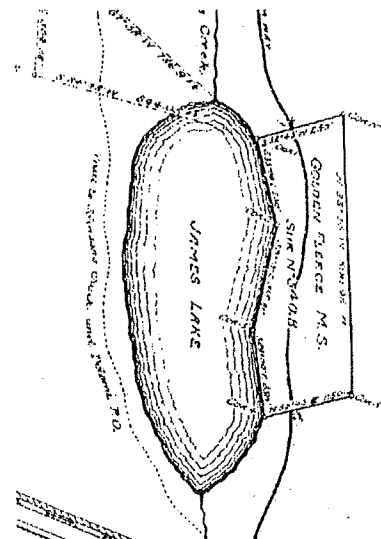
But when the side line or end line of a lode claim very closely approximates the margin of a waterbody the question of riparian rights can become important.

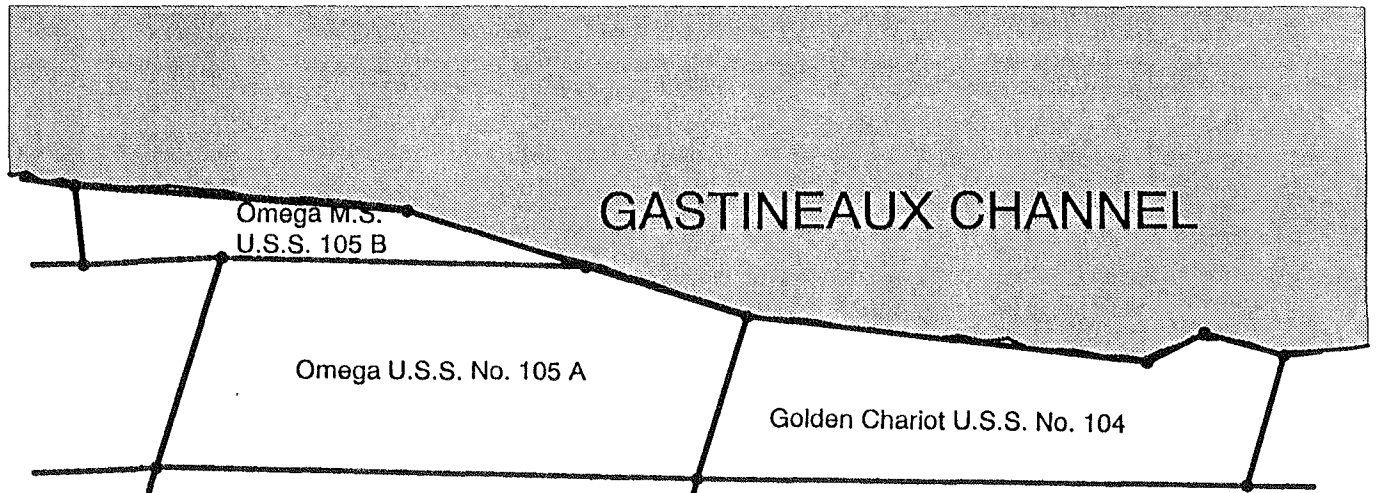
Suppose that the Golden Fleece Mineral Survey claimed to the middle of non-navigable James Lake as a riparian owner. How is that ownership determined? If the field notes for courses from Cor. No. 1 to Cor. No. 4 never mentioned the lake and that the line ran along the lake shore it might be presumed that there was no riparian ownership. But if the field notes recited "along the shore" or "along the meanders" of James Lake, the claim might be valid. It would probably require a decision of the courts to determine the answer.

How about the Fortune Lode on the other side of James Lake? The line from Cor. No. 2 to Cor. No. 3 approximates the lake shore only part of its length. The line from 2 to 3 certainly doesn't approximate the shore of the lake near the SE corner of the claim. Calls on the plat and in the field notes indicate points where the line intersects the shore and leaves it. If the notes read "thence along the shore of James Lake" there could be a claim as riparian to at least 900 feet of shore line. It might be subject to challenge, however.

If James Lake were navigable, the state might conceivably claim the lake bed within the patented claim.

In *Alaska United Gold Mining Co. v. Cincinnati-Alaska Mining Co.*, 45 L.D. 330 (1916), the Department of the Interior set out its position on the matter.

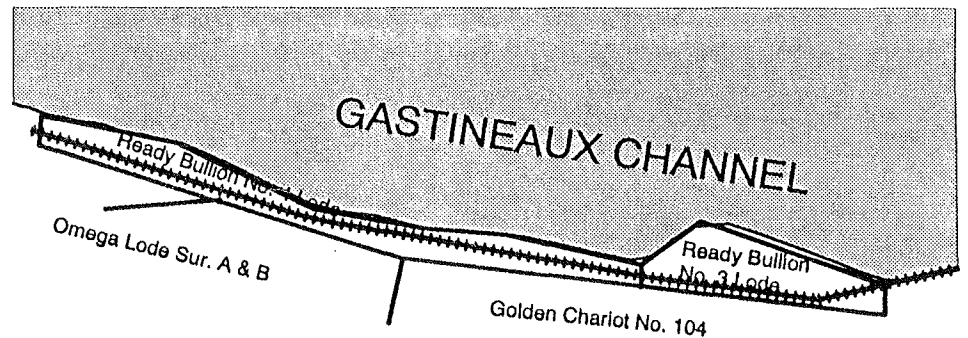




The Omega and Golden Chariot Patented Lodes Were Platted as Riparian to the Channel.

The patent description for U. S. Survey No. 104 never mentioned the meanders of the line of high tide along Gastineau Channel. But the Field Notes definitely described the lines as "On meander line of Gastineaux channel" and the plat showed them as the meander line as well. The Claims were patented in 1907.

A "Johnny Come Lately" filed a claim and proceeded with a mineral survey on the beach between the patented claims and the Gastineau Channel. During legal proceedings the Golden Chariot Patentees argued that the Ready Bullion 3 and 4 were invalid because their patent extended to the line of High Tide of the Channel or was riparian to the channel.



The Rejected Claims Were Squeezed into a 120 ft. Average Width Between the Channel and the Patented Lodes and Mill Site.

In finding that the patented claims included riparian rights, the court said, "The Department is clearly of the opinion that the rule as to meander lines is, both in principle and reason, as applicable to mining claims as to other classes of claims, and that where in the course of an official survey of mining claim abutting upon a navigable body of water a meander line, which follows as nearly as practicable the shore line of such water, has been run, such shore line and not the meander line must be take as a boundary of the claim when patented according to the plat and field notes of the survey of such claim."

I do not know whether this has been overturned by later decisions; a lawyer should be consulted.

Survey Methods

This has been pretty much legal and theoretical. Lets talk about surveys for a while.

So much new equipment is becoming available these days that it is pretty difficult to give any fast rules on that subject either. One of the biggest problems in water boundary surveys is that the brush is usually the thickest available. Because of the thick brush the setups are usually close together which makes for poor traverse closures. Sometimes it is easier to work from the opposite bank of the stream.

This is not legal advice.

Any inertial or satellite system that would furnish precision in the meter range would seem to be adequate for ordinary high water mark surveying. Reason: It is difficult to determine the precise location of the ordinary high water mark except on very steep banks. Also, because the boundary so determined is a moving boundary, why does it need to be defined more precisely?

A satellite system would have to be able to respond in spite of an overhead canopy of trees. I haven't had that kind of experience to comment on that possibility.

Photogrammetry is particularly useful in water boundary surveying, depending on the size of the job. The bigger the job the more there is to gain by photogrammetry. If the photos are to be flown specifically for the water boundary work, it pays to specify a 12 inch (or at least a 6 inch) lens on the camera because the long focal length provides better visibility of the ground through trees and brush. Color infra red film is an excellent detector of vegetation which shows up as a red color while areas that are cool and wet show up as black. Be sure to go on the ground to identify the returns you see on the color infra red prints— so-called ground truthing.

One of the advantages of photogrammetry is that the final map/plat product can be produced on a scaled black and white photograph. Where many small indentations on a boundary are involved, this can be a big plus. Besides that, the layman can understand the results easier.

Final Words

In all the multitudes of combinations of land ownership patterns, state and federal case law and, primarily, the many diverse ways rivers change over periods of time, there will be somewhere an obscure law suit that will be contrary to the general trend. Then there will be someone who will point to it and say, "But this is the way it should be handled."

And, of course, there is no single, fixed answer to water boundary problems. The main thing is to keep alert for their presence because they can do you in.

12 Feb., 1996

Memorandum to accompany "handout" promised at the meeting:

One part of our interesting interchange on navigability included quotations from a letter from the Alaska Department of Natural Resources. Their letter was written in response to my questions about DNR positions on riparian boundaries. Those quotes are paraphrased below. Remember, though, that they were not written as the official policy of the DNR.

Q. Is there a legal presumption of navigability if a stream is meandered? A. Generally, yes if both banks of a stream are meandered and the bed of the water body is segregated from the uplands. The meander of the thread of a stream would be interpreted as being non-navigable since the bed of the stream is not segregated.

Q. Is there a legal presumption of non-navigability until a stream is declared navigable by a competent court? A. In my opinion, no. Alaskan waters are neither navigable or non-navigable until a navigability determination is made.

Q. Does the state consider use of river for floating logs and railroad ties as evidence of navigability? A. Yes. The state uses all the arguments available.

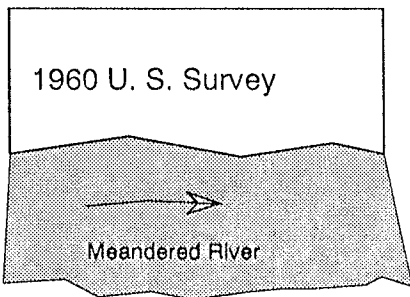
Q. Does the state still consider the frozen surface of waters as evidence of navigability? A. Yes, however the use need not be commercial— only if it is capable of transportation.

Q. Does the state consider ownership of river beds to include the banks? A. DNR would treat the banks as uplands.

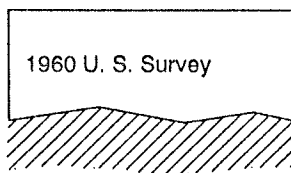
Q. Does the state claim the new channel created during avulsion as well as the abandoned channel? A. Yes. (!)

Q. Does the state consider indicators of the ordinary high water mark location other than the presence of terrestrial vegetation, shelving, steep banks of rivers and litter along lake shores? For example do you consider the quantity of flow in a river averaged over a period of time? A. The DNR uses all the standard criteria including the change in soil conditions. The quantity of flow averaged over a period of time has not been used. The main consideration is— What is ORDINARY to a particular water body.

A 1987 paper, *Policies and Procedures on Ownership and Management of Navigable and Public Waters* should be available from the Department of Natural Resources P.O.Box 107005, Anchorage, AK 99510-7005. Each surveyor is urged to write for a copy.

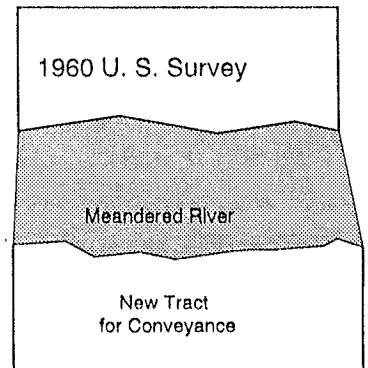


1) Meandered U.S. Survey is surrounded by a selection.



2) The hatched area of river bed is included in the selection.

One possibly important subject that was briefly discussed during a break concerned what happens when some selections by aliquot parts are conveyed by BLM. If the selection completely encloses a prior patented U. S. Survey that fronted on a non-navigable but meandered stream a conflict occurs. Selections have been conveyed that essentially patent to a Native Corporation the area of streambed in front of the patented U. S. Survey. Obviously the government cannot patent what it has already granted to others— the riparian right to half the bed of the river. The question concerned how to convey the surrounding area without affecting prior riparian rights. A possible solution is to create a new tract opposite the U.S. Survey with meanders on the opposite bank. The new tract would then be conveyed along with the surrounding aliquot part to the Native Corporation. The area of the river bed between the tracts would not be charged against any patentee and riparian-ness would be preserved.



An alternative is to create a new parcel meandered on the opposite bank. The new parcel would then be conveyed along with the surrounding selection.

*With Best Regards
Jim Simpson*

