Certified Federal Surveyors Certification Program

Course 2

Boundary Law & Title Examination

Version 3.0
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Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:	This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land. While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.
COURSE OBJECTIVES:	Upon completion of this course, students will be able to: • Review basic boundary law and title concepts in order to analyze interests in land • Introduction to the PLSS fundamentals and records • Learn about IBLA decisions • Identify the control exercised by Controlling Intermediate Monuments
COURSE INSTRUCTOR(S):	Dennis Mouland, Bureau of Land Management Robert Jackson, US Forest Service Ron Scherler, Bureau of Land Management
VIDEO LECTURE TITLE:	Basic Boundary Law – Part 1 (46 minutes)

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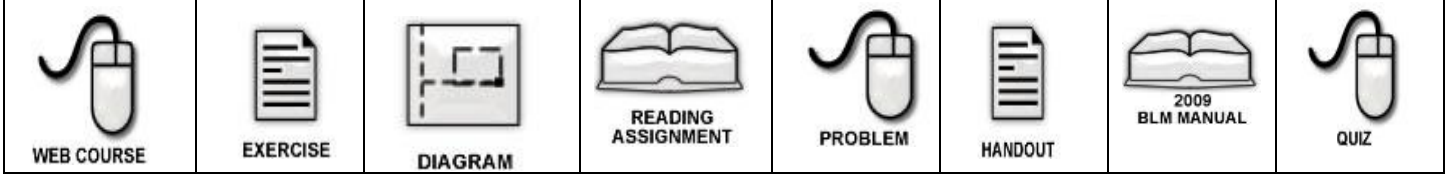
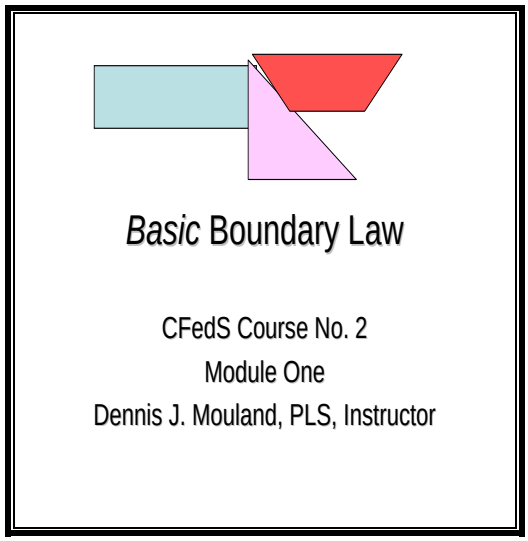


BASIC BOUNDARY LAW – PART 1

Introduction

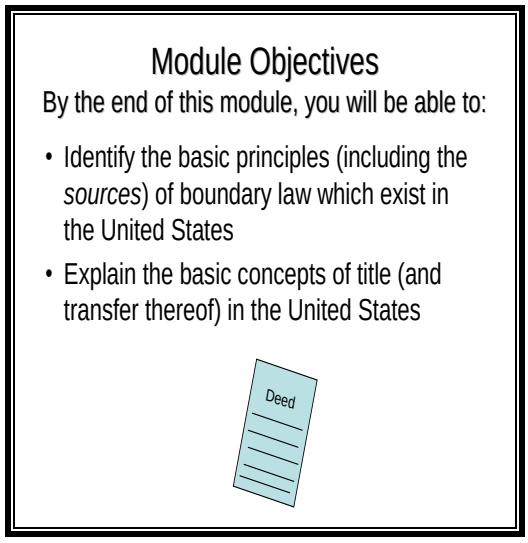
Hello everyone, Dennis Mouland here back again with you for this next module. You know as I mentioned earlier to you, you are going to see a little bit of myself and Ron Scherler scattered throughout here and there. He and I have played the role of filling in on some of the little gaps here and there and took a few subjects so that we could maintain a little bit of variety of changing talking heads so that you don't get bored. I know that I am not as pretty as Dominica or the solicitors we have later, but hey you'll have to deal with it. But we are glad to have you here.



Objectives

This course that we are going to do here is called Basic Boundary Law it is the CFedS Course 2 Module 1 and we are glad to have you here. Let's talk about what our objectives are going to be for this segment.

By the end of this module you will be able to identify the basic principles, including the sources of boundary law, which exist in the United States, and you will be able to explain the basic concepts of title and the transfer of title used here in the United States.



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Now those are our objectives and in order to get us there we are going to follow what we call the road map and that is going to start with a little bit of brief historical review.

I know that I did that with you already, but I'll just do a couple of minutes here. Talk about the sources of our common law, which is where most of our boundary law comes from, talking about state boundary law and the overall picture of it, talk about federal boundary law issues and then some concepts of title and concepts of title transfer and just a very brief discussion on the principles of unwritten rights.

Really to get us going here we perhaps ought to ask a few basic questions of ourselves and then that can lead into a couple of comments that I want to make. Let's ask four questions.

Number one, where did our laws about boundary come from? Why did the concepts of title and ownership develop the way they did? What issues drove the common law to be developed as it was? And, how have we adapted these principles here in the United States?

With those questions that is part of where we are going, but I want to first comment that I realize that for many of you, if you are a CFedS candidate, then that means that you are a registered land surveyor in one or more states.

I realize that we will have some people taking the courses that are not licensed yet, technicians that just want to be exposed to the information and we welcome you and are glad to have you a part of that.

Road Map.....

- Historical review
- Sources of our Common law
- State Boundary Law overall picture
- Federal Boundary Law issues
- Concepts of title
- Concepts of title transfer
- Principles of unwritten rights

Questions to ask ourselves…

1. Where did our laws about boundary come from?
2. Why did the concepts of title and ownership develop the way they did?
3. What issues drove the common law to be developed as it was?
4. How have we adapted these principles here in the United States?

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But if you are already licensed, then a lot of this will be just a review for you. But it is important that we cover these things so that we are all on the same page on a foundational subject.

I will just tell you from my own personal experience having taught a lot of seminars over the years and well at the time of this taping I have taught at the University of Wyoming for 12 years. I can tell you that it doesn't matter how basic or foundational you think the subject is, you get a group of registered land surveyors in a room, all of them have had different exposure to different things, we are all missing some things here and there, all of our understandings may be need to be tightened up.

I know even for me personally I have been surprised when I have dealt with a some situation in a boundary situation and I get to thinking well I know what this is, I think I remember reading that in a, you know, Curtis Brown's book or some standard text book in surveying and then go back and look at it and realize it says something quite different than what I thought.

We are going to do this here, so if you want to fast forward through it, well have at it. But we want to review a few things about basic boundary law to make sure that we are all on the same page.

Review?

- We realize much of this will be review for many of you
- It is important, however, to be sure all of us are on the same page on this foundational subject

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Historical Background

You know as I mentioned in an earlier segment that I gave to you talking a little bit about historical things, the pre -European boundaries, we need to understand that first of all the Indians, the natives here in the Americas, used natural features to identify their boundaries, rivers, ridges, mountain peaks. Anybody could identify those. Land ownership was not in their culture, rather territory and access, but not title. They didn't really think about that.

Pre-European Boundaries

- Indians used natural features to identify most of their important boundaries; rivers, ridges, and mountain peaks were easily identifiable by all
- Land ownership was not in their culture; rather, territory and access....not title
- Buying/selling/trading land usually not part of their history.
- Detailed boundary disputes very rare

But there were still boundary issues. And to Native Americans, to Indians buying and selling and trading land is usually not a part of their history. It is almost foreign to them in their culture to think about buying land or a home and just staying in it for 2 or 3 years and let it build equity. But extremely detailed boundary disputes were rather rare.

I think that what you will find is that there were disputes of territory between groups, but they weren't down haggling over a foot or two on the boundary on the ground or which side of a line some structure or building was built. Those are the kind of things that we do in our modern culture and the non-Indian culture.

I'll just pause for a moment, and just mention that over the years primarily in the private sector part of my career I have been amazed at how many boundary disputes I've been called in on and you go and you talk to the people, and sometimes you get hired and sometimes you don't. I would say the vast majority of boundary disputes that I have dealt with in the private sector were for less than one foot. It was always somebody haggling over something.

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I have always learned that almost every time that you have a boundary dispute, the boundary is not the issue, they already didn't like the neighbor, okay, and the boundary was the final straw and then they are going to hire a surveyor and then when you tell them what it is really going to cost, well sometimes it goes away. But I have been amazed at how many times that is.

Well you see in the cultures that were here when we got here, they weren't haggling over a foot or 2 feet or 100 feet. If ever, it was just something major, and nobody was worried about if you are exactly on the line between those two mountain peaks, and we are going to get that right down to the 1/100th of a foot. It wasn't that way.

That is a European cultural thing for us to argue about minutia at times and to go to court. That's the American way, Right? Go to court. Sue them.

Now really for our European cultures, our cultural roots are identical with our legal roots. It is a fundamental part of our culture.

Here in the United States or the area that became the United States, our title and boundary principles came with our fore fathers from Europe and we are still almost identical with the principles in every European country.

European Background

As you can see on the map there, a map of Europe, just kind of generally showing most of these nations headed west across the Atlantic to North America and brought their boundary cultures with them, the one perhaps exception here is the Russians, who

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headed east, because they didn't have very far to go across the Bering Sea and they planted their principles in Alaska.

It really doesn't matter which part of the United States you are in, you can be here in the southwest where I am speaking to you from where we have very much the Spanish and Mexican cultures. You can be in Alaska where you have some Russian background. You can be up in the northeast where you had a lot of Irish and British, and then as you move around the country you get the French and other nations, Swedish and lots of German in certain parts of the country. Hey it really doesn't matter.

All of those cultures really had the same basic common law about boundaries so that helps. It doesn't make it super complicated. We find that no matter where you are in the United States, even Hawaii, which we acquired much later but you know the principles of monumentation being the most senior, superior call in a description are there as well as many other things. That's good to remember.

Now there is always this conflict of federal law and state law and this is somewhat of a generalization, but really federal boundary law is generally limited to the public land survey system which you've heard a little bit about and are going to hear a lot more about in the program and even later in this module. I'll mention a little bit of it, but that is where federal law is.

Federal v. State Boundary Law

- Federal boundary law is generally limited to the Public Lands Survey System (PLSS), to be discussed in a later module of this course
- States have created the vast majority of boundary law through
  1. Statutory Law
  2. Case Law

There is very little boundary law that comes from the feds other than the creation of, the extension of, and the management or maintenance of the public land survey system. It is the states where we go and we find the vast majority of boundary law and that is common as you see there from two basic sources, that is statutory law, the state legislatures or other equivalents have passed laws that affect how boundaries are done and how they are recorded and how whatever is done and then we have case law where we have confusion situations where people have gone to the courts to try to get answers to things and we have a tremendous amount of case law in our background.

Again, I am speaking to registered land surveyors and I recognize that you have studied a lot of case law, you may not realize it, you

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have studied a lot of state case law, without realizing it, because if you are reading or have read and make reference to books like, **Boundary Control on Legal Principles, Evidence of Procedures, Clark on Surveying**, these various text books and a whole lot of others. Those are primarily all those principles that are outlined in those books are almost all from state case law. They come from court cases and occasionally statutory law but really the case law is amazing at how consistent it is from state to state.

There are a few oddities here and there. Texas has a few odd things and every state; I guess I should say has a couple of weird little things in their state law about something about boundaries. But for the most part statutory law differs but the state law is incredibly consistent. Most state courts if it is an issue they haven't addressed before, they look to adjoining states to see how they have addressed certain issues and problems and that is good. That is to our benefit.

So the summary of what I am saying there is that the majority of what we have when we talk about boundary law is a state function.

Statute of Frauds and Livery of Seisen

Now I want to then go back a little bit again in history and talk a little bit about what is called the statute of frauds.

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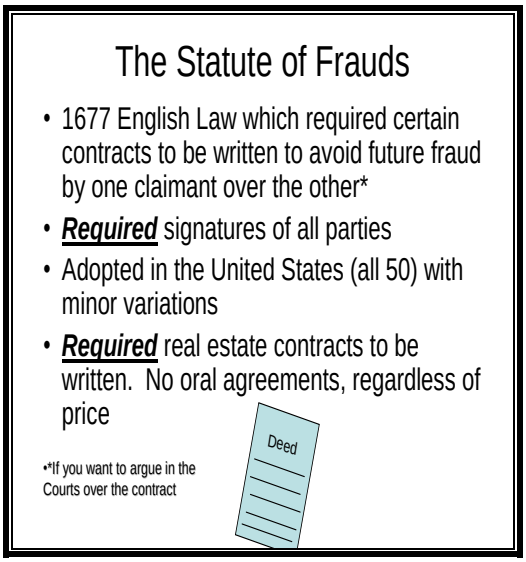
It is a 1677 English law that required certain contracts to be written to avoid future fraud by one claimant over the other in order to avoid the he said, she said sort of arguments that you still hear a lot on Judge Judy over contracts.



Now what the real bottom line was, it didn't mean that your contract had to always be written, whatever it was, but if you wanted to argue the contract in the courts, what they did was set up that if you want to argue this in court, there has got to be something in writing.

There verbal agreements don't cut it. Now in the statute of frauds, they were addressing all sorts of things and all jurisdictions in the United States have adopted the statute of frauds, maybe not necessarily by that name, but this principle is certainly there. But in a title transfer situation, here is what they said. You had to have it recorded, regardless of the value. A lot of states say well if it is over $500, you have to have it in writing, well if it has to do with land transfers it doesn't matter what the value, it has to be in writing.

We require signatures of all parties that are involved and that was part of the statute of frauds to show that you had agreed to certain things. It has been adapted in all jurisdictions as I mentioned. So real estate contracts have to be written.

You cannot have an oral agreement, no matter what the price is, you cannot have an oral agreement and transfer land ownership. That is really simplistic but the most important part of the statute of frauds. That is what that is talking about.

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Now, there is another concept that actually predates the statute of frauds. It is called the livery of siesen. It was also used in England and it regards the delivery of possession or transfer of title. That is actually what the word means livery, deliver and siesen is possession, the delivery of possession, the transfer of title.

Prior to the statute of frauds what was required was that you and the buyer, if you are the seller, well the grantor and grantee, had to actually walk the bounds and look at the bounds and point them out and that is how we attempted to convey intent of the parties. It was actually a ceremony that was carried out in the field where the grantor would point out what was being transferred to the grantee.

Livery of Seisen

- A concept pre-dating "Frauds", used in England
- Refers to "delivery of possession", or a transfer of title
- A ceremony carried out in the field where the Grantor would point out what was being transferred to the Grantee
- European custom of "beating the bounds" served a similar purpose in boundary recognition

And you might even find it interesting that here in the southwest, the Spanish government when they passed title to the Pueblo grants, in particular, up and down the Rio Grande in New Mexico, it was actually a religious ceremony and the priest had to come and everything was usually based at the church and he would pace out however many **varas or Mexican leagues** it was going to be and shake the cross that he was carrying and throw dirt up in the air. It was an actual ceremony that went on and then they would mark the boundaries and very much the concept of delivery of siesen in that Spanish culture as well the ceremony having a religious connotation to it as well.

And this may be where we have a custom in the colonial states that was called beating the bounds. It actually comes from Europe and beating the bounds started out when you went out and did the delivery of siesen. You actually went on the ground to the place where it was going to be and you took a stick or something and you beat on the rock or the tree that was the monument and this was part of the ceremony.

Beating of the Bounds

Now we find in New England, especially Puritan New England, beating the bounds took on a little bit more meaning and this historical irony here a little bit, what they would do every year the custom became in the New England culture was to take your children out to the property that you had bought or inherited and

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show them those bounds and that is how you were going to pass that information on and they took it a little too seriously, there have been many cases of beating the bounds because they actually took the children and whipped them with a willow switch so that the kid would never forget where he was standing when that nasty event occurred.

So that doesn't fly nor should it in our world today and in our society today. But they took beating the bounds a little too seriously. But all of that was part of this livery of siesen. Another principle that we want to talk about is constructive notice.

You see the whole word needs to know who owns what interest in land and what rights they have with it.

Here are some of the reasons, that is what we call constructive notice, it is notice to the whole world what is going on. It adds to a peaceful civilization. We know who owns it. They say good fences make good neighbors but that is not necessarily true in the surveying business. You'll find out. But it adds to a peaceful civilization. It also allows for proper taxation. The government is able to tax the correct entity for a parcel and at the correct amount. Also constructive notice provides notification to third parties.

A modern day example of that is, say I am with a gas pipeline company and want to run 100 miles of pipeline to deliver natural gas. Well, we are going to cross thousands of peoples land and we need to know who owns that land and what rights they have in that land, to get an easement from them. And believe it or not, many times there may be somebody who owns the land but they don't have the right to give me an easement.

So I have to be able to find that out so I can go to the right people, get the right document in the transfer of ownership in this case just of an easement for me to build and maintain a gas line across there. So constructive notice is notification to all of these third parties, who owns what, what rights they have; it creates a permanent chain of records, which we often call the chain of title. And a constructive notice is required in almost all jurisdictions.

There are a few jurisdictions that don't require constructive notice,

Constructive Notice

- The whole world needs to know who owns what interests in land, and what rights they have with it
- Adds to a peaceful civilization
- Allows proper taxation
- Allows notification to 3rd parties
- Creates a permanent "chain" of records
- Required in almost all jurisdictions

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although they still place limitations on your deed if it is not been constructively noticed. Now how do we do that in our society here in the United States, well we call it recording. Of course, there are other requirements for a deed to be valid.

It needs to have signatures and in most jurisdictions, it needs to have an acknowledgment, a notary, there has to be a **consideration**. Many of you have seen deeds that say for $10 and other valuable consideration, now the land might have cost $500,000 bucks, they didn't know exactly what it was going to go for, but the deed was prepared ahead of time and said $10, so because there's this in our law part of our recordation and deed validation processes is that it is required to have a consideration or a value so we just put a generic value in there that's why you read those things.

But constructive notice is recording in, in most cases, your county courthouse. You are going to hear later that in Indian trust lands, constructive notice is handled in a different way. This still happens, but it is not done in the county courthouse. It is done in a separate record system that the Bureau of Indian Affairs manages and operates. So constructive notice goes into the county courthouse or parish or borough or whatever your jurisdictions are and they are filed generally by a grantor/grantee index system. That is constructive notice.

That is how we go in as a third party, I'm a surveyor and I want to know who owns this and what does his deed say, and who owns that and what does her deed say. She thinks that she adversely possessing this property and I need to know who these people are and what rights they have. And that is why we have recordation.

And as you see here, we have the statue of frauds, a land transfer is required to be written then it requires signatures and it is required to be recorded, constructive notice so that everybody knows who has what and who they are, what rights they have, what rights they don't have and what limitations or restrictions there might be.

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Principles of Title

Now shifting gears just a little bit then and talking about title meaning land ownership, actual ownership of at least interest in land.

Title refers to the ownership of interest in your land and it is kind of like, if you are from California, the pink slip. If you remember some of the old Beach Boys' songs, I've got the pink slip daddy.

It's referring to, I own it, I've paid it off, I have title, the bank no longer has a lien on it. The title to your car, it is a document that proves who owns this car. And it is very similar. If you look at it you see the same concept of the statute of frauds being there and even the delivery of siesen if you think about it.

Now there are many different interests that are possible and we continue to invent new interests in land all the time. I know for instance 25 years ago, I would never have heard of a **solar easement** but then I moved to New Mexico and solar energy is a big thing there and a lot of people have their house here and they have their solar panels facing the south to get the maximum sun all the time and they have an easement on the lot in the subdivision next door that that guy can't build or plant a tree that gets any higher than so high and cannot block my access to the sun. Well we continue to invent these.

When airplanes came along, and we started having airports in cities, we have these conical shaped easements that go out. That's an interest in land where the FAA or the local community that owns the airport or whatever, they buy these easements or sometimes they just condemn them and get them for next to nothing, but that's another subject, but they do this to prevent you so that you cannot build up into the approach zone of the runway that sort of thing. I am surprised at 3 dimensional easements I see all the time, here is a highway and here is a railroad and the railroad built a bridge over the highway so the railroad has a 3 dimensional easement that is described by surveyors and platted and legal descriptions written for that and we have this all over the place.

Concepts of Title

- Title refers to ownership of interests in land (like the pink slip or title to your car)
- Many different interests possible; new ones invented all the time!
- A fundamental part of US history; protecting private property rights from neighbors and from government
- If you own **ALL** the rights, it is called "fee simple title", or just "fee"

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In fact any day if you just drive from your house into town you cross thousands of boundaries, maybe tens or hundreds of thousands of boundaries of all these easements and all of these interests in land. My point being, that there is a lot of interests in land that aren't directly ownership.

It is a fundamental part of U S history that we are going to protect **private property rights** from our neighbors and from the government and you may recall, it's rather recent history here, you'll hear about it for many years to come, but relatively recent Supreme Court decision that involved some land, I believe it was in Connecticut or Rhode Island, I forget, but they allowed condemning land so that the city government could increase it's tax revenues.

You may remember that there's been a lot of noise made about that and several states have passed state laws that prevent the states or cities from doing that in those states, because that got out of hand in some peoples' minds. But it is in our constitution that the government cannot just come and seize your land.

Now where do you suppose that came from? Well they were fed up with the crown, and Britain. They were fed up with the King coming in and seizing land and just taking it and saying "it's mine now" and it's nobody's. Kind of like the Mexican government did to an awful lot of people in that country. Just seized it, government controlled and then got it re-distributed to friends and family.

That might be a summary of world history, that statement. But when the United States was being formed, we wanted to forbid that and so we recognized that there were times that the government might need to take land for the benefit of all, we call it **condemnation** now, but that is a fundamental part that the constitution forbids it unless it's necessary for public use and that was the debate in this recent court case, but it was also required that you be paid just compensation or fair market value we call it now.

So even when the government wanted to take your land for something for a highway, or a city, or something, street or a park

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or whatever, it had to be for municipal good that sort of thing. And they had to appraise it and pay you what it was worth. They couldn't just seize it from you. So we built that right in.

Now using that and thinking about how sensitive we are in this country to private property rights, we as land surveyors have to be super aware of title and the concepts of title. Now if you own all of the rights to a piece of land, if you own it all, we call that fee simple title or just fee and that comes from some old English words fiefdom and that sort of thing, but bottom line, if you own something in fee, you own all of the rights that are there.

Now we have traditionally, I learned it when I first started and it's continued to be used by many right of way, realty specialist, lands types in private and government, we have an analogy that we call the **bundle of sticks**, this concept is an allegory that we use for the collection of rights that come with land ownership. You can see some down below there; I drew a few sticks for you okay.

Some of these come by actual ownership, some come because they were restricted in my deed, perhaps they were restricted by the covenants that are on the property, like building rights, people own their land but they don't have the right to build on it. They have sold it under a conservation easement, Mineral rights, you would be surprised how many people own land and think they own the minerals but they don't.

One of my pet peeves is some homeowner's association that has restrictions in the deed that prevent me from parking my RV on my property. Believe it or not, one of the sticks that are in the bundle, is do you have the right to pass on the land. Do you have the right to sell the land? You see you might have rights in the land in the sense of a lease or rent, but you can't sell it because it's not yours, you don't have that.

The right to hunt and fish on your land is a right that can be taken away, modified, or controlled. A full use of the land doing about whatever you want. I have these other sticks off to the left there. Maybe you own the land, but there is an easement to some other party on the north 20 feet of your land. Do you have the right to subdivide your land? Some of this is controlled by zoning but this

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is all part of the bundle of sticks. So again, the complete bundle is fee simple. But one or all of those can be disposed of by a deed, or it can be limited by governmental action, zoning, set backs, how far your building has to be from your property, or liens or a court order. You know we have all of these things. You've experienced or you've seen them, you can have a court order that said, like in a divorce, he gets this and she gets that and you are going to split the property down the middle. Then you have lost part of that.

Liens, you know one of the least favorite liens in the country, is an IRS lien. You owe taxes, back taxes and the IRS can't seem to collect them so they just slap a lien on your property that suddenly takes away your right to sell that land or do much of anything until you pay the IRS. So you've lost one of your sticks temporarily because of that lien, and zoning and all of these things.

These are all parts of the bundle of sticks and what that is again is an allegory of what land you own, what rights you have, you see there are hundreds of different levels, if we could put it that way, or variations as to what when we say I own that land or that land is mine, there are a lot of variations as to what that really might mean.

When it comes to actually owning land or interest in land, we call it an **estate** of course, you are familiar with the term real estate, because land ownership is real as compared to other things that you might think you own, I own my good name, I own other things that are not as permanent or real and so that is why we call it real estate.

Let me just give you a definition of estate, it is the nature and extent of an owner's rights with respect to interest in land or other property, other real property. So that is your estate. We talk about when you die, and you give something in a will or whatever, that is your estate. Because it's this extent of rights that you had in the ownership of various things.

Land can be held in many different types of estates and each of those estates controls what a person may do with their land interest.

Types of "estates"

- *Estate*: The nature and extent of an owner's rights with respect to interests in land or other property
- Land can be held in many different types of estates
- Each of these controls what a person may do with their land interests

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There are four basic estates we want to talk about here just momentarily, a free hold estate, that is our fee simple, you can look some of these terms up if you want, are where you are actually on the property, you're occupying it and you do own it at least for a time; fee tail that has a condition on it; there is life estate there, and that is where someone owns the land but only for a certain amount of time.

Four Basic Estates

1. *Freehold Estates* – fee simple, fee tail, conditional, life estate
2. *Leasehold Estates* – tenancy for years, periodic estate, tenancy at will
3. *Statutory Estates* – created by law, community property, homestead rights
4. *Equitable Estates* – liens, easements, easements appurtenant

I would like to digress for a moment to tell a quick story, this was up near Pecos, New Mexico, on the Santa Fe National Forest about 1985 or so, and I was the forest land surveyor in the Santa Fe National Forest, and I was called by the ranger out in the Pecos area and said there is a house on federal land and there is an old couple living in it and they have threatened to run me off and its on federal land and I want them off.

But he was trying to get a surveyor to come out and make sure he was right on that so I look up my status records, that sort of thing, and I realized before I even go out there in fact I never did go out there, it was a beautiful house, a log cabin, but on a beautiful rocky outcrop looking right down in the Pecos River, I mean, it was just beautiful.

The forest service had bought that land ten years before and so that's why on the ranger's map it showed that it was green, that was their code, hey this is forest service land so he thinks these people are trespassing. Well I go and I look at the deed, the written contract between that old couple and the forest service ten years ago, and in it the forest service gives them a **life estate**. Meaning that they are allowed to continue to live there and they own the property, we paid for it ten years ago but they still own it, until the last of the two of them dies. That is what we call a life estate.

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So I had to explain this to the ranger, course he was new and he had not been there ten years ago. And of course being a forester he had never heard of estates, let alone a life estate, so I explained it to him and he said well that's not fair, I am not going to approve of that.

I said you don't have any right to not approve of that, it's in the written contract, we signed a deal, there was a consideration, it's recorded you know and it doesn't really matter what you think about land management or anything else. Those people have a land ownership interest there. That is a good example of a life estate.

I am just glad that he came in and talked to me because otherwise we might have gone in there with guns a blazing and bring in the law enforcement people and throw these people out of their land. You can imagine where that would go. We would be in court and look pretty dumb.

We also have these four basic estates. We have lease hold estates and as that kind of tells you this is more where it is just tenancy for a certain number of years, not tied to somebody's death, but just a **99-year lease**, you've heard of those, or a 10-year lease on the property.

Meaning you don't own the underlying fee, you just have tenancy but that is a form of an estate. Periodic estates, tenancy at will that is where they let you rent it at will. The owner at will, you can rent it this week but not next week. We have statutory estates; these are things that are created by law.

Community property states have this where it is by statute that your estate is held in a community property situation even if your deed doesn't say that, that's done by statute.

Also homestead rights, we get that confused with homesteading land in the public domain, but **homestead rights** in most states are there and they are to protect your home in the event of bankruptcy.

Here in Arizona, if I remember right, if you declare bankruptcy, you are able to protect the value of your house, it is not a part of

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the settlement there as long as it is not over a certain dollar amount and that is set by statute.

But a homestead right means that I still have the right to maintain my home even though I am giving up everything else in this bankruptcy. I have the right to maintain my home. That's more what we are talking about homestead rights when we talk about a statutory estate.

And then the last of these is what we call an equitable estate and that is where something is being done to make something right or fair, that's your IRS liens, or for most of you, I hope you don't have IRS liens, but you do have a lien from your mortgage company, easements that somebody has across someone else's land or across your land.

Easements are pertinent, referring to I have an easement but it is across someone's else's land, normally we talk about an easement, it is somebody else has on me but if I have an easement on someone else then it is an easement of pertinent.

These are our basic estates, and we could go into a lot more detail, but I am just covering these things because some of these terms and issues come up as we talk about things in the CFedS course but in particular you are going to come across these issues as a CFedS surveyor out there doing work.

You are going to come across situations whether it is on Indian land or anywhere else where someone has a life estate or they think they own the land and all they have is a lease, or there are easements and these easements pass with the land and that sort of thing those are important things that we as land surveyors and frankly part of the realty transfer and ownership, the land tenure system that's what we're a part of. So we need to understand those things.

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Common Estates

Now here is a list of the most common estates, some of these I've already mentioned but just so you have it in front of you,

- fee simple, you own all the rights;
- fee with limitations, which is almost all of us in these days;
- life estates, I gave you that example;
- easements, gave you some examples;
- liens, leases, so that there is a little bit in writing for you as to those common estates.

Most Common Estates

- *Fee simple* (own all the rights)
- *Fee with limitations* (almost all today)
- *Life estate* (own most rights for a specific length of time)
- *Easements* (right in a limited use of the lands of another
- Liens (usually a monetary claim or judgment against the lands of another)
- Leases (a specific right of use for a time)

Now on top of all of this we have something that we call tenancy. This can get very complicated, and I'm not going to play lawyer or attempt to turn you into lawyers that's for sure, we don't want to do that.

Just a few things so that we understand some basic things, especially when we are doing research in the chain of title. I have been amazed at how many times I have actually found where someone else missed it, even the title insurance company missed it, maybe we're not in a community property state, and the wife owned land and the husband wasn't on the title, but the husband signed a deed without her signature and sold the land and nobody caught it. I am amazed at that.

And frankly when you are doing research and you come across some of those things, some of those things have a dramatic effect on whether you are even going to finish the survey, because you may not be working for someone who actually has title. So you want to think about these things.

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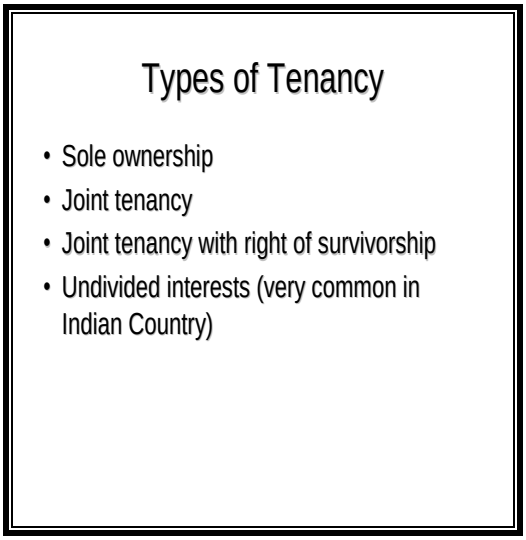
So these types of **tenancy**, I have just generally given it to you in four bullets, sole ownership, that is just one person owns it and of course in a state that has community property even if your deed is in sole ownership, see by statute they may have given your mate some kind of ownership there anyway; where states don't have community property, well sole ownership is still a possibility; we have joint tenancy, we have joint tenancy with the right of survivorship, that one works really well because if one of you dies, it doesn't have to be probated, it doesn't have to go through court, you don't even have to mention it in your will.



It automatically, you and your partner or business partner or joint tenancy husband and wife, or any combination of peoples, you can own the land in joint tenancy with right of survivorship and if one of you die, well the other automatically owns it fully.

Nothing has to go through the courts, nothing has to happen. We also have this fourth one, **undivided interest**, which unfortunately are very, very common in Indian country.

Now you will hear more about that in some later modules, some details of that, but let's just make sure we understand the definition here and that is an undivided interest. There is one thing where my wife and I both own the house that we live in and so we have joint tenancy with right of survivorship. That means that both of us owns it completely. It doesn't mean that I own half the house and she owns the other half. Divorce court, knock on wood, might see it differently but that is the courts have the power to order that.

But an undivided interest is what we have really when you think about it. But let's say, and I will use an Indian country example, because these are so common, let's say that an Indian owned a 40 acre allotment and died and did not have a will and it goes through probate, and he or she had three kids, okay.

Well the probate is going to give the land to the three kids in an undivided interest. That doesn't mean that you divide the parcel into three parts, and the son gets this, the daughter gets that, and the other daughter gets that. That doesn't mean that. It means that all three of them own it in an undivided interest.

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That gets very complicated, doesn't it? Because if two of those three want to sell the land to somebody, they can't sell it. And if they say, "well two of us…there…we'll just sell two thirds of it", you can't do that. Because they own it in common, they are all going to have to be in agreement. So these types of tenancy are really, really important.

I am going to give you an example of that, I re-typed this out of a deed in Indian country this is in Washington, Whereas an order of the authorized officer of the Bureau of Land Management, directing that in accordance with 25 CFR a fee simple patent is issued to, and I left the name out, for an undivided one-two hundred and seventieth interest in the following described land.

Sample of Undivided Interests

- *WHEREAS, an Order of the authorized officer of the Bureau of Land Management, directing that, in accordance with 25 Code of CFR, a fee simple patent issued to XXXX YYYY for an undivided 1/270 interest in the following described land:*
  Willamette Meridian, WA
  T.35N, R37E
  Sec. 19, Lot 7;

That is the reality of working in Indian country, you are going to go and do some work on a piece of land where there are 270 people who have an interest in that land and it is undivided.

And here this example, this might amaze you, here is the government issuing a patent to that person for their 1/270 th. So you might get there and 8 of the 270s have a patent from the government and the others don't or they don't have a fee patent, that's what this was they have a trust patent. You'll find out what those are later.

That's the reality of it and it's complicated. And this happens out in the non-Indian world but not nearly as much. So that's worth thinking about, isn't it?

Now I want to talk about, we have been talking about title here for a few minutes because boundary law is intimately tied to title.

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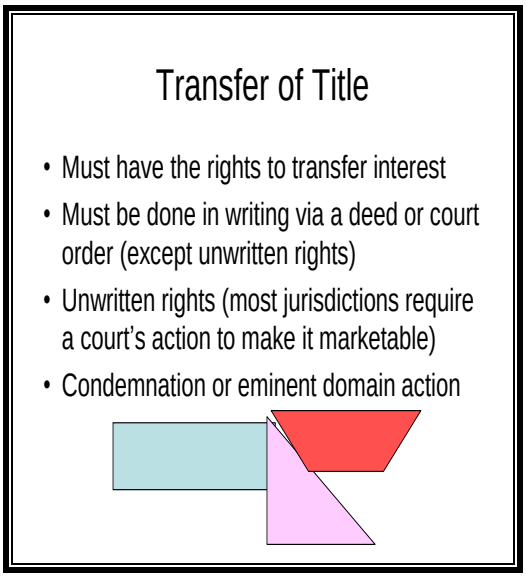
Let's talk about the **transfer of title**. We have kind of danced around that subject.



If you want to transfer title to land, you have to have the right to transfer it and as we saw there are some forms of estates where you don't have the right to transfer it. You might own the land and you have the right to sell it, okay, great.

But if you have a lien, let me give you an example, you've got a mortgage on your property, I'll guarantee you in the fine print, you know all the stuff you never read when you buy a house or buy some land, all that fine print in there, one of the things it says in there, I guarantee is, you can't sell one inch of this, you can't sell any interest, you can't give your neighbor an easement, you can't give the government a one foot easement to put a trail on the back of your property, you can't do anything without written permission from us your mortgage holder, that's the lien.

You see what happens when you borrow the $300,000 from the bank to fund your property, one of the things you give up until you satisfy that lien, one of the things that you give up is your right to convey the land unless you completely pay off the debt.

When you sell the house, and you borrowed $300,000 and you've had it for five years and now you owe $299,000, and you want to sell it, you have to pay off that mortgage and they have to release the lien before you can actually sign a warranty deed or whatever you are going to use to this other person. It has to be satisfied first.

In reality, most of us have a lien on our property and so we do not have the right to transfer it until we meet the circumstances which in that example is pay off the loan.

As we already saw, to transfer title, it must be done in writing by a deed or a court order, there are some unwritten rights issues which we will talk about, but in most jurisdictions that still requires a court order.

Unwritten rights, in most jurisdictions require that especially if you want it to be marketable. If you want to be able to actually

BASIC BOUNDARY LAW – PART 1

convey it. The fact that you think you own some land and you have been occupying it for ten years or twenty years, whatever your statute is, that doesn't mean that you own it by an unwritten right except in a couple of jurisdiction, what that means is that you have, at least, the appearance of that but if you actually want to make it marketable, where you can get title insurance or you can get someone to loan you money against it, you will probably will have to go to court to get that taken care of.

We'll talk about **unwritten rights**, but you see, title can transfer in an unwritten way but that is a totally different situation. But you can see though, think about what we have talked about. What's the big problem with unwritten rights? Well, there is no constructive notice. That is the problem, there is no constructive notice.

So when unwritten rights do occur, which they do, then we have issues there that need to be identified frankly the surveyor is usually the first person to come along and realize there's the potential at least for unwritten rights here.

We need to make note of that and a record of that and that is even true, as we'll see later, on some federal lands. And then there is another way that title is transferred and that is through eminent domain which is the legalistic term for condemnation where land is being condemned and I had made reference to some Supreme Court action in that regard lately.

So the transfer of title is just part of this ownership of land, these interests in land, and do I have the rights and then do I describe it right, we'll talk about that later, and I have to do it via deed or the court has to split the land, and sometimes a court order in a probate case, someone has died, even when someone has left a will, usually it has to be probated and the court says we are going to divide that land in thirds, and here is how it is going to happen, then there is a court order that transfer title. But the transfer of title is supposed to be a very organized, very well documented process that the whole world knows about as we have seen so far.

So that will be a good place for us to break for the end of this video lecture and go into the next one.

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We have been talking about transfer of title and what we want to do in the next lecture is we'll just pick it right up again but then start talking about deeds and the instruments by which we do the actual title transfer and in particular some things that affect us with federal lands and Indian trust lands.

So, I'll see you in the next video lecture.

Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

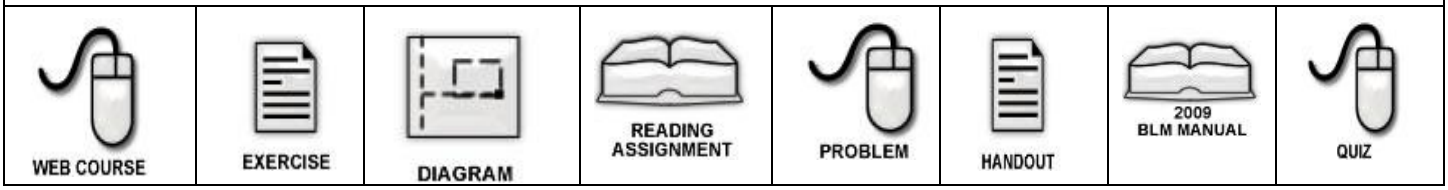
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Basic Boundary Law – Part 2 (42 minutes)

ICON LEGEND



BASIC BOUNDARY LAW – PART 2

Introduction

Well, welcome back to our next video lecture. Continuing our discussion of basic boundary law and title issues, and as you will recall from the previous lecture, we were talking about different types of estates and how land is held and titled, and we were talking about transfer of title and different possibilities of how estates are held and now what we are going to do for the remainder of this is talk about some of the actual instruments or documents, they usually call deeds and other documents like that instruments. We will talk about how those instruments were used to convey title and transfer interest or ownership of interest in land.

Types of Deeds

So let's review first of all the different types of deeds. Now there are actually dozens of types of deeds, but really they all come down to the two basic types, the **warranty deed**, this is a transfer of rights which warrants or guarantees, that is what the word warrant means, guarantees that you have that, those rights to sell and you will make good if it is not substantially real and valuable. Okay. That is what a warranty deed is it guarantees that you have the right and that there is some value to it.

The other type of a deed is a **quit claim deed**; this is a deed, which will transfer rights in an equal way, except it has no guarantee. It doesn't even guarantee there are any rights to be conveyed. Now there are a lot of other types of deeds that have been created under different states' laws, special warranty deeds and gift deeds and all of this, but most of them fall under the two basic categories of a warranty deed or a quit claim deed.

Now to illustrate the example let me just comment, in warranty deed, if I am going to sell my land, I own a couple of acres up here in northern Arizona, if I want to sell that land then I am probably going to be required to warrant or guarantee that I own the land and that I have the right to sell it, or meeting the conditions to have the right to sell it, in other words like paying off my mortgage.

Types of deeds

- Warranty deed – *A transfer of rights which warrants (guarantees) you have it to sell and will make good if it is not substantially real and valuable.*
- Quit-claim deed – *A transfer of rights, if any, but no guarantee.*
- Other types of deeds generally fall into one of these two categories; some states have created many variations.

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And I am going to convey it to you, and so I warrant that. I use a warranty deed. And if for some reason, I didn't have the right to do that, you gave me money and I didn't have the right, or you gave me money and there was, not necessarily a defect in the land or the house or something, but more a defect in the title, then I have guaranteed to you that I am going to make it good. That is really what a warranty deed does.

But a **quit claim deed**, it will transfer any rights the person has, but you notice by its name it simply means I am going to quit my claim, in other words, I may not really know what I own there, but just in case I have anything there, anything I might be able to claim, I am giving it to you. I am selling it to you and so I will quit my claim. That is where the term comes from. Now quit claim deeds are often used to clean title up.

Let's say that you have a parcel of land that's got some possible, what we call, clouds those are doubts about the title or there's some problems with it. And it's not really clear who owns it. I will give you an example, I worked on a project in Colorado where a big furniture warehouse was going to go and there ended up being a small strip of land through the middle of the parcel they bought, they thought they bought one contiguous parcel, but there was a strip about 5 feet wide through the middle that they didn't get.

And when we tracked back to who owned it, it was a corporation that had gone defunct back in the 1940s and there were no records of who still owned it, or whatever happened to that corporation, you know we tried to track a little bit of that and so what we ended up doing, we did find a couple of the people who used to be the president, I think the other one was the treasurer or something in that corporation, and then we found another person that even was before them in title that was not part of the corporation.

Now none of these people think they still own anything, they thought they'd conveyed everything out of there and it turns out by survey, we discovered there is this strip. So we, got each of those three, I say we, you know the title attorney was actually involved in it, and we identified the problem and then the attorney went and got all three of them to sign quit claim deeds, two of them as if they were officers of the corporation in the past and the

BASIC BOUNDARY LAW – PART 2

other one as an owner in the past.

What that did was clean the title up. We don't know, I mean it might take years to investigate whether any of them still had any title or any real rights, but they were willing to sign a quit claim deed, which simply said hey if I have any rights there, they are yours. That is what a quit claim does. It does convey title and it can convey it just as the same quality of title as a warranty deed but what the difference here is that there is no guarantee or warrant made on the quit claim deed. So, those are our types of deeds.

So now let's ask this question, what is a **patent**? You have heard us use that already, Dominica has used it, I have mentioned the term and you're gonna hear a lot of it through the rest of the CFedS course. What is a patent?

A patent is an original deed that comes from the federal government and many state governments also use it when they're creating private land out of state land, like school lands or whatever, and those deeds are called patents. And a patent is essentially a quit claim deed. That is how it has been ruled in the courts and it is the beginning of title. It starts title from the sovereign government, be it federal or state.

Now the reason that it's considered a quit claim is because you know there were especially in the earlier years in this country, you couldn't really sue the government, except under limited circumstances. That is still true to this day. The government has to give you permission usually by statute to sue them about something because they are still the sovereign.

And the federal government didn't want to have this, everybody that's upset with their patent, you know starting with the public land system in Ohio, you know well you said I had 320 acres and there is only 310 and I want to you know, the government isn't going to guarantee anything. We had the title, we knew that, with very few exceptions, we had the title for sure.

But the government very wisely chose to, because they were the sovereign, to issue a patent and to make that a quit claim deed. So that was a good way to go, but see, think about it folks, almost every piece of private land in the public domain started with a

So what is a "patent"?

- Original deeds from the federal government and most state governments are called patents
- A patent is essentially a quit-claim deed, starting title from the sovereign
- *Warrants* were sometimes issued prior to patent. They essentially promised certain lands, to be patented or deeded later

BASIC BOUNDARY LAW – PART 2

patent. Okay, so you have good clean title on all of that land. Now there were at times in the past from the federal government **warrants**.

They gave a warrant to someone for ownership of the land. Warrants were sometimes issued prior to patent. Okay, so what they did was promise that the lands that were described in the warrant were going to be patented or deeded later, so its kind of like where this was done, Dominica mentioned some of the stuff and I think that I may have too, about the soldiers from the Revolutionary War and they were going to get ownership of some land to compensate them for fighting in the war and many of them were given a warrant, which was a promise from the government, a guarantee that they would get something later. They had to take the warrant and turn it in when they chose what land they wanted in some cases.

So sometimes you will see in some of the old laws or other correspondence, the word warrant used and basically it was this promise of something yet to come.

So now that was a regular patent, what about a **trust patent**? You will hear this, especially talking about the Indian trust lands. Trust patents are issued to individual Indians for their exclusive use. But ownership is still in the United States held in trust for that particular individual. That's a little different, isn't it, but trust patents are issued to individual Indians in order to sell the land. If the Indian wanted to sell that land to a non-Indian, he'll have to go and get a fee patent.

In other words, a regular fee patent that actually gives him ownership and as you will learn later, that will require a Bureau of Indian Affairs approval to be able to do that. Some **allottees** were granted what we call a restricted fee title, and they were actually given private ownership of it but there was a restriction on the deed or the patent that didn't allow them to sell it once again without BIA approval.

You will discover that almost anything Indians want to do with trust land regardless of how it became trust land will probably require the Bureau of Indian Affairs to approve it. And you will hear from some BIA people as to why that is and what that means.

What about a "trust patent"?

- Trust patents are issued to individual Indians for their "exclusive use", but ownership is still in the United States, held in Trust for the Indian
- In order to sell the land to a non-Indian, the owner must get a fee patent, and must have BIA approval to do so
- Some allotees granted "restricted fee" title

BASIC BOUNDARY LAW – PART 2

So you know we have the trust patents and we also have something called a **certificate**. Now what about a certificate? There are some situations where a certificate is issued and what does that mean?

In reality a certificate is used in lieu of a patent, especially in Alaska that is where you see this most of the time. They will appear to pass a restricted fee that is how they are written we will look at one here in a second, which cannot be taxed, because it is still Indian trust land nor can it be transferred without BIA approval.

But what's interesting with these certificates is there's no further grant made by the US in other words that is considered the origin of title in fee with some restriction to an individual Indian or to corporations as well.

There is still a trust responsibility by the United States and let's just understand that that trust responsibility is more because of other laws and jurisdictional things where the United States government has this responsibility to act in trust on behalf of Indians for a lot of things. And so we see that use of the word certificate, especially in Alaska.

I do want to mention that in some research you may find like on old homestead entry surveys and other things here on the lower 48 and even in Alaska a lot of times another document was involved in their process called a certificate, which was a little bit different than this, just so we keep that clear. These ones that I was speaking of just now are in fact considered a patent.

But these other certificates that you see, sometimes like a homesteader had depending on what law he was homesteading under, had five years to plant crops, and fence it or put and a certain amount improvements or whatever and once they had accomplished that, they were given a certificate that basically said take this down to the land office and we will get you a patent.

So they went and did that and got their patent. So that was a little bit different use of that term.

What about a "certificate"?

- A "certificate" is used in lieu of a patent in Alaska (based on a 1906 Act)
- They appear to pass a "restricted fee" which cannot be taxed, nor can it be transferred without BIA approval
- No further grant is made by US
- Still a "trust responsibility" by US

BASIC BOUNDARY LAW – PART 2

Now on the screen is an example of a certificate and I realize that you may not be able to read but it is just one from Alaska and it is for a native allotment and it simply says, Lot 2 of U S Survey and containing so many acres and It does not say on it, the last paragraph I guess I should I'm going to reason it to you.

Therefore let it be know that pursuant to the Act of May 17, 1906 as amended, the land above described shall be deemed the homestead of the allottee and his heirs in perpetuity and shall be inalienable and non-taxable until otherwise provided by Congress or until the Secretary of the Interior or his delegate, pursuant to the provisions of that Act as amended approves a deed of conveyance vesting in the purchaser a complete title to the land.

Now when you read that you think that well there is another document that is going to come from the government before this guy can sell that land or something. But that is not the case. Frankly, those are a just a little bit odd to me but that is how it ended up being done in Alaska so hey who am I to argue, right.

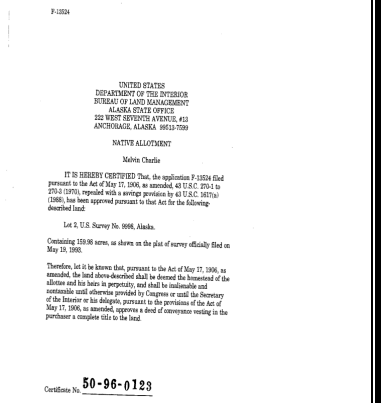
Now what we are talking about here is transfer of title or creation of title or creation of trust situations, interests in land.

We have another one that we call **presidential proclamations** and I know that Dominica just mentioned those as well in her explanation a little bit.

Well this is a power that the president has to order certain actions on the public lands. And these are often used to create forest reserves, which are now the national forests, national parks, or monuments, that are still done, certain special management areas kind of like wilderness or recognition of certain groups or issues, for example, National Surveyors Week, always take some kind of a proclamation. Proclamation boundaries were often poorly described in the creating document, boy is that true.

The presidents, other than the first few and Abe Lincoln, had no surveying background at all and nor did Congress for that matter. Now presidential proclamations still continue, here in the last few years, in fact, if I remember right the last day maybe of the Clinton administration, President Clinton proclaimed several national monuments, a dozen or so, if I remember right, one of them was

Example Certificate



F-13524

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ALASKA STATE OFFICE
222 WEST SEVENTH AVENUE, #13
ANCHORAGE, ALASKA 99513-7599

NATIVE ALLOTMENT

Melvin Charlie

IT IS HEREBY CERTIFIED That, the application F-13524 filed pursuant to the Act of May 17, 1906, as amended, 43 U.S.C. 270-1 to 270-3 (1970), repealed with a savings provision by 43 U.S.C. 1617(a) (1988), has been approved pursuant to that Act for the following described land:

Lot 2, U.S. Survey No. 9666, Alaska.

Containing 159.96 acres, as shown on the plat of survey officially filed on May 19, 1995.

Therefore, let it be known that, pursuant to the Act of May 17, 1906, as amended, the land above-described shall be deemed the homestead of the allottee and his heirs in perpetuity, and shall be inalienable and nontaxable until otherwise provided by Congress or until the Secretary of the Interior or his delegate, pursuant to the provisions of the Act of May 17, 1906, as amended, approves a deed of conveyance vesting in the purchaser a complete title to the land.

Certificate No. 50-96-0123

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Presidential Proclamations

- A power the President has to order certain actions on the public lands.
- Usually used to create Forest Reserves (now National Forests), National Parks or Monuments, certain special management areas, or recognition of certain groups or issues (i.e.- National Surveyors week)
- Proclamation boundaries were often poorly described in the creating document

BASIC BOUNDARY LAW – PART 2

up in southern Utah, some area that I enjoy going up there, the Grand Staircase Escalante area and so by proclamation he changed what was BLM land, just regular public domain land, with no special administrative things to it and changed it into a national monument.

Now, you might think, well what has that got to do with me as a surveyor, well that presidential proclamation using that one as an example just changed the status of that land it closed it to further mineral entry, in other words, people couldn't come in and stake new mining claims after that.

It changed the rules on what easements people could get across there, and if a power line could go through the middle of it and how that would be adjudicated, so still to this day we have presidential proclamations which can be used to even create some reservation boundaries or various issues with Indians.

Now we have what is more common at the root of Indian land is **treaties** that were signed and of course we've had treaties with Indians right from the beginning, and I'm not here to pass judgment, yeah or nay on the quality of the treaty, nor on the quality of our following through with the treaty but just understand that treaties were made right from the beginning with the Delawares and then moved on west and south and a lot of things happened.

Now a treaty technically understand is an agreement, a mutual understanding, between two sovereign nations, and because we essentially treat most Indian peoples as sovereign nations, then we have treaties and Congress has to confirm treaties, that is part of our system, so Congress can confirm treaties with foreign nations and that would include Indian tribes and some other groups, it creates a legal description in many cases in these treaties and the problem is usually that it is included in the treaty language but it is kind of vague, and of course there are a number of law suits and have been over the year as to what does Congress or the tribe mean by these words and just like any other legal description.

They do have a web address there that has all Indian treaties on it and if you ever want to look up the treaties, that could be quite interesting, and you can do a word search inside of it to find things

Treaty Boundaries

- Congress can confirm treaties with foreign nations, Indian Tribes, and others
- A sort of legal description is usually included in the treaty language
- Often vague and sources of legal issues
- Web address with all Indian treaties: http://digital.library.okstate.edu/kappler/Vol2/Toc.htm#Y
- Many Reservation Boundaries created by the Treaty

BASIC BOUNDARY LAW – PART 2

where they might talk about the boundaries and what the legal description actual is.

Many, many of the reservation boundaries that we now deal with to this day were created by a treaty. Now one of the things that we want to make sure we understand, reservation boundaries are created by the treaty and you can go to that web site and read those treaties, but also understand that there could have been some subsequent actions by various entities, especially Congress or the courts even for that matter, in adjusting those treaty boundaries and that sort of thing.

Some examples or a good example is the Hopi reservation is inside and is completely surrounded by the Navajo reservation and there was a joint use area for quite a while and that wasn't working well and so Congress took action and adjusted reservation boundaries and did some monetary compensation here and there and so it was a big deal.

But the point is that some of the original reservation boundaries by the treaties or whatever were adjusted and amended. So just be aware that that could be the case. But you know sometimes you and I are actually going to be working on an Indian reservation boundary.

Maybe we are working on private land next to it or we are working on Indian land just inside of it but the reservation boundaries are very important normally.

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Let's understand that Indian reservation boundaries are of extreme interest to us and as we have just seen, they can be created by treaty, or an Act of Congress, or by proclamations.

Now usually any reservation boundaries has been completely surveyed and monumented; there's a complete set of field notes and plats that are available through the GLO, BLM in an open state or through your state agencies in a closed state.

And this map here you actually have a digital version on your research CD but it shows all of the reservations and how they are divvied up amongst the regions of the BIA, just recognizing that we have these reservation boundaries.

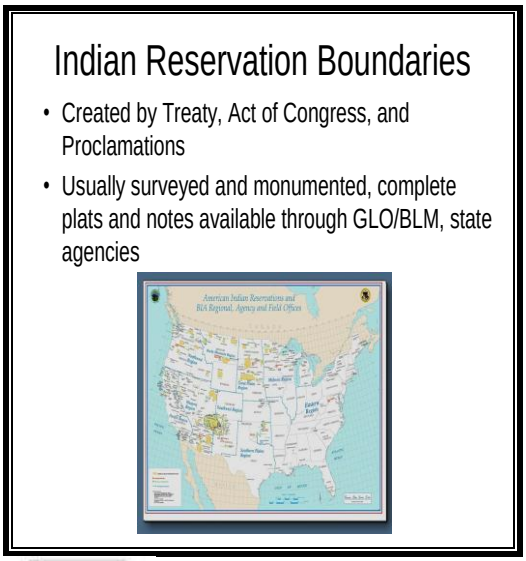


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Now let's take this example of an Indian reservation boundary plat, this is the exterior boundary of the Umatilla Indian reservation.

An 1888 survey, you know the treaty or however this one was created, may have occurred many years prior, but GLO was finally out there doing it and I realize you can't read a lot of details, I just wanted you to see that this covers several townships, and there is a complete set of field notes and if you look closely, it follows its own straight line in some areas in fact let me identify that, over in here its just running down a straight line other places its following a creek and a river and some other places it seems to be following some straight lines.

Quite a miss-mash or collection of different means of describing land is used on that reservation and so my point is that there are records available for that for us to go see where that reservation boundary is.

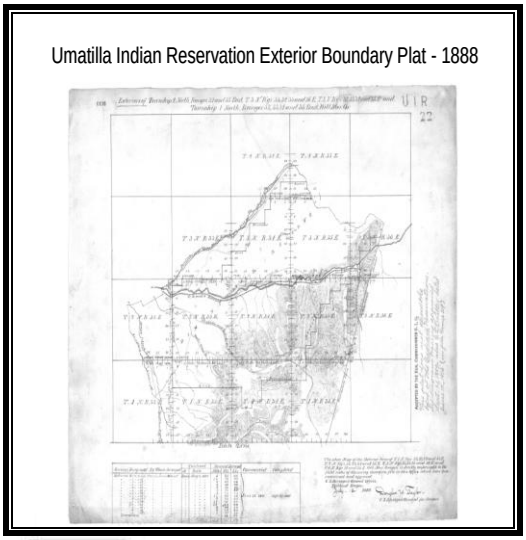
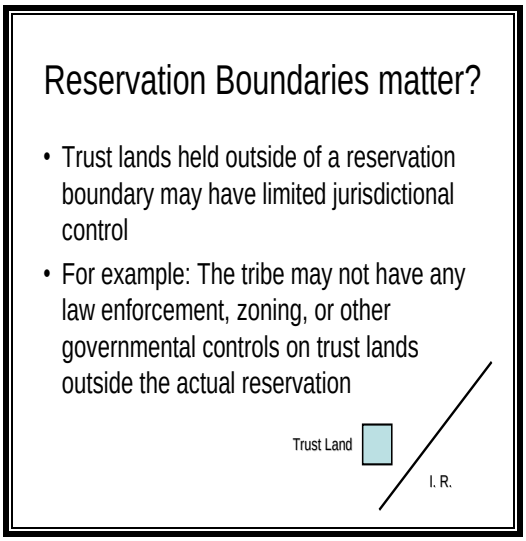


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

BASIC BOUNDARY LAW – PART 2

Now why the reservation boundary of interest to us? Let's ask that.



You know first of all most surveys you will probably not deal with the reservation boundary at all, but let's realize that there can be trust lands outside of a reservation, okay, and just my simple diagram down there in the lower right, here is the Indian reservation here and the boundary running here and here is a piece of trust land that an Indian owns outside of the reservation.

Now it is still held in trust and the federal government has a trust responsibly but as you can see also there, the tribe may not have law enforcement authority or zoning or other governmental controls on that and so we are interested when we go do a survey if its really close to one of these reservation boundaries, as to whether it is actually inside the reservation or not because that may affect the rights that the Indian has or for that matter, you could even have fee land owned by non-Indian inside the reservation and that would be of interest to us as well.

So reservation boundaries do matter I predict that reservation boundaries will continue to be a source of litigation, many tribes feel that they don't get or the survey didn't end up reflecting exactly what they thought the language was in the treaty or what their understanding was. And so those things will happen.

I know BLM and BIA have been recently doing a lot of talking about doing more extensive retracements of the actual reservation boundaries themselves and I'll just predict that that will open up a lot of situations that people were not aware of or the tribe will say, well no it doesn't go here I thought it went over there and there will be litigation or there might even be statute, Congress may solve some of those problems with amendments to treaties and that sort of things.

So reservation boundaries are of interest to us and we want to be thinking about that. Now let's shift gears for a minute here and talk about a few more principles, overlaps and gaps.

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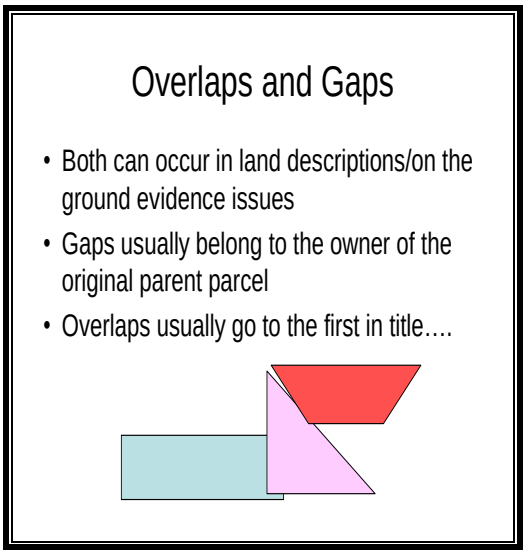
These are things that we surveyors deal with all the time. Both of these can occur in a land description or they can occur on the around or combinations thereof.

Many overlaps and gaps are not known to exist until we do a survey and we find ones that didn't exist or we have similarly we have situations where there appear to be overlaps or gaps in the written record but when we get on the ground, there are not. Gaps usually belong to the owner of the original parent parcel.



Let's just say that this entire slide belonged once again to A and then A sells to B this parcel here, and there's a B, and then sells to C the black triangle. And let's say that on paper there's an implication that these lines over here are in common, but we go out and do a survey and we actually find that in realty there is a gap in that parcel there between those two.

That what we are talking about Gaps by the way are also called gores they're also called hiatuses in surveying. Now those are the examples I am talking about. This happens a lot in the metes and bounds world. It was one of the big problems that I mentioned in the very first lecture. It was one of the problems with the metes and bounds. This can happen in the public land system as well but they are very rare.

Let's understand that there are a lot of places where we have federal land, including Indian trust land that has been acquired. The federal government or the tribe or somebody has acquired land that was private for a while, and when we reacquire it we are subject to what deeds and words that those parcels were created by while they were out in the private world, in the non-federal world or the non-trust world. We need to be aware of how that can affect us in doing our surveys because overlaps and gaps are a big major issue and need to be identified.

You know this might be a good time to just mention that it is not

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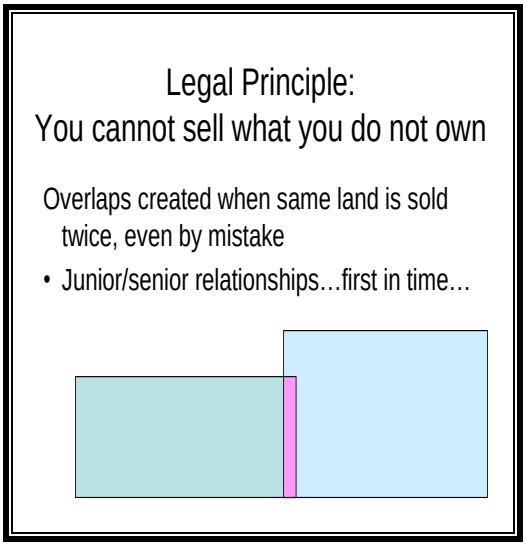
the surveyor's job to go out and fix this stuff, it is the surveyor's job to go out and identify this and let the legal, you know if it's a title issue, then the title people need to fix it. What we do is identify the problem. We don't hide it or we'll let's just pretend that those are touching no if the monuments aren't touching and if the thing isn't, if in fact it is not a contiguous line, we'll then that's the way it is.

As I mentioned gaps usually go to the owner of the original parcel. Again, looking at that slide for a moment, that little strip in there, even though both B and C think they own it, in fact still belongs to A.

Now there can be some exceptions to that, but that is essentially how that is. When you have an overlap, that usually goes to the first in time and first in title and so that is what we have down here, the black triangle was C so maybe C got their land first from A and then D got this parcel and if you notice down here, you can see that these are overlapped a little bit. Well C would own that land because that's how that works. And we are going to look at that right now.

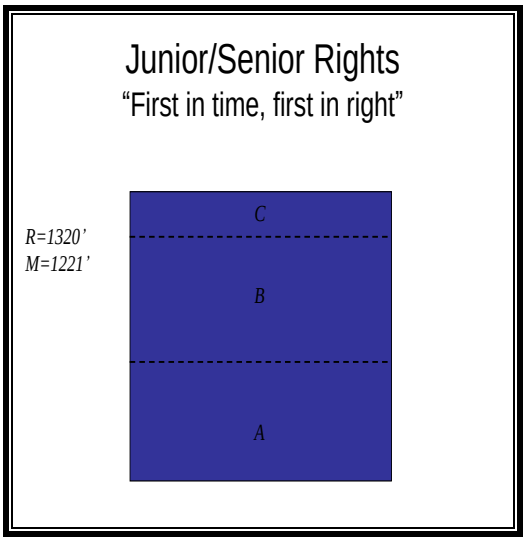
Let's look at the legal principle involved; **you cannot sell what you do not own**. You cannot sell what you do not own. Also mentioned in earlier one of the videos, we call it the Brooklyn Bridge principle.

Overlaps that were created when the same land was sold twice, usually by mistake, not somebody doing something dishonest usually.



BASIC BOUNDARY LAW – PART 2

A Junior/senior relationship is first in time, first in right. And we need to understand that I have an example I want to show you here.



I have simplified it greatly, but this was a case that I was involved in up near Flagstaff, one party owned this entire parcel, it was a 40 acre parcel, described by the public land system and of course a 40 acre parcel is supposed to be 1320 feet by 1320 feet, so when they described parcel A, the legal description said the southerly 500 feet and a couple of years later they sold B and then when they described parcel B, it was the northerly 500 feet of the southerly 1000 feet, so what that was saying was that they were assuming that they had conveyed and they had, they had conveyed 500 feet here and they conveyed 500 feet here based on the words that they had, and if you assume that this is a normal section, and everything is fine you will assume that you have 1320 feet to go, but in reality there was only 1221 feet there. So what happens?

There is an assumption that there was 1320 feet left here but there is actually 100 feet less of that it was a quit claim deed by the way before. When C got his deed from the original owner of the whole parcel, it said the north 320 feet but there wasn't 320 feet to go all there was was about 220 feet in here. So C decided that wasn't fair because he had a deed that said 320 feet and he was just an average landowner, doesn't understand boundary law, doesn't understand title and doesn't understand Junior/senior rights.

This concept of **first in time, first in right**. So what does C do, the first thing C does is hire a surveyor, well the surveyor goes out and doesn't do his records research, by the way, this is where you want to look at your adjoiners because this is a sequential conveyance, that is why there is Junior/senior rights, no simultaneous creation here. And going back to the slide, so the surveyor went out and he found a monument here and here. He found one at all four corners, so he just cites down the line and measures down 320 feet and it goes 100 feet past the fence that is already here, and he monuments these and tells C that is your line right there and it goes past that this fence.

You would think that just the presence of that fence would scare you that something was wrong, well, so owner C he goes in and he tears out the fence. Of course, this surveyor did a very poor job

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and did not research the adjoiners at all. So of course this goes to court. And B goes after C because C tore down his fence and is trespassing and the court ruled that you're right, C you will have to rebuild the fence and you will have to pay all these costs and all that.

Well C was a pretty stubborn individual and he decided that he had a new option, the fence is the line and I bought 320 feet and I paid for it so he decided that he was going to move up north of this I'll show you in the screen and he decides that he is going to go 100 feet north out into somebody else's land and this turns out to be a national forest and there is a highway over here and he builds a road in here to come into his property, it goes right through the middle of an archeological site, the Elden Pueblo is what it is called, so C is a very determined individual to get his 320 feet, doesn't understand Junior/senior rights, he never got 320 feet, why? Because there wasn't 320 feet to have. You can't sell what you don't own.

The original owners only owned another 221 feet. So C of course ended up in federal court with criminal accusations against him and he was found guilty and I believe it cost him over $100,000 for the damage put on that land and damage to the archeological site. And if you ever drive up there now, the forest service probably has the best fences ever built running down that line, the correct line, with about every 50 feet one of those yellow signs that says forest boundary, just to remind that guy to stay out.

Well that is an example of **Junior/Senior rights** and in almost all jurisdictions that is exactly how it works.

Now there is another legal principle that we want to talk about that is part of our basic boundary law and that is the call for another document.

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Let's understand a basic principle here, call for another document is a completely legal method to describe land, it avoids typos and omissions because you are citing some other document.

That document that you are going to cite must be of public record. Now what are we talking about here? Well, let's understand that there are times where you can convey a piece of land simply by saying I am going to sell you the exact legal description that I got in my deed and rather than me rewrite out all of the metes and bounds or whatever the legal description method is, I simply say, I am going to convey what was in deed recorded at book 1, page 10. That is exactly what I am going to do. You have seen this done in other ways when you are looking at deeds.

A call for another document may be where it says I am selling you such and such a parcel as shown on a plat and it cites this plat that is recorded so you have to go to another source to get that plat and see what is says.

We even see this in deed sometimes where the deed that is actually in the same deed but you have seen where it is more particularly described as follows and it has some description of the parcel and then it says as shown on Exhibit A attached hereto and made part hereof, that is a take off from this. It is calling for another document that is in that case attached to your deed.

And so you notice that you can call for another document other deeds. You've seen deeds that might say hence north 100 feet or 1000 feet or whatever to a point on the south line of the old railroad right of way at engineer's station 200+ 42.61.

How are you going to figure where that engineering station is on that railroad on that south line of that railroad right of way, that railroad has been abandoned for 60 years. You are going to have to go and find the old records of that railroad right of way and the engineering plans that have the stationing on it so you can use that.

Understand that when a document, when a deed that is transferring land or interest in land refers to another document, that that is a legal method of describing and its actually pretty wise in some ways.

Call for another document

- A completely legal method
- Avoids typos and omissions
- Document must be of public record
- No junior/senior relationships: "*as if the one document is printed upon the face of the second*".
- Ever any amendments or corrections?

BASIC BOUNDARY LAW – PART 2

Now notice our last bullet that we looked at was document must be of public record. You bet. It has got to be something that everybody can see. Understand that this isn't going to create any junior/senior relationships between the documents. That's what I'm talking about here.

I have a quote on the screen for you from a Supreme Court Judge, who addressing this very issue said, **"It is as if the one document is printed upon the face of the second."** That is interesting and important. Because what that means is, and I have heard over the years some surveyors and title people who seem to misunderstand, because they will say, my deed calls for this such but such and then it makes reference to some other document, my deed is senior to the other document.

No, this has been ruled on in the highest courts in the land and what it says is that it is if those documents are one. So if you have a deed that calls for the old railroad stationing, you need to have that information. You don't have a choice. If you have a document that calls for a plat somewhere, then that plat is brought in.

Now I want you to think about this for a minute, is this not how the entire Public Land Survey system works? It is, isn't it?

That is how the whole public land system works because it calls for every patent that the government ever issued calls for a legal description and then says, as shown on the plat. And then when you go and look at some of the newer plats, say down on the lower right corner of this plat, then this is in conformance with the field notes.

That is implied anyway whether it says it or not. So you have these other documents all being brought into your deed. Your deed may say southwest corner of section 10 but that is according to the plat which has additional information and the plat is going to refer to the notes, which have even more information. Tells you actually the marks on the ground right are in the notes.

So there is no junior/senior relationship between those documents. It says if one is printed on the face of the other. One of the things you need to be careful through when documents are calling for

BASIC BOUNDARY LAW – PART 2

another document though is to make sure that there haven't been some amendments or corrections to that document.

I have been burned on that personally when doing surveys where the deed I have calls for a certain document and then go and research it and I pull that document and don't realize that the document has been amended since then or a correction was made, there was some error on it and that sort of thing. So you've got to be careful with that.

So what we have been talking about here has been a couple of these important legal principles like, you can't sell what you don't own and also the concept of calling for another document and recognizing them. These are basic principles on how we operate and how we transfer land.

There is one more subject that I want to cover before we finish with this lecture and that is unwritten rights.

We hear a lot about them and there are quite a few different unwritten rights but I have some examples on the screen. Adverse possession is probably the most commonly know one; acquiescence which is a little bit different; agreed lines and prescriptive easements.

Now I have something very important to pass on to it you about these things, but I am not going to go into detail as to what each of these are. You can read those on your own in some of the textbooks that I have mentioned earlier in this series of lectures. I suppose we could have a question on a test that could be true or false, **Adverse possession** can not run against the federal government?

Now most surveyors and title folks would say that's true, can't run against the federal government. But I am here tell you that that's not totally true, as with everything in surveying and titles, there are always some exceptions. There are always some things we need to understand.

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Unwritten rights they are a valid means of acquiring title they are, but as I mentioned earlier, it is a marketable title? But the most important question you and I need to ask about unwritten rights is what is the status of the federal lands in the area that could include Indian trust land.

If these lands are acquired, in other words they went into private ownership and then came back into federal or trust, then they could have unwritten rights running against them if those rights ripened before the date of acquisition. Understand those are a function of state law.

Whereas public domain lands, federal lands, that have always been federal lands including trust lands, cannot have unwritten rights against them because those are the sovereign and the sovereign is not subject. That is what most of us hear about the sovereign is not subject to unwritten rights.

What about *unwritten rights*?

- Unwritten rights are a valid means of acquiring title, but…….
- Is it marketable title?
- What is the status of federal lands in the area?
- ***Acquired*** Federal lands (including trust lands) can have unwritten rights against them if they "ripened" before the date of acquisition

What about *unwritten rights*?

- ***Public Domain*** Federal lands (including trust lands) cannot have unwritten rights against them, as they have always been held by the sovereign, not subject to unwritten rights.

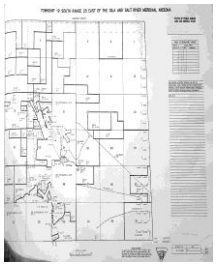


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

BASIC BOUNDARY LAW – PART 2

Acquired lands

But what we've got to remember is that if it is acquired land, that's different. Now let's just run through an example of that for a minute and think about how that could be.

Let's just say that the tribe uses some casino money, this is kind of a typical scenario of what's going on these days, they have some casino profit so they are buying private land and it comes into the tribe's ownership and then the tribe through another process wants to get that land converted from just the tribe owning it as another entity out there in the world and have it actually move back into trust and that is a process that goes through the BIA to bring it back to trust. So let's just say there was a 40 acre parcel that the tribe bought from a private rancher or individual, and let's also say that for the last 30 years someone's been driving across the corner of that property and accessing their property through there. This would be a prescriptive easement is the type of unwritten right I am talking about here.

That person doesn't have a deed that says I have the right to cross your land, that is one of the things we talked about in the bundle of sticks, where you may have conveyed or your predecessor in title may have conveyed an easement to another party to cross. But what I have here there is nothing written down but they have been driving back and forth there for 30 years, and the rancher that the tribe bought it from never stopped them. Now it comes into federal ownership, or trust ownership or even tribal ownership, but especially once it is in federal, it is acquired land, so we go out there and we see this easement running across there.

And now here is what happens, I have seen this with the Forest Service, they go out there and put a fence across there and tell them you keep off, you can't drive across here, this is federal land. Boy you don't want to go to court on one of those because you are going to lose. It may be federal land, but it was acquired federal land and it was subject too. Now you know depending on your state's statutes, but most statutes, adverse possession and even prescriptive easement, which generally follow the adverse possession statutes the longest that we have in the US is 20 years.

BASIC BOUNDARY LAW – PART 2

Some states are 5 years is all that had to be there. So, these people have been driving across there 30 years, they have an easement. It is unwritten but they have an easement. And you cannot stop them. What I am interested in is unwritten rights I am always looking for evidence of their possibility. I am not authorized to judge on them, but I look for them and I identify them in what I do. But understand, unwritten rights can run against federal land and even Indian land, if those unwritten rights were ripening and came to a full ripened position, in other words more than the statutory period of time and met all the other requirements in your state statutes for those sort of things. And it is there.

Here is the point, the rancher who sold the tribe that 40 acres had lost the right to control the people driving across that corner because he had not stopped them during the statutory period of time. So you see, he could not sell what he did not own. He couldn't sell to the tribe the right to close off that property completely and nobody could drive through there. He didn't have that right anymore. Those are the kinds of things that we want to pay attention to when we are talking about unwritten rights. Because in surveying federal lands, it is not a black and white situation, we have to know the status of that land and look at the timing and you can see some of the complications that might even come up with that.

Conclusion

So those are some of the basic principles of boundary law that we wanted to cover in this and I want to close by just checking our objectives and see if we have actually met them. We did identify the basic principles of boundary law including their sources and you saw that that basically was from Europe.

Our federal boundary laws are only public lands and most of our real boundary law comes from the states. And I have explained a few of those basic concepts of title and the transfer of title as we use it here in the United States. So, that is going to conclude this video lecture and we are going to move on with some more particulars about metes and bounds and then into the real nitty-gritty details of the public land survey system. So, I will see you later on in the lecture series.

Conclusion….objectives met?

- Identify the basic principles (including the *sources*) of boundary law which exist in the United States
- Explain the basic concepts of title (and transfer thereof) in the United States

BASIC BOUNDARY LAW – PART 2

Before moving on to the next topic, complete the "Identify the Location of a Parcel" problem which you can be access from the course description page.

DIAGRAM

Example Certificate

F-13524

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
ALASKA STATE OFFICE
222 WEST SEVENTH AVENUE, #13
ANCHORAGE, ALASKA 99513-7599

NATIVE ALLOTMENT

Melvin Charlie

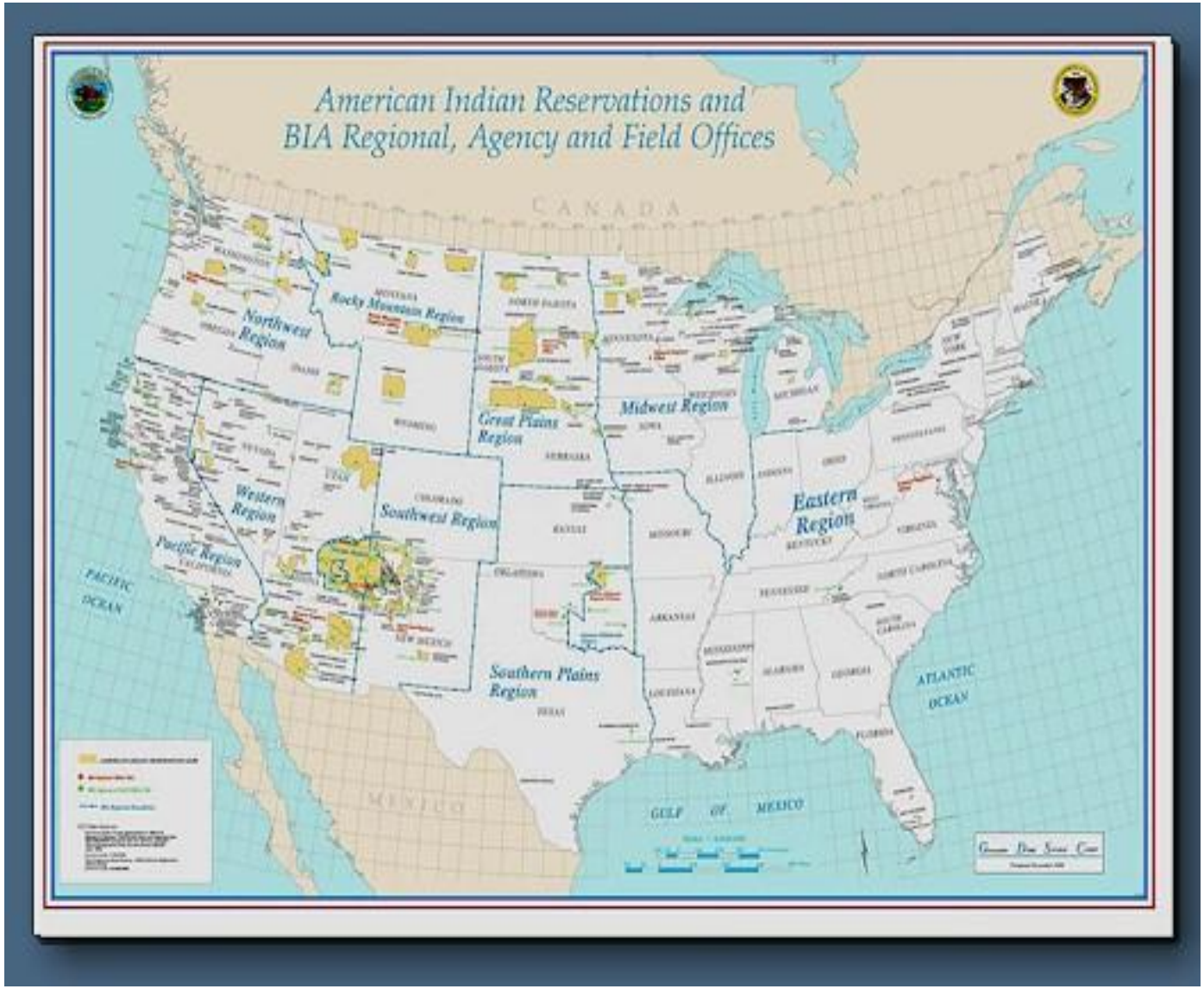
IT IS HEREBY CERTIFIED That, the application F-13524 filed pursuant to the Act of May 17, 1906, as amended, 43 U.S.C. 270-1 to 270-3 (1970), repealed with a savings provision by 43 U.S.C. 1617(a) (1988), has been approved pursuant to that Act for the following-described land:

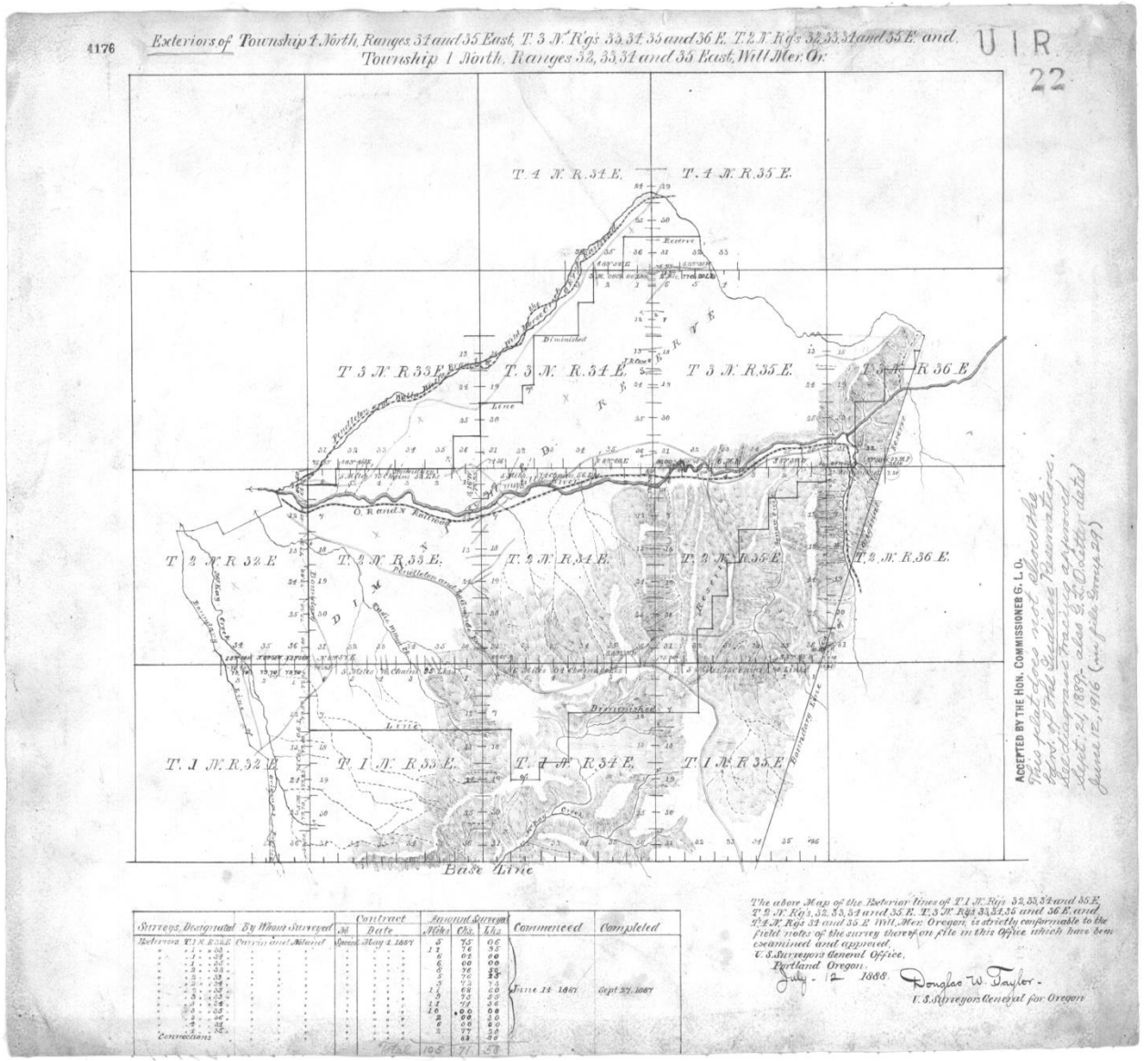
Lot 2, U.S. Survey No. 9998, Alaska.

Containing 159.98 acres, as shown on the plat of survey officially filed on May 19, 1993.

Therefore, let it be known that, pursuant to the Act of May 17, 1906, as amended, the land above-described shall be deemed the homestead of the allottee and his heirs in perpetuity, and shall be inalienable and nontaxable until otherwise provided by Congress or until the Secretary of the Interior or his delegate, pursuant to the provisions of the Act of May 17, 1906, as amended, approves a deed of conveyance vesting in the purchaser a complete title to the land.

Certificate No. 50-96-0123


American Indian Reservations and
BIA Regional, Agency and Field Offices
CANADA
Northwest Region
Rocky Mountain Region
Great Plains Region
Midwest Region
Western Region
Southwest Region
Pacific Region
Eastern Region
Southern Plains Region
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO


4176
Exteriors of Township 1 North, Ranges 31 and 35 East, T. 3 N. Rgs. 33, 34, 35 and 36 E. T. 2 N. Rgs. 32, 33, 34 and 35 E. and, Township 1 North, Ranges 32, 33, 34 and 35 East, Will. Mer. Or.
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22
T. 4 N. R. 34 E.
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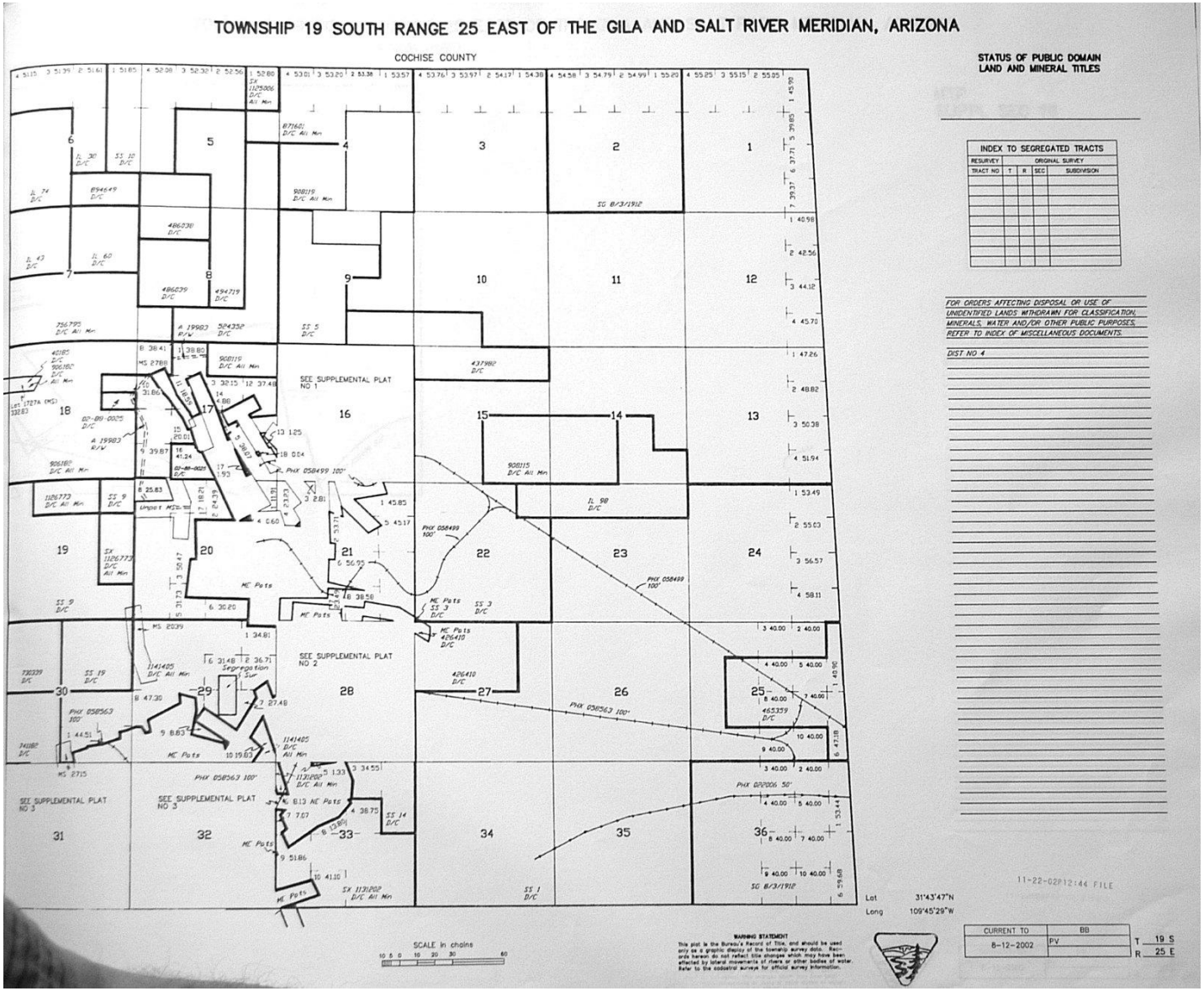
T. 1 N. R. 34 E.
T. 1 N. R. 35 E.
Base Line
ACCEPTED BY THE HON. COMMISSIONER G. L. O.
Surveys, Designated By Whom Surveyed
Contract
Amount Surveyed
Commenced
Completed
The above Map of the Exterior lines of T. 1 N. Rgs. 32, 33, 34 and 35 E. T. 2 N. Rg's. 32, 33, 34 and 35 E. T. 3 N. Rgs. 33, 34, 35 and 36 E. and T. 4 N. Rgs. 34 and 35 E. Will. Mer. Oregon, is strictly conformable to the field notes of the survey thereof on file in this Office which have been examined and approved.
U. S. Surveyors General Office,
Portland Oregon,
July 2 1868.
Douglas W. Taylor.
U. S. Surveyor General for Oregon


TOWNSHIP 19 SOUTH RANGE 25 EAST OF THE GILA AND SALT RIVER MERIDIAN, ARIZONA
COCHISE COUNTY
STATUS OF PUBLIC DOMAIN LAND AND MINERAL TITLES
INDEX TO SEGREGATED TRACTS
RESURVEY
ORIGINAL SURVEY
TRACT NO
T
R
SEC
SUBDIVISION
FOR ORDERS AFFECTING DISPOSAL OR USE OF UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION, MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES, REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.
DIST NO 4
SEE SUPPLEMENTAL PLAT NO 1
SEE SUPPLEMENTAL PLAT NO 2
SEE SUPPLEMENTAL PLAT NO 3
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Long 109°45'29"W
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Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

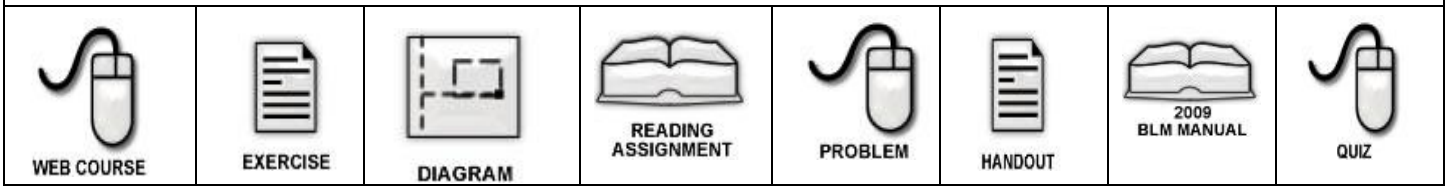
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Basics of Metes and Bounds (42 minutes)

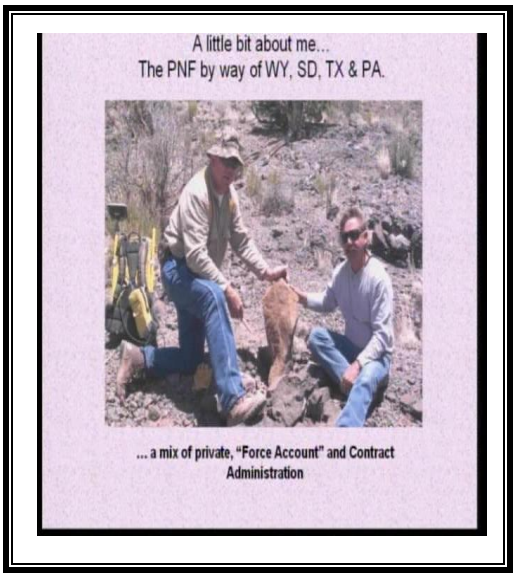
ICON LEGEND



BASICS OF METES AND BOUNDS

Introduction

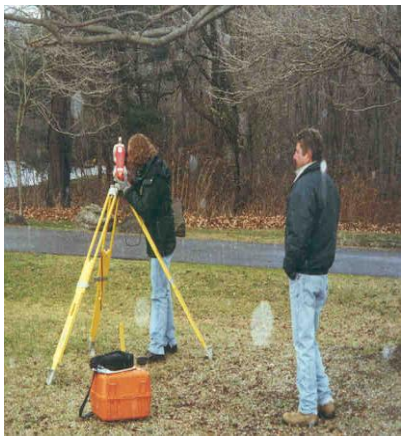
Hello and welcome to the CFedS module on metes and bounds retracements. My name is Bob Jackson, and I am currently the forest land surveyor on the Prescott National Forest.



However, prior to that I have spent about ten years with the Forest Service. My first duty station was in the Black Hills and then I moved down to be the forest land surveyor in Texas and also in Pennsylvania. Prior to that I worked for a small mom and pop engineering outfit in Wyoming, while I got my start.

So technically, overall I've had kind of an interesting mix between private industry, force account work (which is the Forest Service term for working in house) as well as contract preparation and administration.

Because of the fact that I moved around the country I worked started out in rectangular states and moved on to work in two different mete and bounds states, I have a rather checkered or prefer to think colorful career.



I am licensed in multiple states including metes and bounds states and due to that fact, I guess that is why I have been asked to be here. As I say, I started with the U S government in the Black Hills in 1988 and my first boss said, Bob you will be a wonderful government surveyor because you would really rather talk about work than do it. Which again I guess is why I am here.

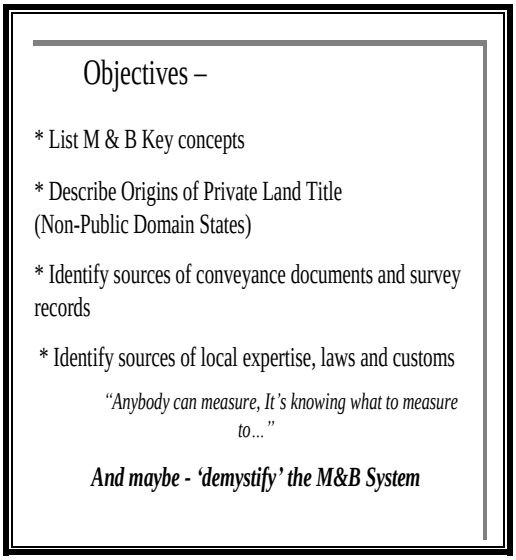
I like to show this slide because my first boss with the forest service liked to accuse me of preferring to talk about work more than actually doing it, but this is me actually out in the field, obviously doing a survey with Carrot Top.

BASICS OF METES AND BOUNDS

Objectives

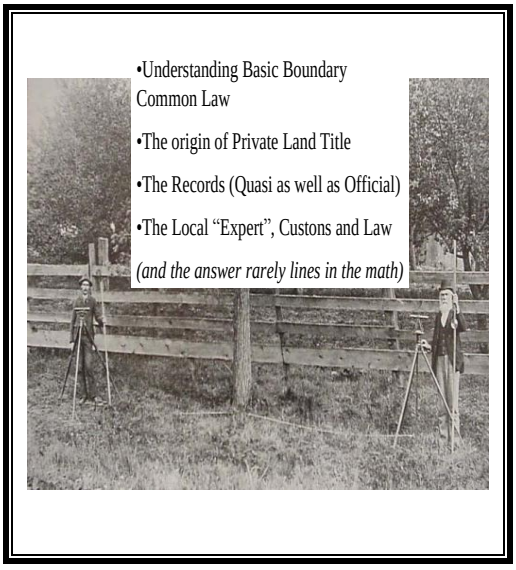
Today the objectives that we would like to cover in this overview of metes and bounds retracement is for you to be able to list the metes and bounds key principles, key concepts if you were, also to be able to describe the origins of private land title in the non-public domain states and identify sources of conveyance documents and survey records.

Also I would like you to be able to identify sources of the local expertise laws and customs because also as my first boss with the forest service liked to say, anybody can measure it's a matter of knowing what to measure to. So the key concepts in metes and bounds retracements, is understanding basic boundary common law.



I am only going to touch on this subject because it is covered in other modules, but obviously it is key to understanding retracement in a metes and bounds environment.

You also need to be able to find the origins of private land titles and I believe that this is touched on in other modules, however, we are going to look again specifically at some of the original colonies in metes and bounds states.



Records and Definitions

You need to be able to find the records; quasi as well as official records and you also need to find the local expert, the custom and the laws. And my own little side point here is that the answer rarely lies in the math.

BASICS OF METES AND BOUNDS

And of course like in any sort of retracement, it is a matter of following in the footsteps of the original surveyors. This picture here is a famous Forest Service slide that was taken in Kentucky at the time of Forest Service acquisition.

When I givie this presentation to a larger group, I always ask if anybody feels that they can identify the party chief in this survey group, in my mind it must be this gentlemen over here because he is the one that has the shoes.

…and, of course, **following in the footsteps**….

So moving right along, let's go ahead and look at the definition of metes and bounds. In the Brown's text, it calls it a collective description survey that metes and bounds or both.

When I first looked at Blacks' the Black's text says, the boundary of land with their terminal points and angles, a way of describing land by listing the compass directions and the distances of boundary. It is often used in connection with the government survey. Huh?

Metes and Bounds - Definitions

- **Brown's –** 'a collective description' (survey) that 'metes' or 'bounds' or both…
- **Black's –** "The boundary of land, with their terminal points and angles. A way of describing land by listing the compass directions and distances of boundaries. It is often used in connection with the Government Survey System." **(huh??)**

BASICS OF METES AND BOUNDS

I didn't understand so I looked a little bit and further and on the clue of a fellow surveyor that told me that mete was actually truly a word, I went onto Webster's and sure enough there it was, **mete**, to distribute by measure or apportion the synonym would be to allot, dispense, dole, parcel, a boundary usually in the phrase metes and bounds.

Metes and Bounds - Really

- **Websters –** "**Mete -** To distribute by measure; apportion –Syn. allot, dispense, dole, parcel… a boundary, usually in the phrase metes and bounds"

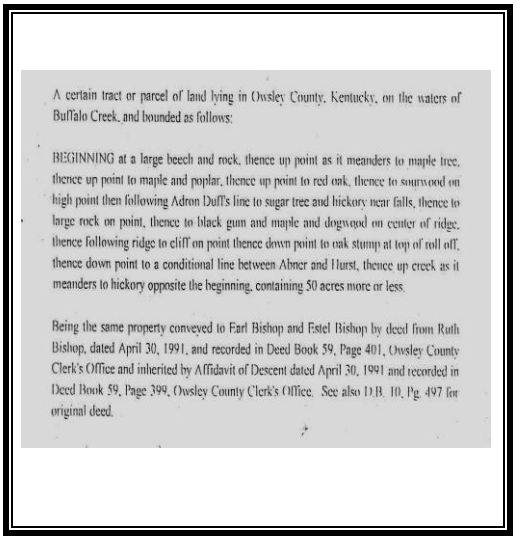
And finally, the newest edition of Blacks that I have, the 8th edition, it defines metes and bounds as the territorial limits of real property as measured by distances and angles from designated landmarks and in relation to adjoining parcels of properties.

… and finally Blacks, *8th. Edition*

- The territorial limits of real property as measured by distances and angles from designated land marks, **and** in relation to adjoining properties…
- also see "butts and bounds" **(huhh??)**

BASICS OF METES AND BOUNDS

Here is an interesting description that comes from a friend of mine. In Kentucky who is an appraiser and he shared this with me, let's take a look, beginning at a large beach and a rock then some point as it meanders to a maple tree and then to a high point then following Adrian Duff's line to a sugar tree and a hickory, so on so on and so forth.



A certain tract or parcel of land lying in Owsley County, Kentucky, on the waters of Buffalo Creek, and bounded as follows:

BEGINNING at a large beech and rock, thence up point as it meanders to maple tree, thence up point to maple and poplar, thence up point to red oak, thence to sourwood on high point then following Adron Duff's line to sugar tree and hickory near falls, thence to large rock on point, thence to black gum and maple and dogwood on center of ridge, thence following ridge to cliff on point thence down point to oak stump at top of roll off, thence down point to a conditional line between Abner and Hurst, thence up creek as it meanders to hickory opposite the beginning, containing 50 acres more or less.

Being the same property conveyed to Earl Bishop and Estel Bishop by deed from Ruth Bishop, dated April 30, 1991, and recorded in Deed Book 59, Page 401, Owsley County Clerk's Office and inherited by Affidavit of Descent dated April 30, 1991 and recorded in Deed Book 59, Page 399, Owsley County Clerk's Office. See also D.B. 10, Pg. 497 for original deed.

Is it a valid metes and bounds description, well it certain bounds, could you put it on the ground? I don't know I have never surveyed in Kentucky, but you will notice here that it was used as late as 1991 at least it bounds.

But getting more to the mete from Browns, he is defining and describing metes and bounds survey, he says a landowner is free to create any boundary desired as long as it does not infringe on the rights of an adjoiner or a senior right.

More from Brown's

- "A land owner is free to create any boundary desired , as long as it does not infringe on the rights of an adjoiner or senior right."
- "Unlike the GLO system, the metes and bounds method was created out of human need rather than law."
- "When people ultimately became agrarian, the first need was to define parcels of that would ultimately become the life sustaining element for survival…."

Differs from PLSS

Unlike the GLO system, the metes and bounds method was created out of human need rather than law.

And when people ultimately became agrarian, the first need was to define parcels that would ultimately become the life-sustaining element for their survival. And I would like to add to that other valuable commodities as well.

BASICS OF METES AND BOUNDS

On this slide here what we are looking at is a 1880's drilling rig from Pennsylvania. As you can see at the time they didn't have the rotary bit, it is actually a fulcrum that simply pounded it down.

Well anyway, I merely mention this because as society has moved on our needs to define parcels has also changed with our needs and extractions of minerals and other materials.

Drilling Rig – Allegheny National Forest

As a result of this need, the metes and bounds system is molded and dependent on common law.

Now **common law** in boundaries and boundary retracement has been touched on or covered in another module however, I think it is important to understand that in retracement the common laws developed over the years, the statute of fraud, the intention of parties, possession, unwritten, junior/senior rights, and of course the dignity of calls.

The surveyor needs to have a basic understanding of those principles.

"**As a result of this need, the metes and bounds system became molded in, and dependent on Common Law.**"

- Statute of Frauds, Intentions of Parties
- Possession, Unwritten -Junior/Senior rights
- Dignity of calls
  - Natural Monuments
  - Artificial Monuments
  - Adjoiners
  - B&D
  - Area

BASICS OF METES AND BOUNDS

Getting to where it all started in the Eastern states, the non-public domain states, Pennsylvania, the original grant to US citizen I guess you could say would be the original grant, King Charles to William Penn.

When I worked on the Allegheny National Forest, through a course of some of my research, I was able to find the first at least a written version, not the original, typewritten grant from King Charles II and we'll take just a quick look at this.

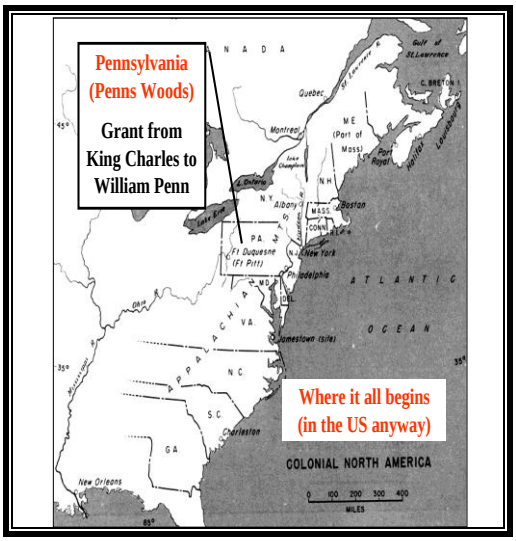
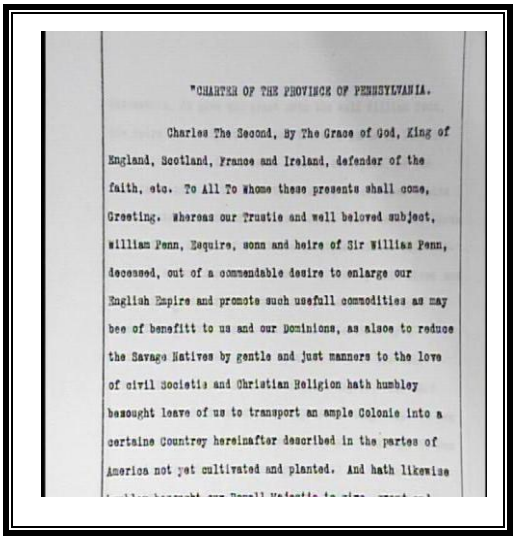


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

The Charter of the Province of Pennsylvania, Charles II, by the grace of God, King of England, Scotland, France and Ireland, defender of all faith, etc. to all to whom these presents shall come, greetings, whereas our trustee and well-beloved subject, William Penn, Esquire, son and heir of Sir William Penn, deceased, out of a commendable desire to enlarge our English empire, so on and so forth, first charter from the King then on to the heirs of Penn to the Commonwealth.

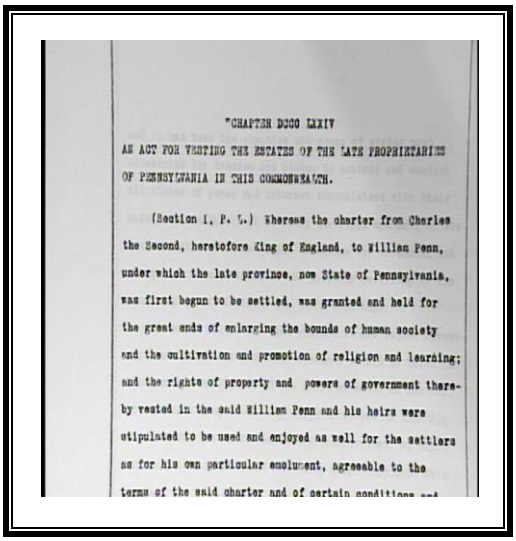


"CHARTER OF THE PROVINCE OF PENNSYLVANIA.

Charles The Second, By The Grace of God, King of England, Scotland, France and Ireland, defender of the faith, etc. To All To Whome these presents shall come, Greeting. Whereas our Trustie and well beloved subject, William Penn, Esquire, sonn and heire of Sir William Penn, deceased, out of a commendable desire to enlarge our English Empire and promote such usefull commodities as may bee of benefitt to us and our Dominions, as alsoe to reduce the Savage Natives by gentle and just manners to the love of civil Societie and Christian Religion hath humbley besought leave of us to transport an ample Colonie into a certaine Country hereinafter described in the parties of America not yet cultivated and planted. And hath likewise

BASICS OF METES AND BOUNDS

Whereas, the charter from Charles II theretofore the King of England, to William Penn under which the late province, and now the state of Pennsylvania was first begun and settled.

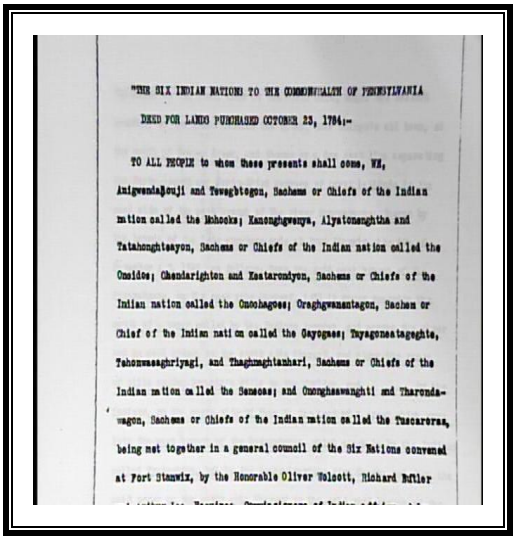


"CHAPTER DCCC LXXIV

AN ACT FOR VESTING THE ESTATES OF THE LATE PROPRIETARIES OF PENNSYLVANIA IN THIS COMMONWEALTH.

(Section 1, P. L.) Whereas the charter from Charles the Second, heretofore King of England, to William Penn, under which the late province, now State of Pennsylvania, was first begun to be settled, was granted and held for the great ends of enlarging the bounds of human society and the cultivation and promotion of religion and learning; and the rights of property and powers of government thereby vested in the said William Penn and his heirs were stipulated to be used and enjoyed as well for the settlers as for his own particular emolument, agreeable to the terms of the said charter and of certain conditions and

The Penn's continued on and signed a treaty with the six Indian nations to secure the rest of the **unceded** land. And I am not going to attempt to read this, but I think it is interesting to show these documents, not that the Forest Service in each of its cases of acquired land abstracted back to the original grant.



"THE SIX INDIAN NATIONS TO THE COMMONWEALTH OF PENNSYLVANIA

DEED FOR LANDS PURCHASED OCTOBER 23, 1784:-

TO ALL PEOPLE to whom these presents shall come, WE, Anigwendaẽouji and Tewaghtogon, Sachems or Chiefs of the Indian nation called the Mohocks; Kanonghgwaeye, Alyatonenghtha and Tatahonghtsayon, Sachems or Chiefs of the Indian nation called the Onnidas; Chenderighton and Kataromlyon, Sachems or Chiefs of the Indian nation called the Onondagoes; Oraghgwasantagon, Sachem or Chief of the Indian nation called the Cayugaes; Thyagonestageghte, Tehonwaeghriyagi, and Thaghnaghtanhari, Sachems or Chiefs of the Indian nation called the Senecas; and Ononghsawaghti and Tharondawagon, Sachems or Chiefs of the Indian nation called the Tuscaroras, being met together in a general council of the Six Nations convened at Fort Stanwix, by the Honorable Oliver Wolcott, Richard Butler

BASICS OF METES AND BOUNDS

Now that the Commonwealth or the state had secured all the unceded land that hadn't been granted by the sovereign, the original grants needed to go to the citizens and this would be similar to what you would see in the western states in a patent, but in Vermont they were called towns and town lots.

In Pennsylvania, the original grants were **warrants**. In Pennsylvania, the term gets used a little loosely to describe a title to the land, but actually the warrant in itself was similar to a sales contract or similar to the process of patenting a mineral claim.

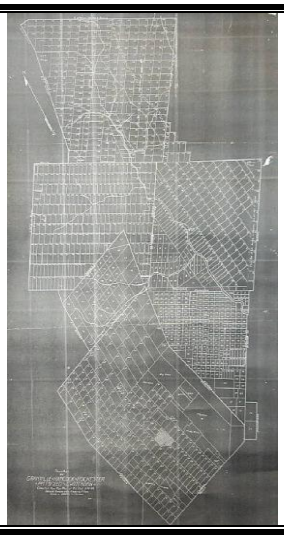
The warrant itself was really just the authority for the individual to get the lot or parcel surveyed, prior to getting a patent. But in Virginia, which I have never the occasion to work in Virginia, but the grants were similar to when West Virginia would be just the name on the grant would be how it would be identified.

And in Texas of course, there was the famous leagues labors. East Texas, where I worked, there were name surveys and then they also had an abstract number.

We have a sampling of the Vermont town lots, which we can see as a surveyor, is fairly orderly, but not exactly rectangular as western folks might assume to see it, but a certain order, probably not all that different from a subdivision plat that you might see now a day.

Original Grants to Citizens –
(a random sampling)

- **Vermont** - -Town and Town Lots
- **Pennsylvania** - - Warrant (warrant to survey – a land contract)
- **Virginia** - - Grants (named survey)
- **Texas** - - Leagues and Labors
  –Named Surveys and 'Abstracts'



Vermont Town Lots

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

BASICS OF METES AND BOUNDS

In Pennsylvania here is the warrants as discussed and again pretty rectangular, fairly uniformed.

The parcel that you see down to the south is along the river so again we have that agrarian human need factor coming in there as well as I guess I should explain that this picture comes from in Pennsylvania, what is called a connected draft that you can get from the state office that shows a very minimum survey data.

This is not a picture of the official survey, but you can see that there is some survey data on there, fairly orderly from surveyors' linear perspective.

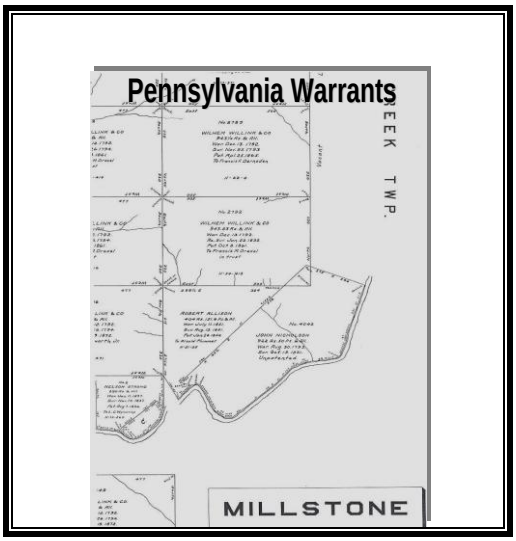


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

This is a picture of what happened to a warrant after the effects of metes and bounds traditional survey had happened.

One can assume that again this human need arose to create the patterns that you see now. This was actually a tract that was acquired by the Forest Service in Pennsylvania.

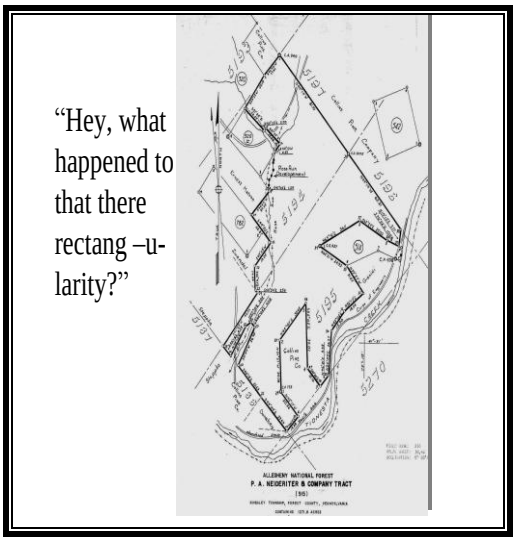


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

BASICS OF METES AND BOUNDS

But in reality it is not much different than what you see in the west with your homestead entry surveys. And again I am going to quote Brown, by saying when people ultimately began agrarian the first need was to define parcels that would ultimately become the life-sustaining element, survival.

If you are familiar homestead entry surveys, when you look down here in the center, these are irrigable lands; the whole purpose for the homestead entry survey was for folks to be able to patent their 160 acres of ground that could actually be used.

A depiction from a friend of mine sent this up to me from Virginia, where she works as a realty specialist and you can see the hodge-podge nature I guess you can say of the Virginia land grants.

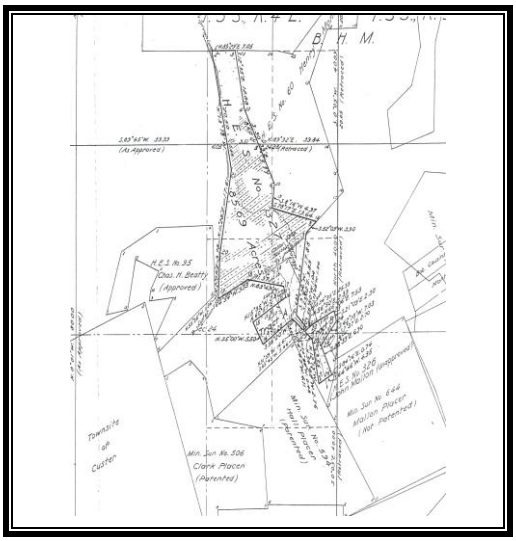


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

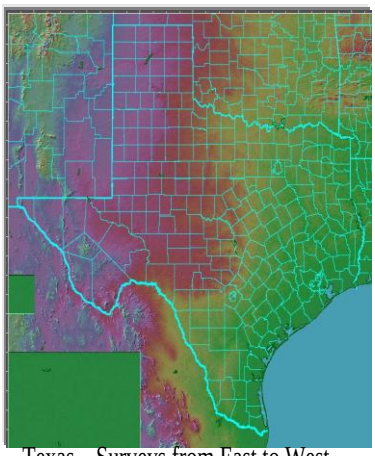
I am told that possibly the pattern that we are looking at here are the high ridges with timber being different from the irrigable land down there on the bottom, but again the boundaries are derived from human need not a rectangular pattern.

FS Working Drawing of Virginia Grants

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

BASICS OF METES AND BOUNDS

Texas, an interesting situation in Texas, I love this slide; this demonstrates how the surveying from east to west went from the colonial system out to a quasi-rectangular system in the west.



Texas – Surveys from East to West

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

This is from the Texas government land office slide that shows the original grants in one of the particular counties.

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

BASICS OF METES AND BOUNDS

In looking at this a little closer, here is a working drawing that the Forest Service in Texas would have acquired from the Texas government land office and you can see quite a bit of survey data in there from a surveyor's prospective, even if you had not worked in it, there is probably enough information there to get you started as well as an interesting situation here where you have a true gap between the patented I'm going to guess lands.

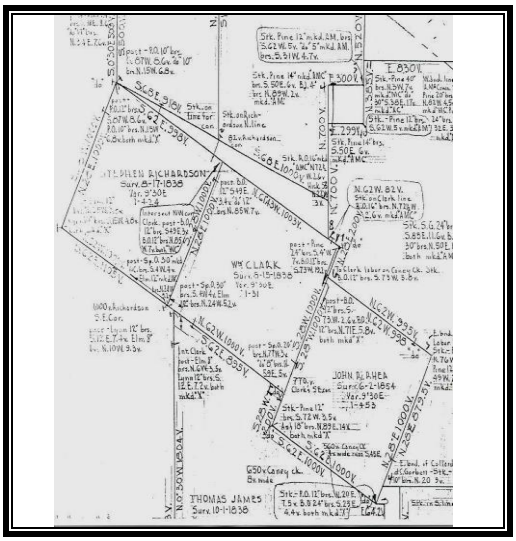


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Also in Texas, there was a ton of **railroad grants**, a lot of railroad grants were sold in a lot in block configuration as you can see on this slide, Block 2, Block D2 of the Gulf Coast and San Francisco railroad grant. Fairly orderly but unlike, not a true rectangular system.

When I was working in East Texas we didn't have a configuration of lot and block like this, they were irregular parcels like you saw in the previous slide.

When I took the test in Texas, there was a proportion question in the analytical part on how to replace one of these, and having no experience with it, I went and asked some of my fellow surveyors in East Texas and they pretty much clued me in that because the land office had changed guidance so many times that there had never been developed a specific pattern, so you needed to go back to the time, look at the instructions that was given by the general surveyor, and at that time I learned that as I was doing the research on this, I found out that Texas at one point in time had, after statehood, in 1845 had asked the federal government if they would survey the vacant lands under the GLO system and they were told

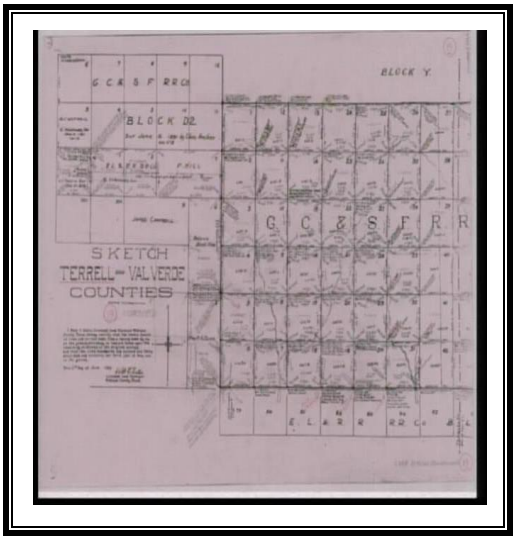


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

BASICS OF METES AND BOUNDS

at that point in time that no the GLO had enough business on their own without doing the Texas vacant land and that is how you ended up in west Texas, to my understanding, with a different pattern of how each lot and block was produced.

I think this is kind of interesting and it also came from the Texas GLO and this would show a lot and block survey for patent and if you will notice here our patentee's name here is David Crockett, and I have shown this slide to various people and this has been a huge source of contention whether that might be the Davie Crockett.

I was told that Davie was only called Davie by his friends and that David was his official name that he would have on documents. No, I'm just making that up. Moving on, again we are talking about original grants from the sovereign in this case, from the King of England to the Holland Land Company, which was sold to the Holland Land Company in one big block.

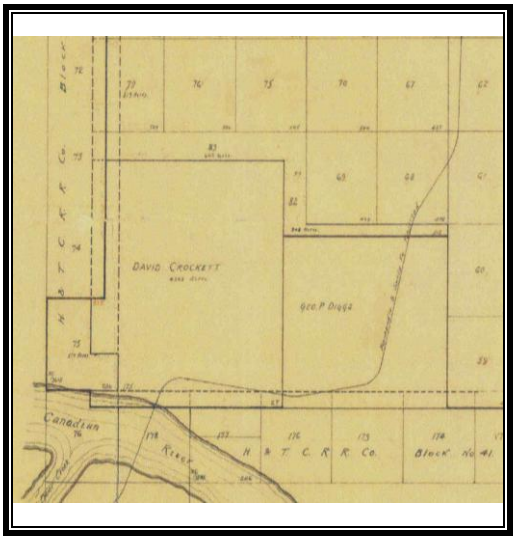
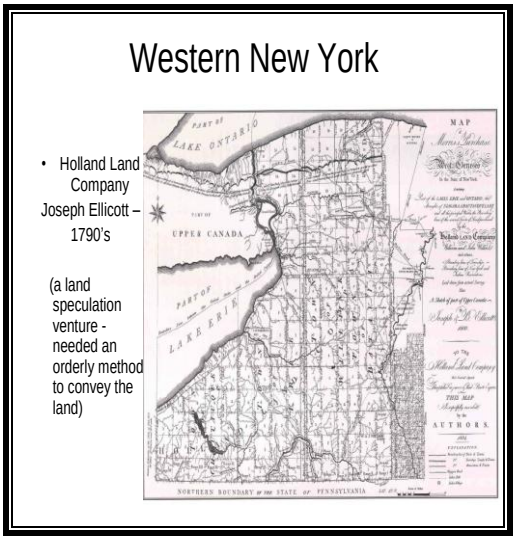


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

However, the Holland Land Company was merely a land speculation venture and just like the United States government and western expansion, they needed an orderly method to convey and actually sometimes rent the land.



BASICS OF METES AND BOUNDS

Unique measurements

This is a county road map actually of Mansfield township where I grew up. If you will notice over here, not only is it named the Mansfield township but it also has a range number and we wouldn't be able to see it, because it is cut off here, but it has township number as well as the name, and I, myself grew up right here in section 47 and my father owned all the acreage west of the county road and south of Eddie Road and that was kind of a conforming legal description.

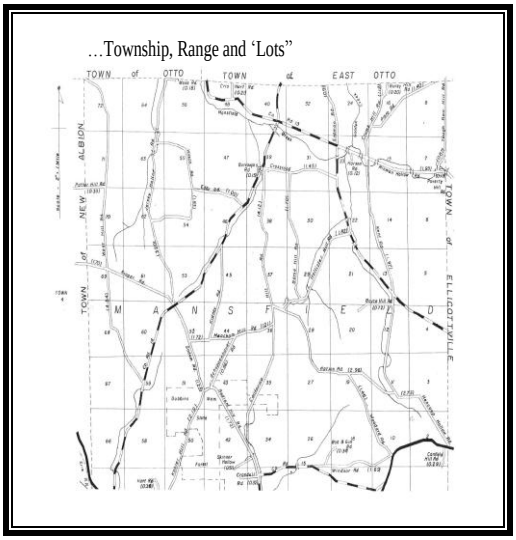
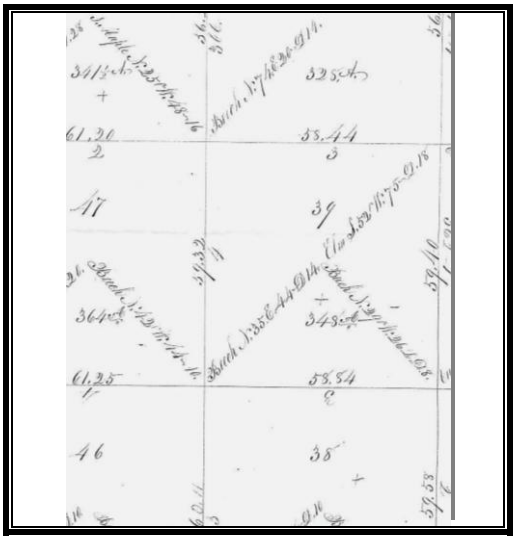


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

This is a Holland Land Company survey plat that came from the Calaveras county courthouse, and as you can see a considerable amount of survey data and some of these 300 year old films can actually still be found.



BASICS OF METES AND BOUNDS

Following in the footsteps, one of the unique things about working back east is the unique units of measure.

Probably most of us have heard of purchase poles and rods being 16-1/2 feet. One of the ones that I find interesting and actually saw it in the description from New England the other day is the rood being a quarter acre, some may have had experience with the French, **arpent**, course the **vara** in Texas and I believe some in New Mexico and the chain or was it a rope.

Following in the footsteps…

Unique units of measure

- Perch – 16 1/2 feet
- Pole – 16 1/2 feet
- Rod - 16 1/2 feet
- Rood – ¼ acre
- Arpent – 191.8' (area = .85 acres when squared)
- Vara – 33 1/3" (modern)
- "Chains"…

I remember reading some time back in one of the professional trade magazines, a gentleman was telling the story about how he was trying to re-trace some very rural properties in up state New York and he was having a terrible time trying to find any sort of original evidence trying to even make the occupation lines meet.

He had the occasion to find one of the locals that had worked with the original surveyor and he just happened to ask the guy what kind of chain he was using and how long it was and the old timer looked at him funny and said well everybody knows it was 50 feet but we couldn't really afford a chain so we just took a big old rope and tied off two knots at 50 feet and apparently after finding out this information, the surveyor went out in the field and approximated what a 50 foot rope at the time might have for swag in it and sure enough, he was able to get on the guy and start recovering some original evidence.

…Or was it a rope?

(Any darn fool knows it 50'!)

- Dutch or English? (meters or feet)
- Engineers or Surveyors? (50, 100 or 66 feet)
- Philadelphia or Günter's? (80 or 100 links/chain)
- and even were the links 1 or ½ feet
- or 1/100th of the chain?

So if you ever find yourself in colonial states or for that matter any part of the world where there might have been a unique circumstance of original surveys, you need to know what kind of equipment they used, was it a Dutch or English tape, an engineer's or surveyor's chain which could be anywhere from 50 to166 feet long, the Philadelphia **Gunter's chain**, and even sometimes the links were feet or half feet and I have also heard of the 100th chain.

BASICS OF METES AND BOUNDS

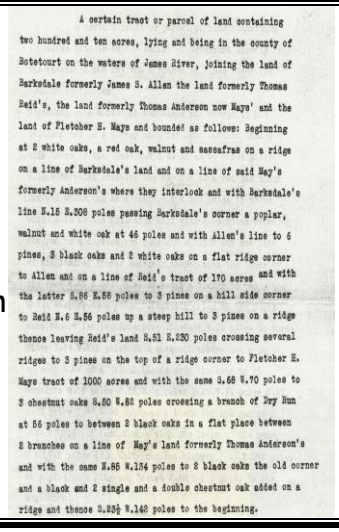
Classic metes and bounds

I have been talking for quite some time about metes and bounds. Let's take a little break and look at a classic metes and bounds description.

This document can be found in your resource CD and what I would like you to do is read through it and without paying a great deal of attention to scale or orientation for that matter. Read through. Sketch it out.

Pay particular attention to things such adjoiners and topo calls and we'll come back in a minute and see what you have come up with.

Exercise – **The Virginia Land Description**

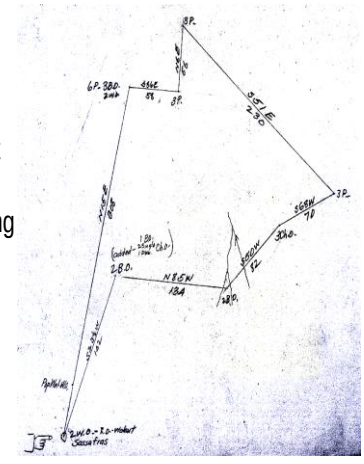


A certain tract or parcel of land containing two hundred and ten acres, lying and being in the county of Botetourt on the waters of James River, joining the land of Barksdale formerly James S. Allen the land formerly Thomas Reid's, the land formerly Thomas Anderson now Mays' and the land of Fletcher H. Mays and bounded as follows: Beginning at 2 white oaks, a red oak, walnut and sassafras on a ridge on a line of Barksdale's land and on a line of said May's formerly Anderson's where they interlock and with Barksdale's line N.15 E.306 poles passing Barksdale's corner a poplar, walnut and white oak at 46 poles and with Allen's line to 6 pines, 3 black oaks and 2 white oaks on a flat ridge corner to Allen and on a line of Reid's tract of 170 acres and with the latter S.86 E.58 poles to 3 pines on a hill side corner to Reid N.6 E.56 poles up a steep hill to 3 pines on a ridge thence leaving Reid's land S.51 E.230 poles crossing several ridges to 3 pines on the top of a ridge corner to Fletcher H. Mays tract of 1000 acres and with the same S.68 W.70 poles to 3 chestnut oaks S.50 W.82 poles crossing a branch of Dry Run at 56 poles to between 2 black oaks in a flat place between 2 branches on a line of May's land formerly Thomas Anderson's and with the same N.86 W.134 poles to 2 black oaks the old corner and a black and 2 single and a double chestnut oak added on a ridge and thence S.82½ W.142 poles to the beginning.

HANDOUT **A full version can be found in the Handout section at the end of this study guide.**

All right, well does it look anything like this, and I guess more particularly even without the benefit of having worked in that particular area, do you think that you could put it on the ground?

Does it look anything like this?



BASICS OF METES AND BOUNDS

All right, now we understand hopefully how the original grants got from the sovereign to the private individual but of course as time passes along the private individuals further divide up those parcels among themselves and this is most typically what you will be re-tracing in metes and bounds so we need to find the records and who has the records.

Typically the original grants are still with the state or commonwealth, perhaps a historical society. The average run of the mill, grantee/grantor conveyance is going to be found with the county or in the case of some New England states the town clerk and in addition a lot of the local surveyors are going to be the source of unrecorded survey documents.

Unfortunately though, some of those we have to question the authority and the purpose on those. And then there was the lost and forgotten.

Following in the Footsteps…

Who's got the records?

- Original Grants are usually still with the State (or Commonwealth)
- Grantee/Grantor- County (or Town) Clerk
- Local surveyors

  -Was it ever recorded?

  -Authority and purpose?
- The Lost and Forgotten

I am going to take a second to show you an excerpt from a text in Texas. One time land records were extremely important to the public at large and it seems a little unfortunate that we have lost that in our society but in 1839 Sam Houston had proposed to take the Texas land records away from the city of Austin where they had been back to his home turf in Houston, Texas and a gentleman by the name of John Welch, wrote Sam with his concerns regarding that prospect.

"Dear Old Sam, we did hear that you was going to move the land record papers and that you swore you would, and then when you would come to Austin and found out the boys would not let you do it, you said you would never was going to move it. Now Sam you told a damn lie for you did promise the people of Houston that you would move it and I heard a man say that you told Hockley not to bring all his servants cause you would go back soon, but the truth is that you are feared you damn old drunk, we don't thank you because we would have shot you with every damn Waggoner we could get started with the papers. You can't do it and we asked you no odds and so on. And so on and so forth you shall hear more from me when I am ready. John Welch."

the local insight: Sprye on Texas Land Records…

The General Lind Office is the only State Office, which has continuously been Situated in the City of Austin since its location here in 1839. Though there are probably other historical reasons why it has never been moved from Austin, the following letter to Sam Houston, as found in the Archives, is at least one good reason for the land records remaining in the city: "Sir Old Sam: We did hear that you was goin to move the land papers and that you swore you would do it and then when you come to Austin and found out the boys would not let you do it you said you never was goin to move it. Now Sam you told a dam lie for you did promise the people in Houston that you would move it and I heard a man say that you told Hockley not to bring all his servants because you would go bak soon. But the truth is that you are afeard you Damn old drunk We don't thank you because we would shot you and ever dam waggoner you could get started with the papers. You can't do it and we ax you no odds. Travis and Bastrop Fayette Gonzales can bring 1000 men out and Ned Burleson and Lewis P. Cook have promised that you shant budge with the papers. I heard them myself and you know Burleson and Cook can make you squat you dam blackguard drunk. Now old fellow if you want to try Ned Burleson's spunk just try to move these papers and old Ned will serve you just as he did your brother when he took the hat whot you give it to your Daddy Bowler. You shall hear more from me when I am ready. John Welsh."

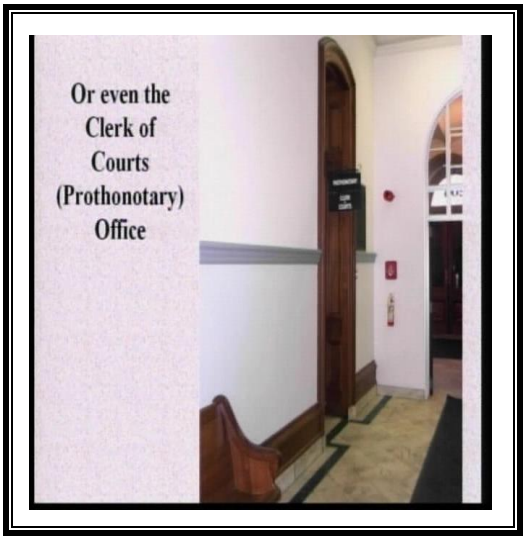
BASICS OF METES AND BOUNDS

Records Research

So the original grant as mentioned can be found in the state archives. Here is a document that is published by the Pennsylvania state archives that gives you specific instructions on what you need to do as far as the original patentee's name and how to do your research. And of course, the **grantee/grantor** documents are found in the county or town courthouse.

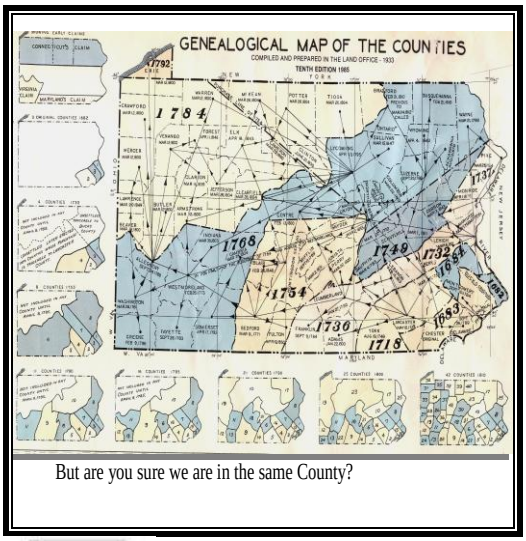
I think that every surveyor spends a fair amount of time in the courthouse and for me it can be part of the fun looking back at these old documents although some of the original handwriting can be a challenge, but not unlike some of the original GLO notes that one might have to find.

But beyond the courthouse and the recorder's office, the deeds office, you sometimes have to look even further beyond such as the Clerk of Courts offices. How many documents land transactions have only happened through the course of inheritance that doesn't get a deed recorded where you normally look.



BASICS OF METES AND BOUNDS

So a word to the wise that there are many places to look. But are you sure you are even in the same county or state? This map shows the genealogical progression of the counties in Pennsylvania.



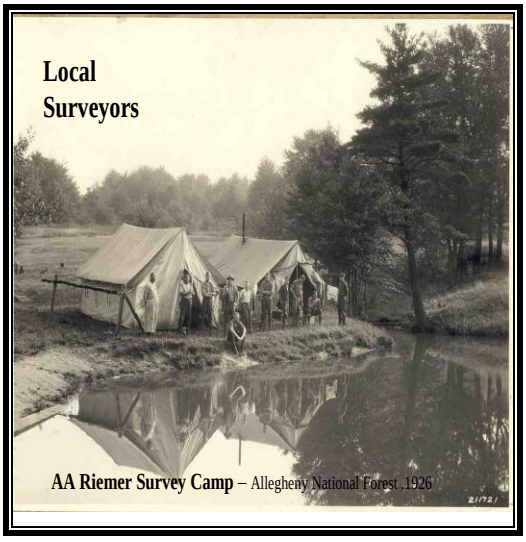
But are you sure we are in the same County?

You can see starting from the 1683 over here where about I believe is the oldest date on this over to where I worked in western Pennsylvania which was finally settled by the treaty with the six nations in 1784 but the county progression particularly I worked in Warren County, was at one point in time a part of Van Ango county and I never had experience with it myself, but I could see probably Virginia , West Virginia as well as the Carolinas, and Kentucky where at one point in time the sovereign claimed to own from the east coast to the Pacific coast.

There could certainly be some circumstances where you may not even be looking in the same state for some of those original grants. The local surveyors and quasi-public records.


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

I will take just a moment and tell you what this picture is.



AA Riemer Survey Camp – Allegheny National Forest ,1926

This is the AA Reamer survey camp taken on the Allegheny National Forest in 1926. What these surveyors were doing, prior to acquisition, they surveyed each parcel that the Allegheny National Forest purchased to go under the National Forest Land System.

I think this picture is interesting because most survey camps you'll see that the members of the crew would all have their equipment out and very proud and showing that off. In this case and I found the original photograph myself, and on the back of it says the AA Reamer Survey Camp, 1926, so I know that it is surveyors even though they don't have survey equipment out.

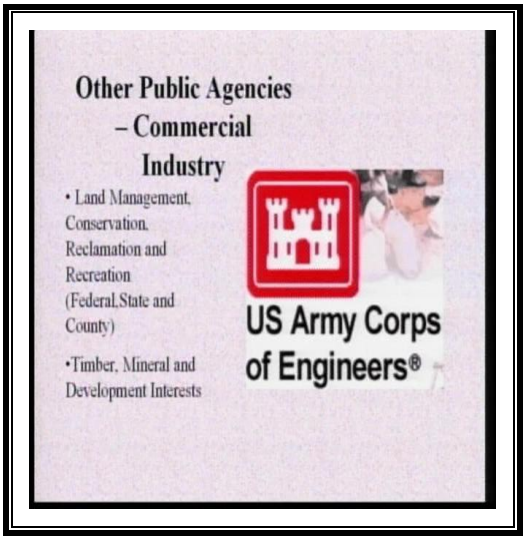
The interesting thing is that if you look at the one gentlemen there, actually several gentlemen have baseball bats in their hands not survey equipment we showed this to our forest archaeologist and asked him if he knew where this piece was he wasn't exactly sure, but he got us in contact with some local people turns out that this picture where Mr. Reamer and his camp were it was located on the

BASICS OF METES AND BOUNDS

Methodist Church Camp just outside of Marionville, Pennsylvania and once the archaeologist found out that he started putting two and two together, turns out that the town of Marionville had outlawed baseball playing on Sunday, so the locals liked to go out to the Methodist church camp and play baseball out there so we suspect that this was taken on a certain Sunday in 1926 and Mr. Reamer and his boys were going to get a little pick up game of baseball going with the locals.

I like to think that this is Mr. Reamer here, although I can't prove it. But he looks like the most reflective one of the bunch.

So other public agencies, a good source of quasi-official public documents. Those can range from land management organizations such as the Forest Service, conservation groups, and reclamation and recreation agencies, federal, state and county.

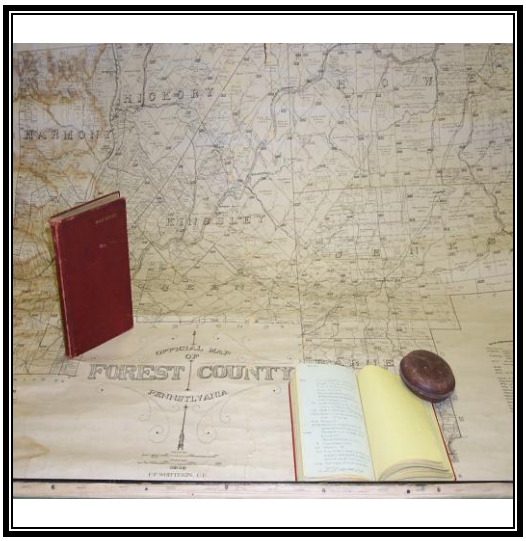


I have a logo here of the Corps of Engineers which you may not generally think of in terms of property boundaries, but both in Texas and Pennsylvania I had circumstances where the large bodies of water there was land takings and often developed to a certain elevation for taking of flood lands and the army corp of engineers not only monumented it but retraced private property lines and often times set corners and their records were invaluable in many cases.

And also private timber and mineral corporations, I can think of several cases in Texas where large timbering firms had their very own survey offices. And the same in Pennsylvania where large oil ventures would have their own personal records.

BASICS OF METES AND BOUNDS

So there is always a place to look beyond where you might initially think. In looking at some of the documents and records that I had in Pennsylvania, forest county map and not a Forest Service field book here but actually a copy of a county surveyor's field notes that were entrusted to the Forest Service.



The lands on the Allegheny National Forest as a matter of fact virtually all the lands in the national forest system lands back east were acquired lands were acquired after the sovereign had sold all of the vacant land off into private interests.

I think one of the interesting things and hugely valuable things about working back there was the records that the Forest Service had.

They had actually abstract back to the original **patent** from the commonwealth each parcel of land they bought before they purchased it and as we saw before then surveyors like Mr. Reamer came in and actually found it and monumented it on the ground it was a huge asset it made my experience working in a classic metes and bounds state a lot easier.

A lot of my time was spent sharing those records that we had with surveyors in the community and they said, you know once you get a mile or two away from the Forest Service boundary, because that up front work hadn't been done, their jobs weren't nearly as easy.

BASICS OF METES AND BOUNDS

This is just a picture of one of the **abstracts** on one tract of land that would have been acquired by the forest service.

Typical records that we could find here on the forest would include these original survey notes and if we look down here something pretty valuable, you'll see 383 chains, he was obviously working across the warrant, found the original hemlock down counted and boxed in 1899 by D. F. Willock, who I happen to know was the county surveyor.

Boy when you have evidence like that in your hand and that is not all that common in the eastern metes and bounds state, but it is sure difficult to disprove you in a court of law that the original corner was there and has been perpetuated.

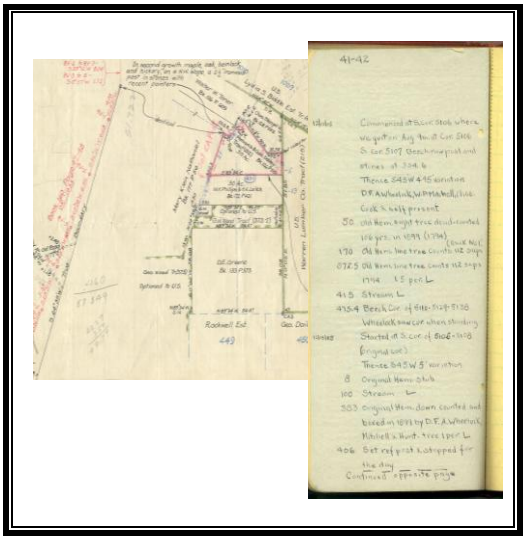


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

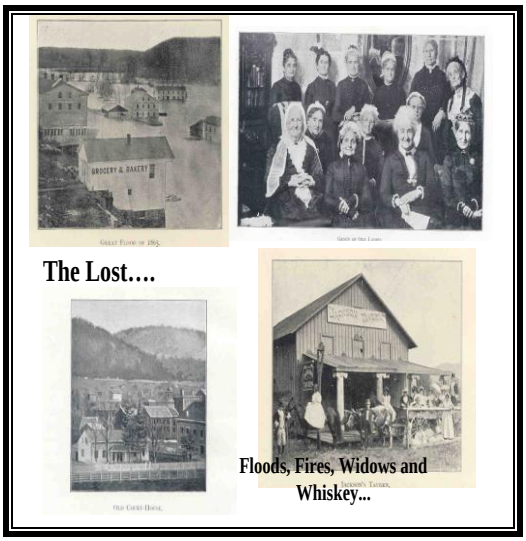
BASICS OF METES AND BOUNDS

And finally when it comes to records research, I guess we just have to acknowledge the fact that there's certainly a wealth of documents that have been lost.

Floods, fires down there in the left hand corner was the original courthouse in Warren County long gone -whiskey.

Let's face it some folks when the job was done they collected their money. And that was all the documentation they needed to do.

And of course widows, how many of us have heard the horror stories about the widow that inherits her husband and his father's survey records in the same county for the last 20 years and if we're lucky we find them at a yard sale, if we're not lucky, they end up going in the dumpster.



And there's also the forgotten. This is a map that I came across in one of our tract folders on the Allegheny National Forest.

To this day because these configurations are shown here were never sold in that manner that I know of. I'm not sure what the authority; what the purpose was.

If there's much information on there that's valuable but I am sure that like any other good surveyor, it would be something that I would want to have and take out in the field with me.

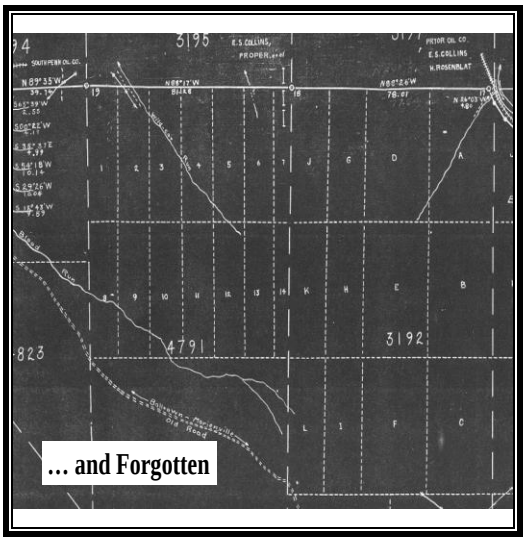
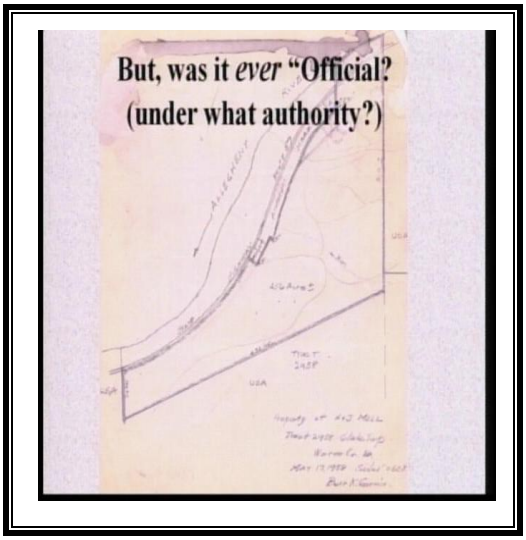


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

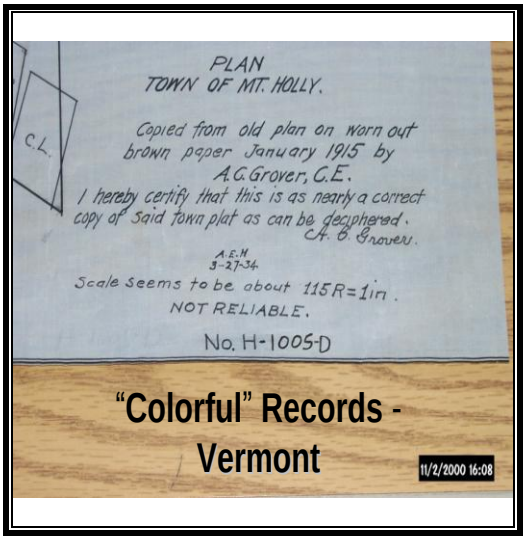
BASICS OF METES AND BOUNDS

But of course with the forgotten, the undocumented documents if you will, you have to wonder was it ever official, what authority would that surveyor have had in 1870 to have done that survey, but of course there was no licenser at that point in time.

However, were they a trained person, were they doing it for Uncle Buster, or whatever. Just all things that need to be considered when you are doing your document research.



So a slide I enjoy, shared with me by my good friend and forest land surveyor in the Green Mountain National Forest in Vermont, Nancy Wynoki. She showed this to me and I think that this is priceless. Copied from an old plan on old worn out brown paper January 15th by A.C. Grover, Civil Engineer, I hereby certify that this is as nearly a correct copy of said town plat as can be deciphered and the scale seems to be about 115 rods to the inch, however, that's not.



BASICS OF METES AND BOUNDS

Speaking of Vermont, here is another thing that Nancy shared with me. This would be a schematic if you will of a typical abstract that would be performed in Vermont starting out from the original patent down to the present day owners.

This slide was developed from this abstract on 24 by 36 sheet, hung on the wall just to give you a scale of how much research is involved with doing one of these and the moral to the story is again some documentation that was given to me from Nancy Wynoki.

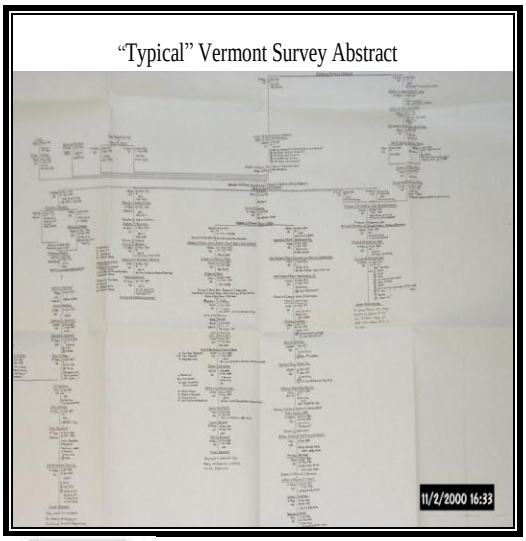
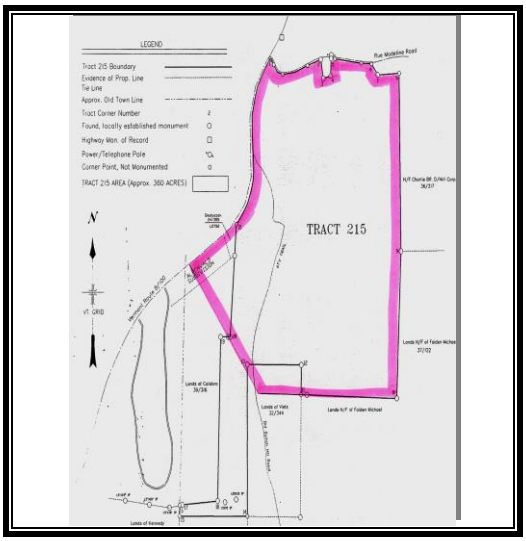


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

What you see here in purple was what was to be proposed to be acquired by the National Forest. After Nancy and her research staff did one of those abstracts, they found out that the proponent actually owned all of this land.



BASICS OF METES AND BOUNDS

But when the footsteps are gone, who's got the answers? And this of course meaning if you have situations where the monument itself is just not going to pop out at you, where do you go to find the answers?

Of course there is the classic text, such as Clark and Brown, which will give you common law and accepted practice. There are also **statutory laws** but more than that the local expert and or the state professional societies can be a wealth of knowledge in helping you find the answers.

In most states I have worked in, the states societies have made a huge effort to try to compile all of the statutory laws that would affect a surveyor's practices and procedures as well as the recognized local expert who could be either one of two kinds, it could be the surveyor down the street that has been there for years or the published local expert. An example of that in the states that I have worked is Spry and his text, The Introduction to Texas Surveying and in Pennsylvania, Knud Hermanson's book on Boundary Retracement and Principles.

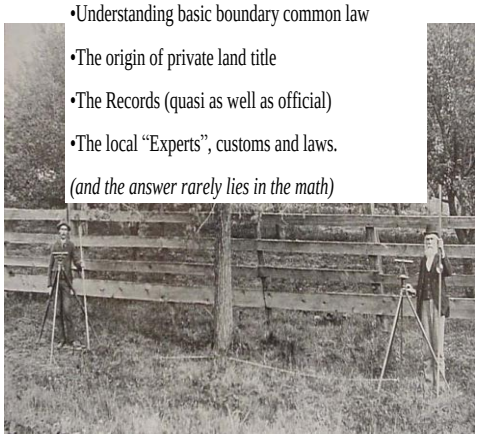
But when the footsteps are gone… who's got the answers???

- **Clarke, Brown, etc. (common law and accepted practice)**
- **Statutory Laws**
- **The recognized local expert and/or the State Professional Societies**
  - Sprye (Texas) ***"Introduction to Surveying"***
  - Hermason (Pennsylvania) ***"Boundary Retracement and Principals"***
  - Bigalow (Vermont) ***"The Bigalow Papers"***

Also we'll hopefully have an opportunity to share some of Mr. Bigelow's papers from Vermont who had a humorous insight into many things and many, many more. I think where ever you went you would only have to ask a few of the local surveyors who's the recognized expert, what's the must have book in the state.

All right, let's take a minute and review what I feel are the key concepts in metes and bounds retracement. Of course you have to understand basic boundary common law, the origin of private land title, the records, where to find them, the quasi as well as the official and the local expert, customs and laws and Bob's little action here, the answer rarely lies in the math. All right that wraps up our brief overview of metes and bounds metes and bounds retracements.

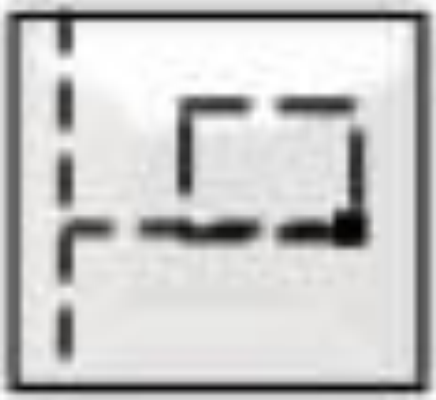
I'll see you back here in just a moment and we will take a look at a case study that I hope brings all these principles back into a format that you can kind of touch, feel and see and then we will see if our course objectives have been met.



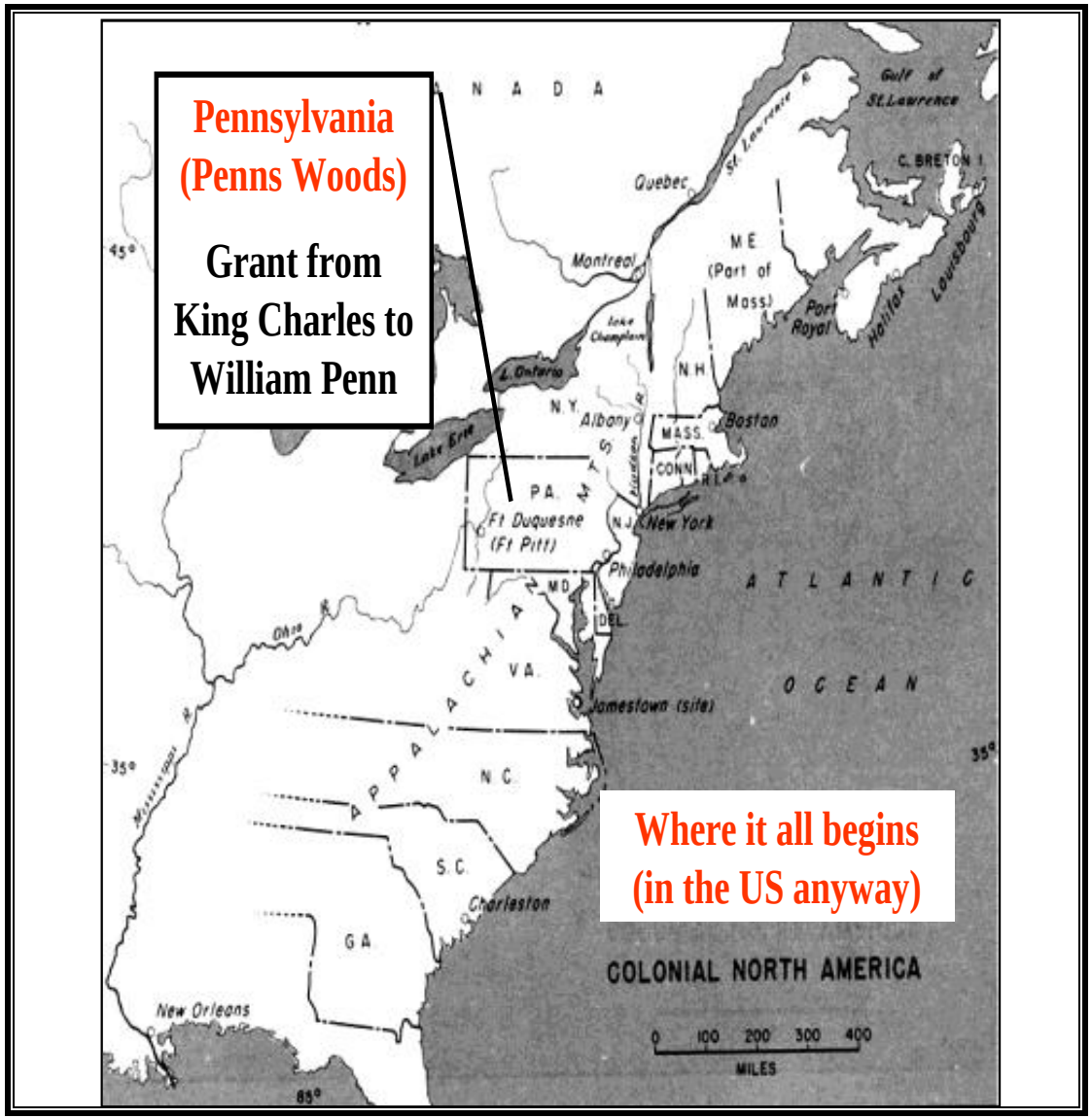
HANDOUT

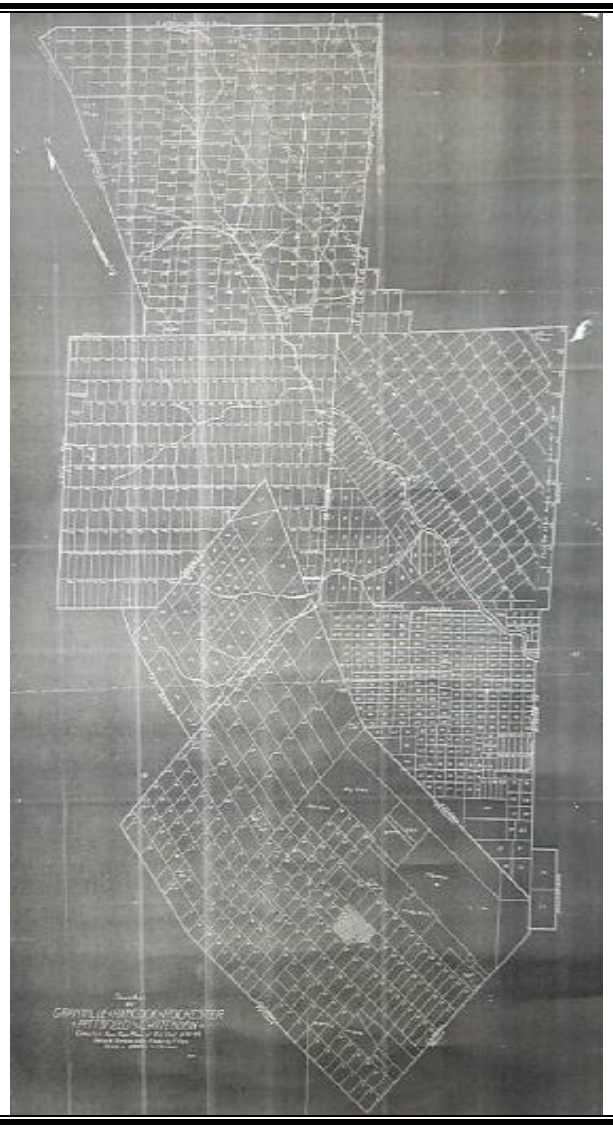
Classic Description

A certain tract or parcel of land containing two hundred and ten acres, lying and being in the county of Botetourt on the waters of James River, joining the land of Barksdale formerly James S. Allen the land formerly Thomas Reid's, the land formerly Thomas Anderson now Mays' and the land of Fletcher H. Mays and bounded as follows: Beginning at 2 white oaks, a red oak, walnut and sassafras on a ridge on a line of Barksdale's land and on a line of said May's formerly Anderson's where they interlock and with Barksdale's line N.15° E.308 poles passing Barksdale's corner a poplar, walnut and white oak at 46 poles and with Allen's line to 6 pines, 3 black oaks and 2 white oaks on a flat ridge corner to Allen and on a line of Reid's tract of 170 acres and with the latter S.86° E. 58 poles to 3 pines on a hill side corner to Reid N.6° E.56 poles up a steep hill to 3 pines on a ridge thence leaving Reid's land S.51° E.230 poles crossing several ridges to 3 pines on the top of a ridge corner to Fletcher H. Maya tract of 1000 acres and with the same S.68° W.70 poles to 3 chestnut oaks S.50° W.82 poles crossing a branch of Dry Run at 56 poles to between 2 black oaks in a flat place between 2 branches on a line of May's land formerly Thomas Anderson's and with the same N.85° W.134 poles to 2 black oaks the old corner and a black and 2 single and a double chestnut oak added on a ridge and thence S.23½° W.142 poles to the beginning.

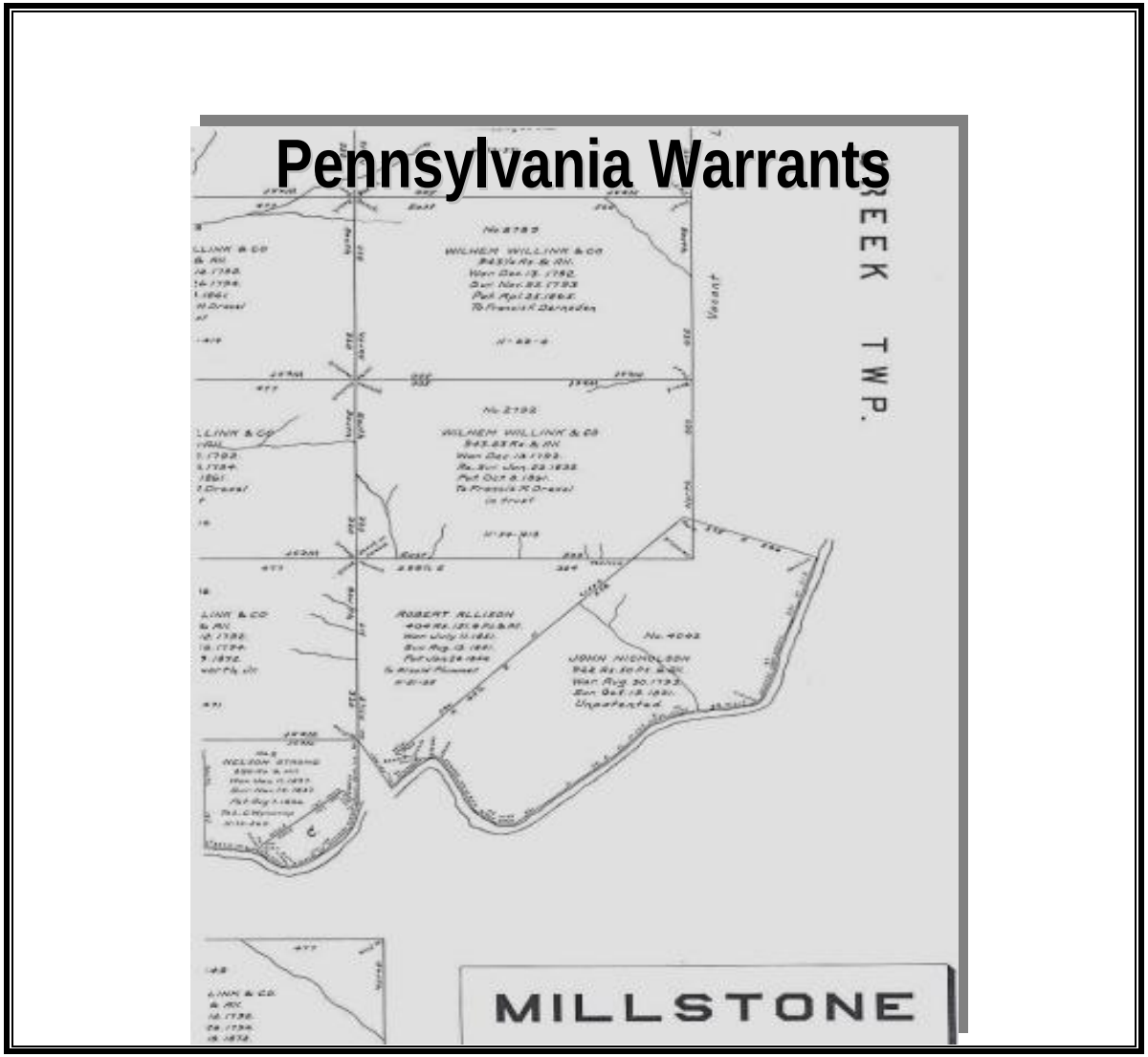


DIAGRAM

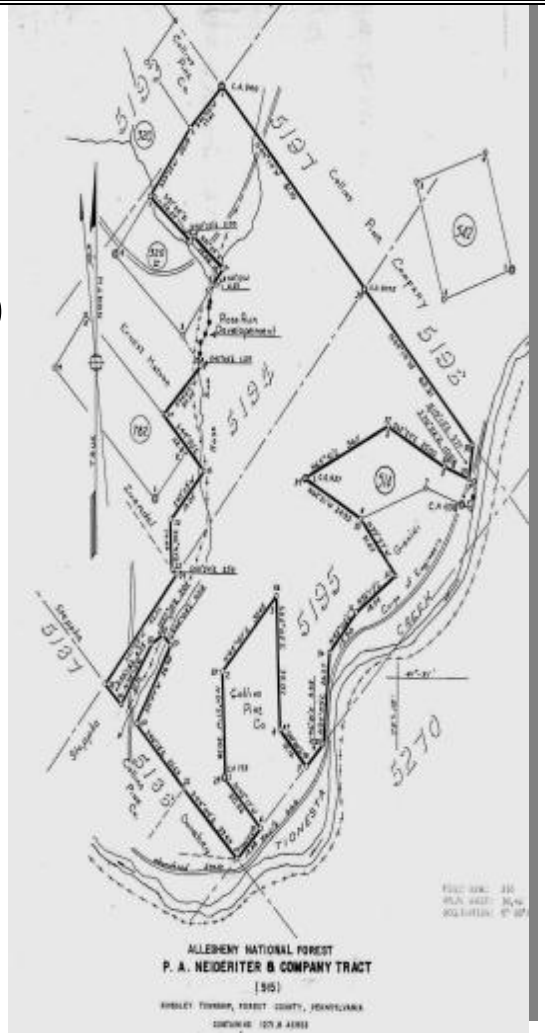

Pennsylvania
(Penns Woods)
Grant from
King Charles to
William Penn
Where it all begins
(in the US anyway)
COLONIAL NORTH AMERICA
Quebec
Montreal
Gulf of St. Lawrence
C. BRETON I.
Louisbourg
Port Royal
Halifax
ME
(Part of Mass.)
N.H.
MASS.
Boston
CONN.
R.I.
N.Y.
Albany
New York
N.J.
PA.
Ft Duquesne
(Ft Pitt)
Philadelphia
MD.
DEL.
VA.
Jamestown (site)
N.C.
S.C.
Charleston
GA
New Orleans
Lake Erie
L. Ontario
Lake Champlain
Ohio R.
Mississippi R.
ATLANTIC
OCEAN
45°
35°
85°
0 100 200 300 400
MILES

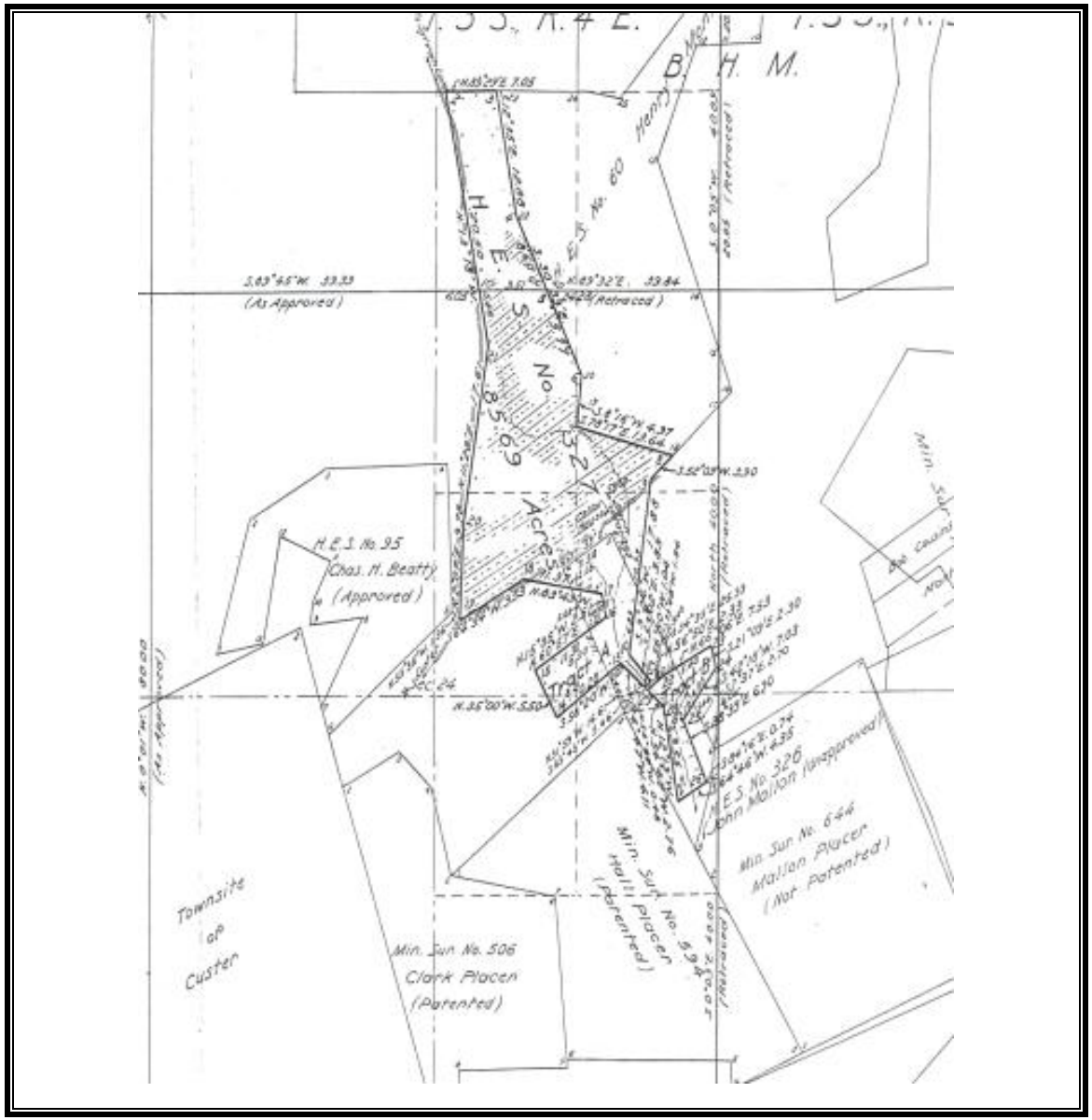


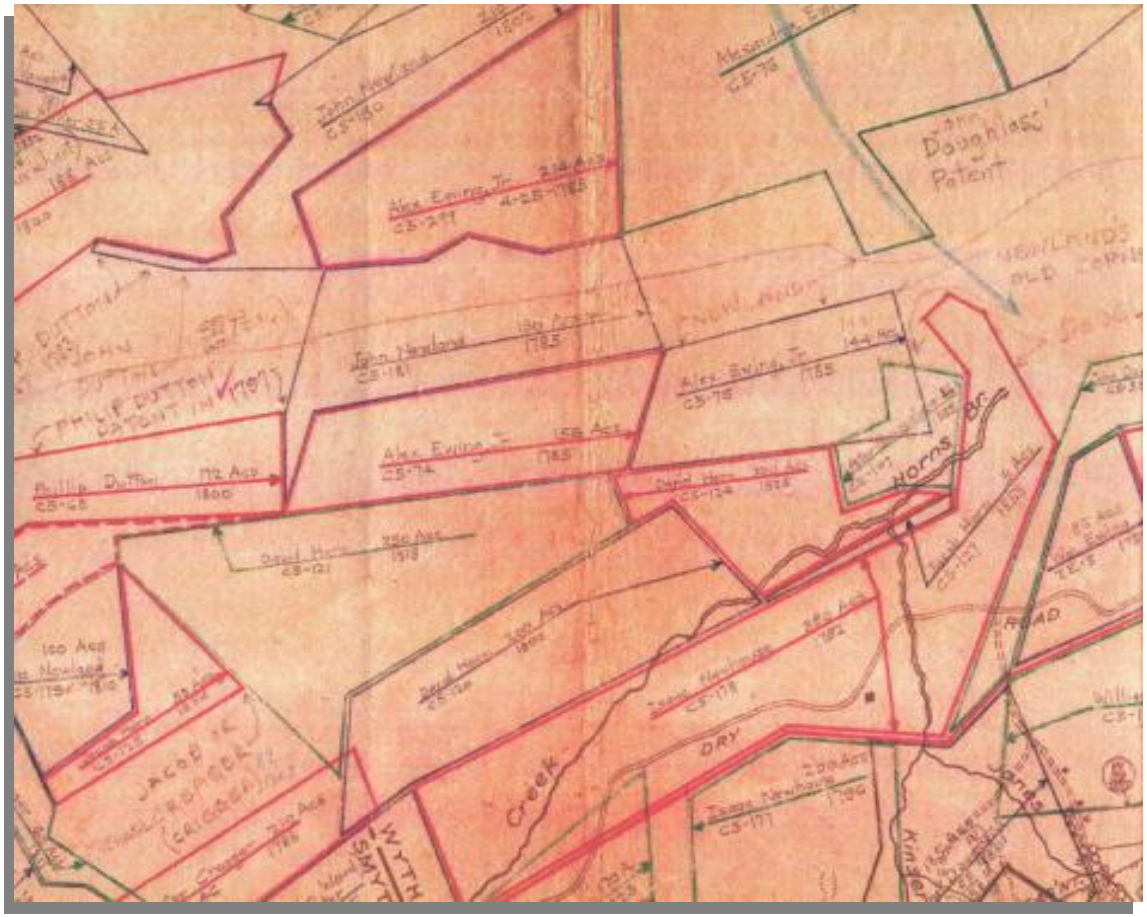
Vermont Town Lots


Pennsylvania Warrants
MILLSTONE

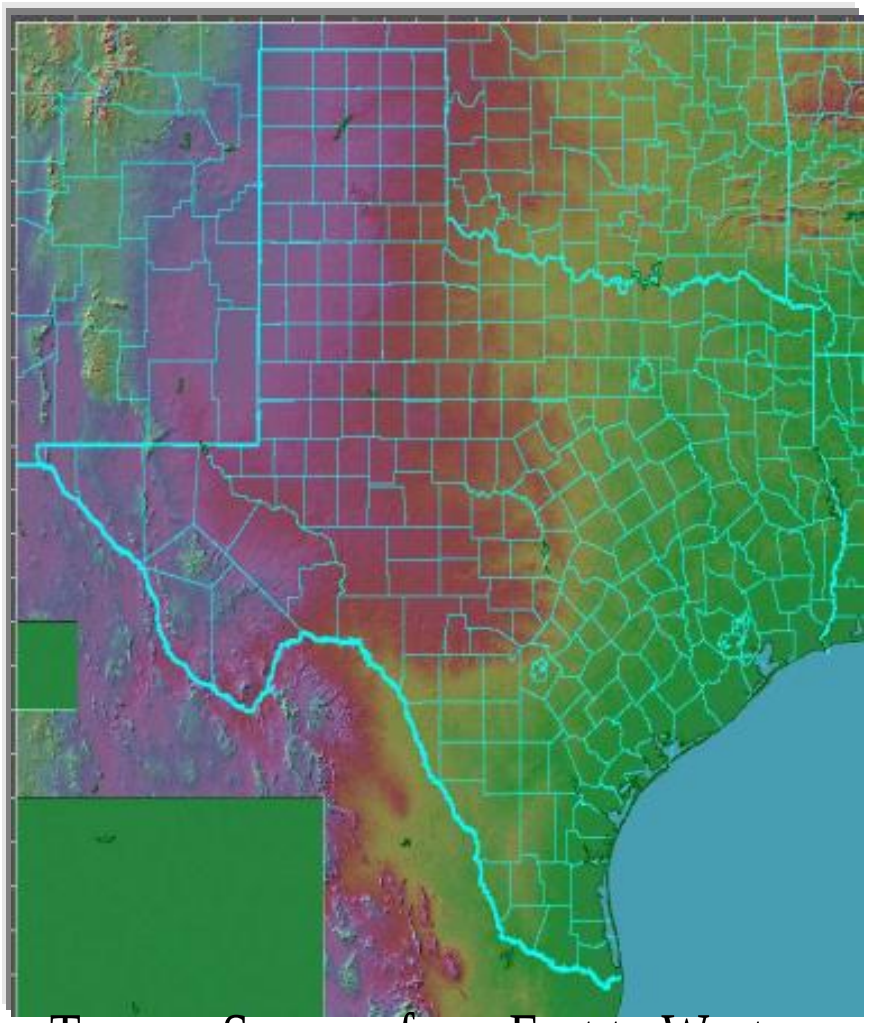
"Hey, what happened to that there rectang –u-larity?"




B. H. M.
H. E. S. No. 60
H. E. S. No. 85.69
32 Acres
H. E. S. No. 95
Chas. H. Beatty
(Approved)
Tract A
Tract B
H. E. S. No. 326
John Mallon (Unapproved)
Min. Sur. No. 644
Mallon Placer
(Not Patented)
Townsite of Custer
Min. Sur. No. 506
Clark Placer
(Patented)
Min. Sur. No. 644
Hollis Placer
(Patented)
(As Approved)
(Retraced)

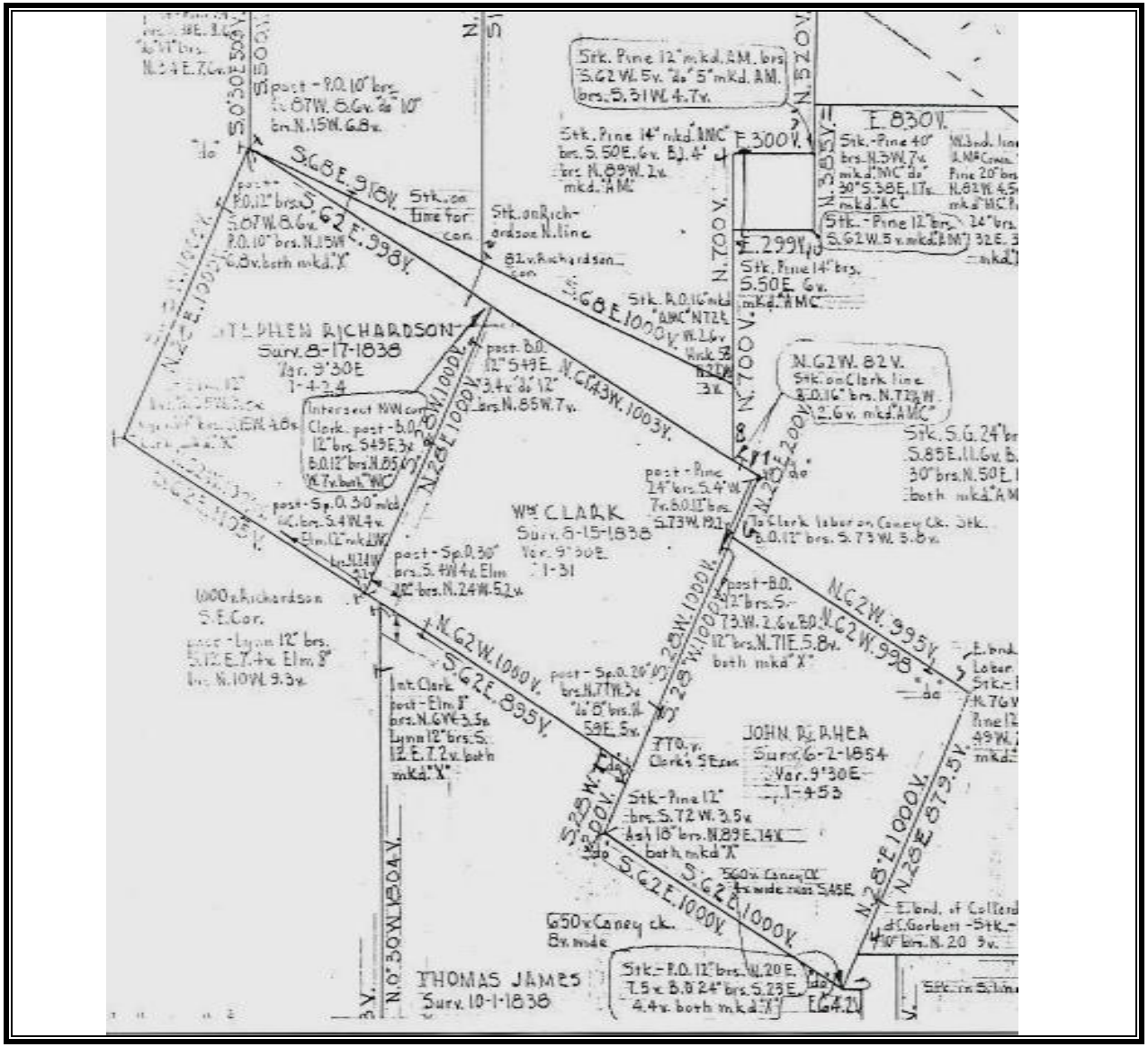


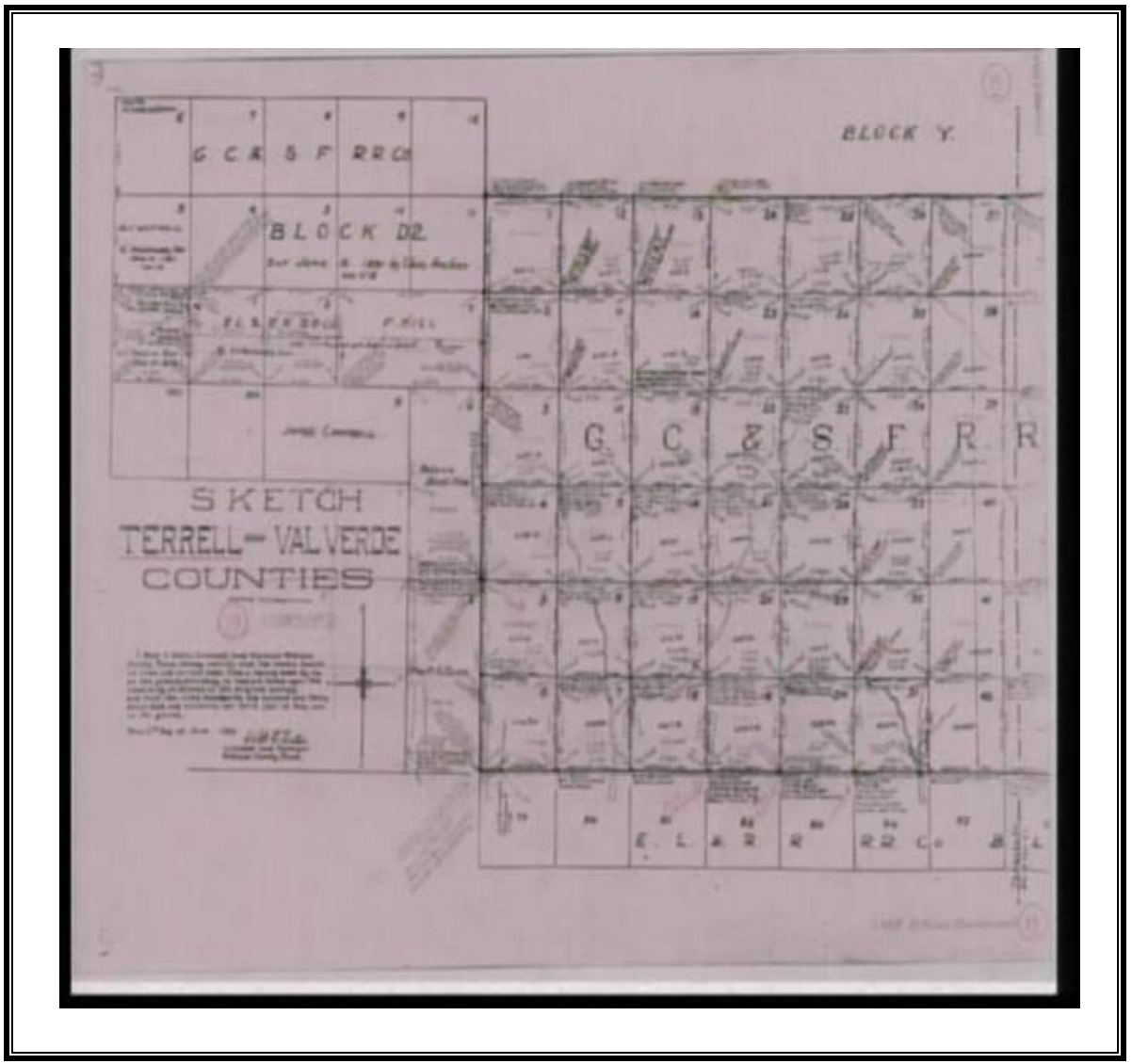
FS Working Drawing of Virginia Grants

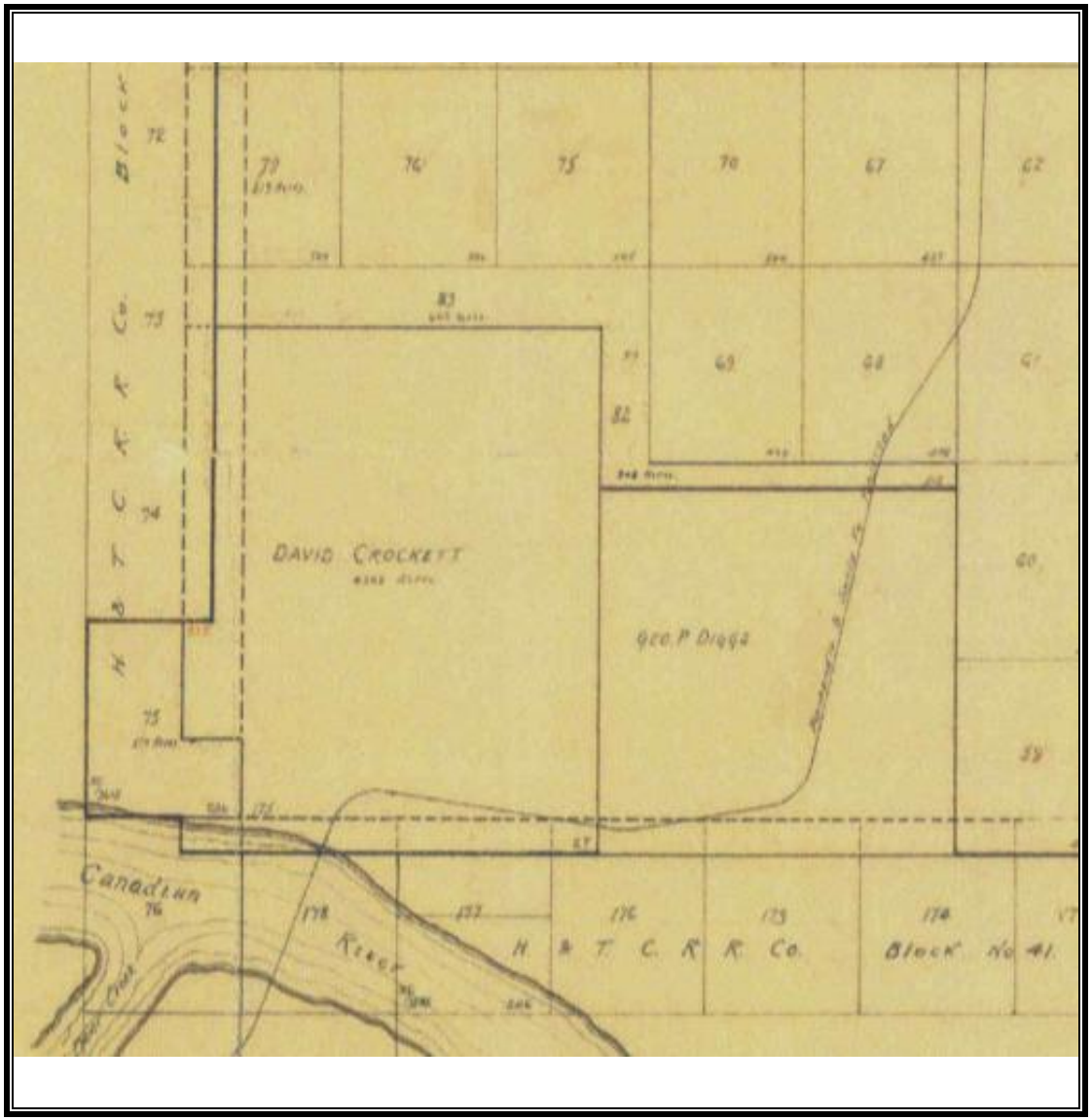


Texas – Surveys from East to West

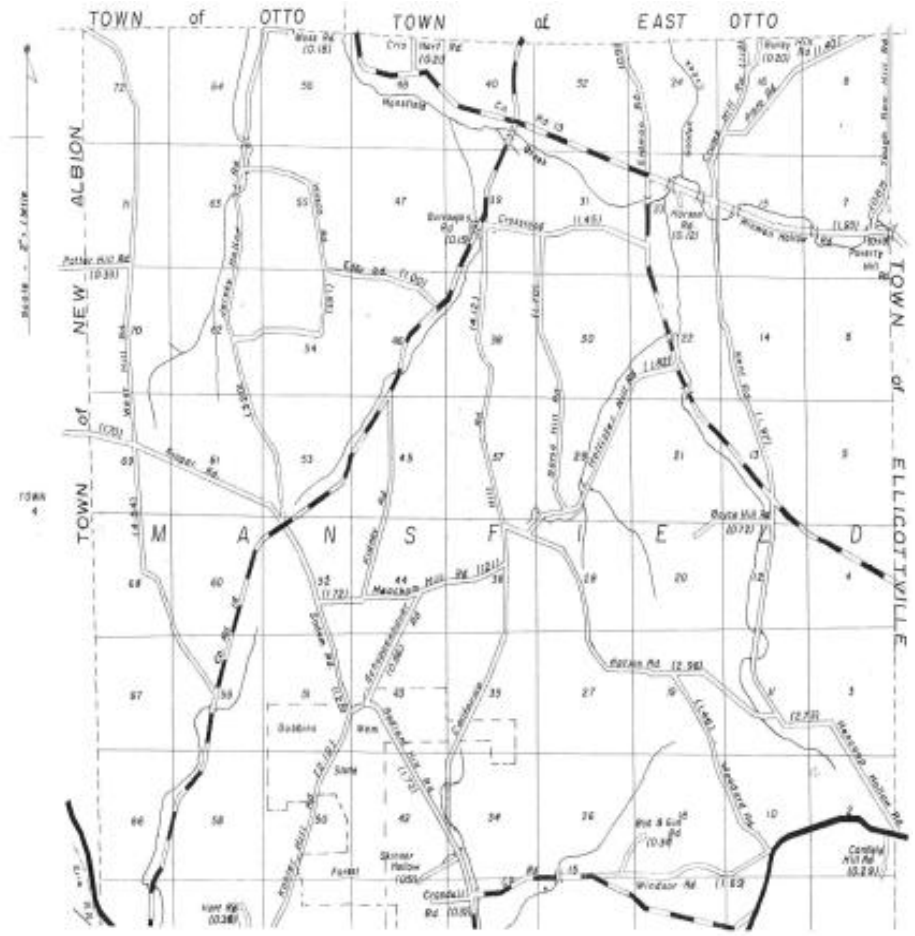

KEY
ANDERSON CO.
CHEROKEE CO.
LEON CO.
TRINITY CO.

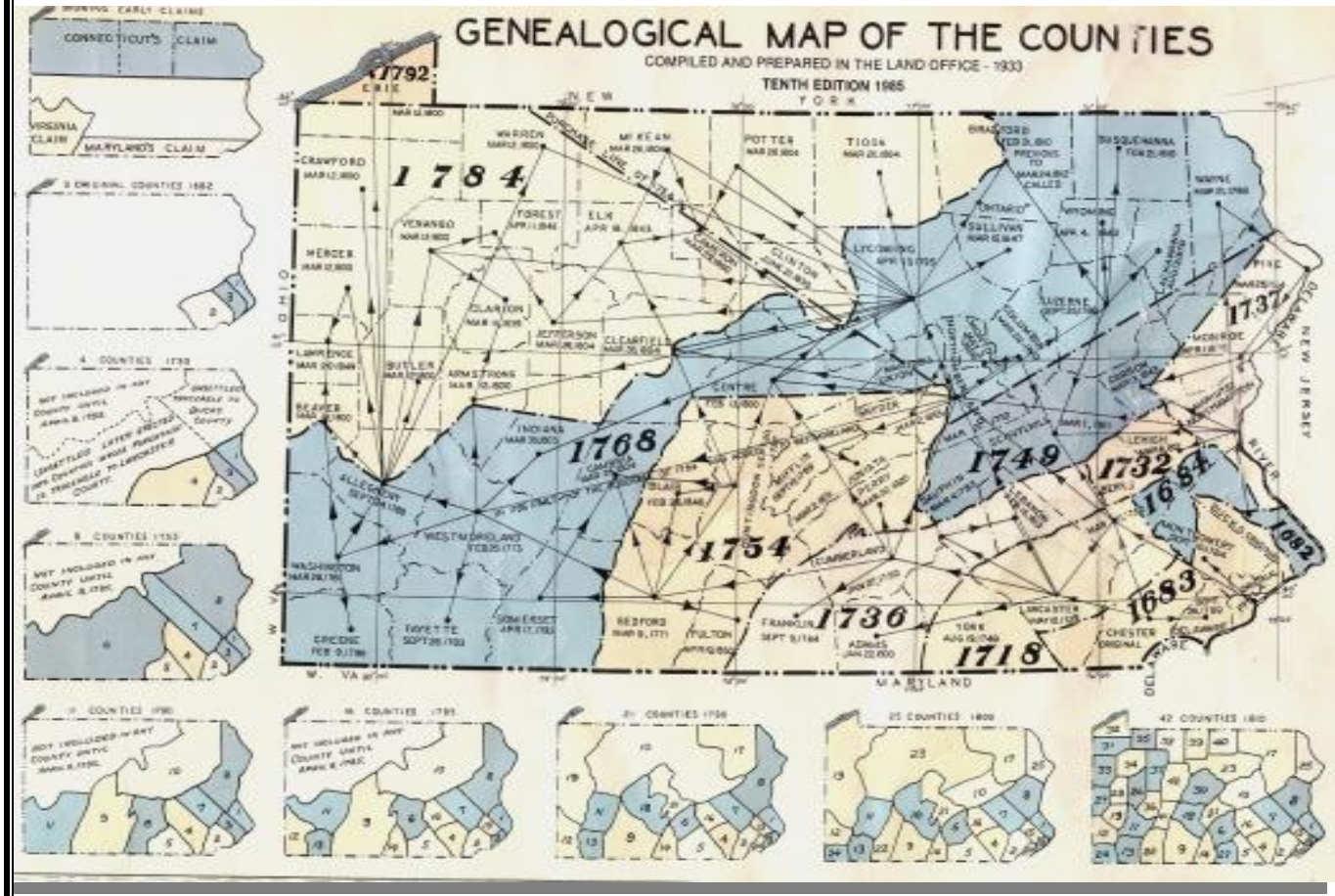

STEPHEN RICHARDSON
Surv. 8-17-1838
Var. 9°30E
1-4-2-4
WM C. CLARK
Surv. 6-15-1838
Var. 9°30E
1-31
JOHN D. R. HEA
Surv. 6-2-1854
Var. 9°30E
1-453
THOMAS JAMES
Surv. 10-1-1838
S.68 E. 916 V.
S.62 E. 998 V.
S.68 E. 1000 V.
N.25 E. 1000 V.
N.28 W. 1000 V.
N.62 W. 1000 V.
S.62 E. 895 V.
S.28 W. 1000 V.
N.62 W. 995 V.
N.62 W. 998
S.62 E. 1000 V.
N.25 E. 872.5 V.
N. 0°30 W. 1804 V.
N. 700 V.
E. 830 V.
E. 300 V.
E. 299 V.
N. 520 V.
N. 385 V.
S. 0°30 E. 509 V.
N. 2 E. 1000 V.
N. 62 W. 82 V.
Stk. Pine 12" mkd. A.M. brs. S. 62 W. 5 v.
Stk. Pine 14" mkd. MC brs. S. 50 E. 6 v.
Stk. Pine 14" brs. S. 50 E. 6 v. mkd. A MC
Stk. on Richardson N. line
82 v. Richardson cor.
Stk. on line for cor.
Stk. on Clark line
Stk. - Pine 12" brs. S. 62 W. 5 v. mkd. A M
Stk. - Pine 40" brs. N. 5 W. 7 v. mkd. MC
Stk. - Pine 12" brs. S. 62 W. 5 v. mkd. A M
Stk. - P.O. 12" brs. W. 20 E. 7.5 v. B.O. 24" brs. S. 23 E. 4.4 v. both mkd. X
Intersect NW cor. Clark. post - B.O. 12" brs. S 49 E. 3 v. B.O. 12" brs. N. 65 W. 7 v. both mkd. WC
post - Sp. 0. 30" mkd. brs. S. 4 W 4 v. Elm 12" mkd. brs. N. 24 W. 5.2 v.
post - Sp. 0. 30" brs. S. 4 W 4 v. Elm 12" brs. N. 24 W. 5.2 v.
post - Pine 24" brs. S. 4 W. 7 v. B.O. 12" brs. S. 73 W. 19.2 v.
To Clark Lober on Caney Ck. Stk. B.O. 12" brs. S. 73 W. 5.8 v.
post - B.O. 12" brs. S. 73 W. 2.6 v. B.O. 12" brs. N. 71 E. 5.8 v. both mkd. X
1000 v. Richardson S.E. Cor.
post - Lynn 12" brs. S. 12 E. 7.4 v. Elm 8" brs. N. 10 W. 9.3 v.
Int. Clark post - Elm 8" brs. N. 6 W. 3.5 v. Lynn 12" brs. S. 12 E. 7.2 v. both mkd. X
post - Sp. 0. 20" brs. N. 7 W. 3 v. 16" brs. N. 59 E. 5 v.
770 v. Clark's S Exas
Stk. - Pine 12" brs. S. 72 W. 3.5 v. Ash 10" brs. N. 89 E. 14 v. both mkd. X
560 v. Caney Ck. 8 v. wide runs S. 45 E.
650 v. Caney ck. 8 v. wide
E. bnd. of Collard & C. Gorbett - Stk. - 4 10" brs. N. 20 9 v.
Stk. - P.O. 12" brs. W. 20 E. 7.5 v. B.O. 24" brs. S. 23 E. 4.4 v. both mkd. X
E. 64.2 V.


BLOCK Y
BLOCK D2
G C & S F R R
SKETCH
TERRELL - VALVERDE
COUNTIES

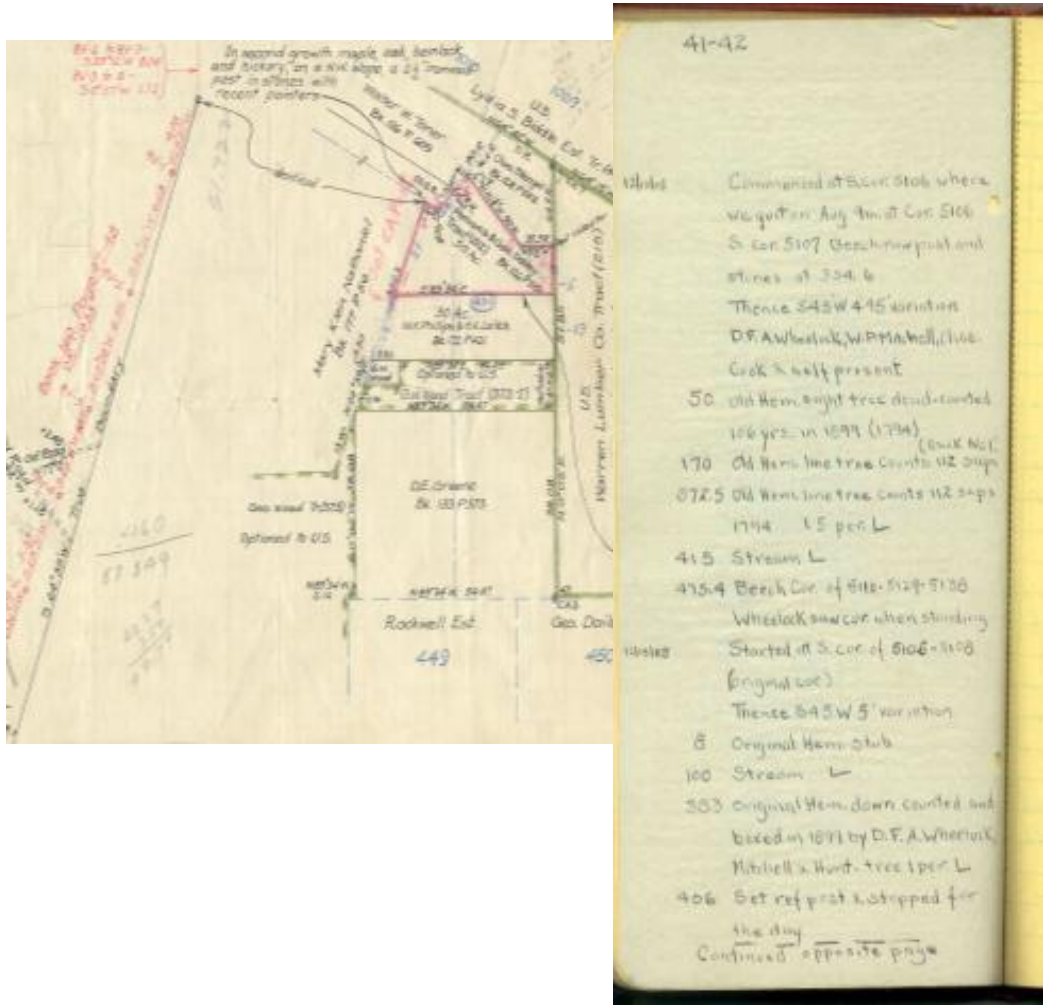

DAVID CROCKETT
Geo. P. Diggs
Canadian
H & T. C. R. R. Co.
Block No 41

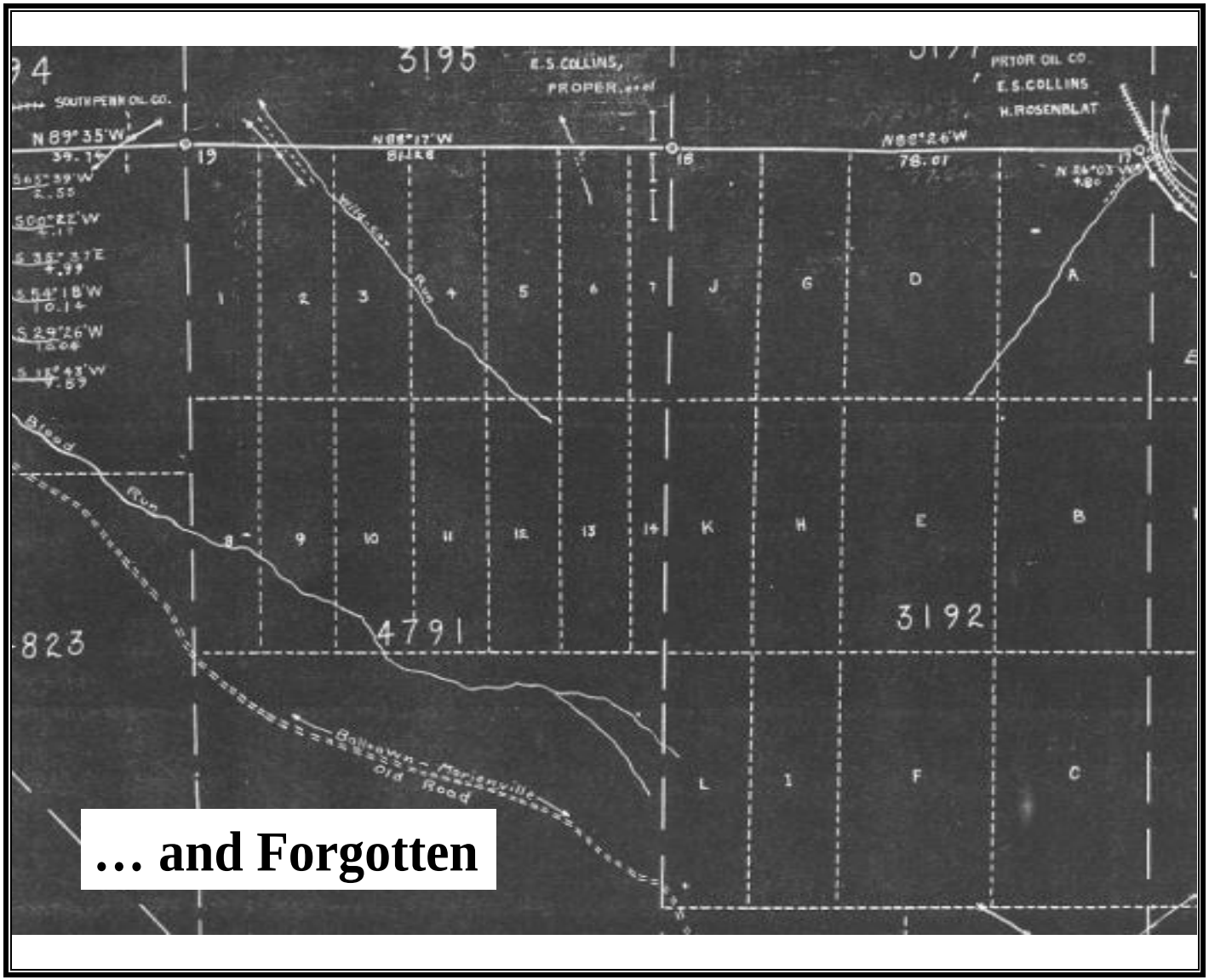
…Township, Range and 'Lots"



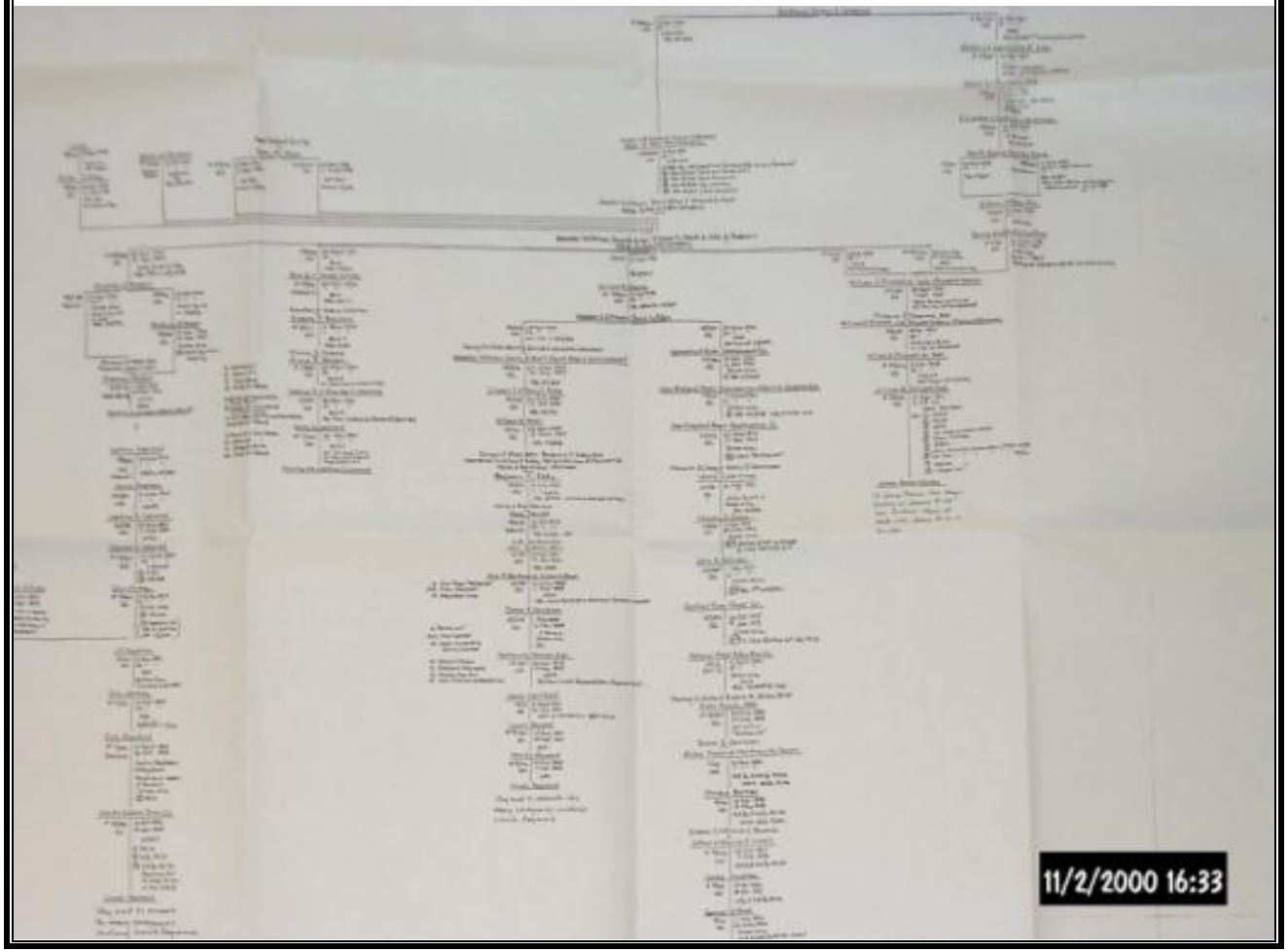


But are you sure we are in the same County?


41-42
Commenced at S.cor. Stob where
we got on Aug 9th at Cor 5106
S. cor 5107 Beech, new post and
stones of 334.6
Thence S45W 4.15 variation
D.F.A. Wheelock, W.P. Mitchell, five
Cook & self present
50 Old Hem. eight tree dead-counted
106 yrs. in 1899 (1794) (Cook No 1.
170 Old Hem. line tree counts 112 rings
872.5 Old Hem. line tree counts 112 rings
1794 1.5 per L
415 Stream L
435.4 Beech Cor. of 5118-5129-5138
Wheelock saw cor. when standing
Started at S. cor of 5106-5108
(original cor.)
Thence S45W 5' variation
8 Original Hem. stub
100 Stream L
383 original Hem. down counted and
blazed in 1871 by D.F.A. Wheelock
Mitchell's Hunt. tree 1 per L
406 Set ref post & stopped for
the day
Continued opposite page
Rockwell Est.
449


3195
E.S. COLLINS,
PROPER...
PRIOR OIL CO.
E.S. COLLINS
H. ROSENBLAT
SOUTH PENN OIL CO.
N 89° 35' W
N 88° 17' W
BEARS
N 86° 26' W
78.01
Willis Run
Bleed Run
4791
3192
823
Baltown - Marianville Old Road
… and Forgotten

"Typical" Vermont Survey Abstract



Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

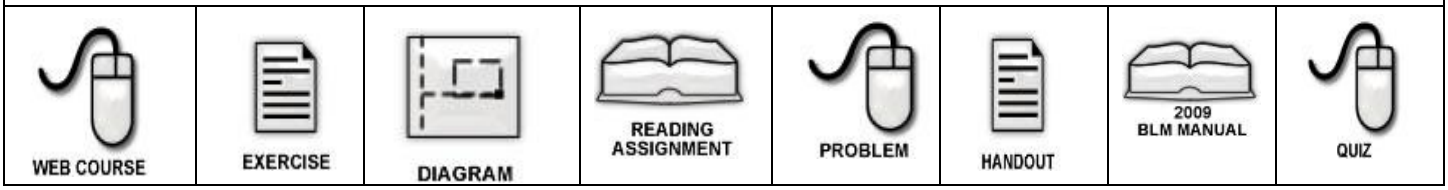
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Metes and Bounds Case Study (25 minutes)

ICON LEGEND



METES AND BOUNDS CASE STUDY

Introduction

Hi and welcome back to the CFedS module on metes and bounds retracement. As you recall we had taken a brief overview of some of the major principles in metes and bounds retracement. And now we are going to work on a little bit of a case study. Hey hey hey you, that's not funny, come on now wake up this is going to be kind of fun. But as I said, now that we have looked at some of the basic principles and again our keys to understanding basic boundary common law, the origin of private land title, the records, quasi as well as official, as well as the local expert customs and laws.

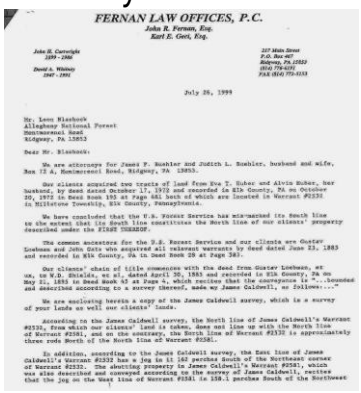
Metes and Bounds Case Study

Us Tract 1n and
The Caldwell Survey
Allegheny National Forest

And of course, the answer rarely lies in the math. My day began just like any other normal day, but of course back in 1999 you opened your snail mail long before you opened your email. It was kind of a rarity back then, and as you can see the heading this is obviously from an attorney.

Course, surveyors aren't particularly afraid of attorneys I look at this letter and I start reading through it with a little bit of a smirk on my face, until I get to this point.

Attorney Fernan's Letter



FERNAN LAW OFFICES, P.C.
John R. Fernan, Esq.
Earl E. Geer, Esq.

July 26, 1999

Mr. Leon Blashock
Allegheny National Forest
Hamamerecci Road
Ridgway, Pa 15853

Dear Mr. Blashock:

We are attorneys for James F. Buehler and Judith L. Buehler, husband and wife, Box 12 A, Hammerecci Road, Ridgway, PA 15853.

Our clients acquired two tracts of land from Eva I. Huber and Alvin Huber, her husband, by deed dated October 17, 1972 and recorded in Elk County, PA on October 20, 1972 in Deed Book 193 at Page 681 both of which are located in Warrant #5330 in Millstone Township, Elk County, Pennsylvania.

We have concluded that the U.S. Forest Service has encroached its South line to the extent that its South line constitutes the North line of our clients' property described under the FIRST CAUSE.

The common ancestors for the U.S. Forest Service and our clients are Gustav Loehnes and John Getz who acquired all relevant warrants by deed dated June 23, 1885 and recorded in Elk County, PA in Deed Book 28 at Page 580.

Our clients' chain of title commences with the deed from Gustav Loehnes, et ux, to W.D. Shields, et al, dated April 30, 1885 and recorded in Elk County, PA on May 21, 1891 in Deed Book 43 at Page 4, which recites that the conveyance is "...bounded and described according to a survey thereof, made by James Caldwell, as follows:..."

We are enclosing herein a copy of the James Caldwell survey, which is a survey of your lands as well our clients' lands.

According to the James Caldwell survey, the North line of James Caldwell's Warrant #5330, from which our clients' land is taken, does not line up with the North line of Warrant #5381, and on the contrary, the North line of Warrant #5330 is approximately three rods North of the North line of Warrant #5381.

In addition, according to the James Caldwell survey, the East line of James Caldwell's Warrant #5332 has a jog in it 142 perches South of the Northeast corner of Warrant #5330. The abutting property to James Caldwell's Warrant #5381, which was also described and conveyed according to the survey of James Caldwell, recites that the jog on the West line of Warrant #5381 is 158.1 perches South of the Northwest

METES AND BOUNDS CASE STUDY

Our property rights arise from a deed description based on a particular survey made by James Caldwell, whether Caldwell correctly marked the northeast corner of Warrant 2532 is irrelevant, he did mark a place called it northeast corner of Warrant 2532 and the owner of the land conveyed a tract of land to our predecessor in title by a legal description using what Caldwell called the northeast corner of Warrant 2532. As you can see, the attorney makes some pretty good points based on common law, a surveyor was there, probably duly authorized, he marked a place and people have recognized that as being the property corner, this may have given me a moment for pause.

> *"Our property rights arise from a deed description based on a particular survey made by James Caldwell. Whether Caldwell correctly marked the Northeast corner of Warrant 2532 is irrelevant; he did mark a place, called it the Northeast corner of Warrant 2532, and the owner of the land conveyed a tract of land to our predecessor in title by a legal description using what Caldwell called the Northeast corner of Warrant 2532."*

Here is a copy of the Caldwell survey, if you look off there in the right hand corner, it is recorded in the Elk County courthouse in deed book X and the date on it is not legible, but as I recall the late 1880s.

The Caldwell Survey

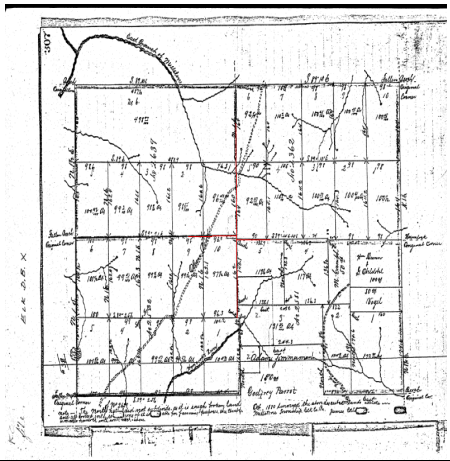


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

METES AND BOUNDS CASE STUDY

Here is the corner in question, as you can see from the Caldwell survey he shows two corners, not common corners, at the intersection of these four warrants.

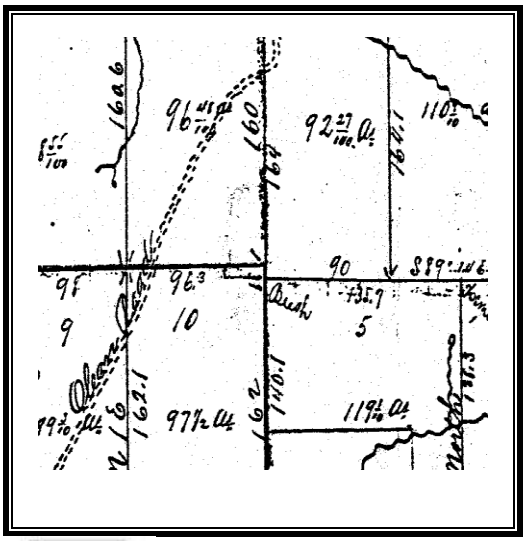


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Here is the connected draft from the Pennsylvania archives that shows how the original surveys and the records of warrants and patents would show it all being one common corner, all four warrants describing it as being monumented by a post.

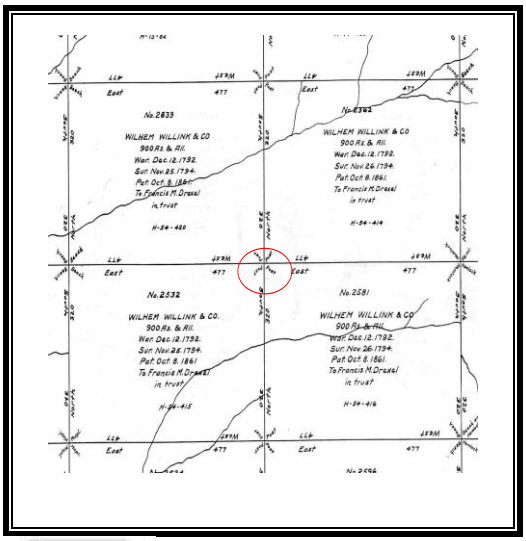


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

METES AND BOUNDS CASE STUDY

Here on the forest service status atlas, you can see it is a boundary between a substantial chunk of forest service and private land.

And I should also mention in Elk County, Pennsylvania, Allegheny National Forest, we're talking about black cherry trees that can be worth upwards to $5,000 on the stump, so even a small sliver of land can have a significant amount of assets on it.

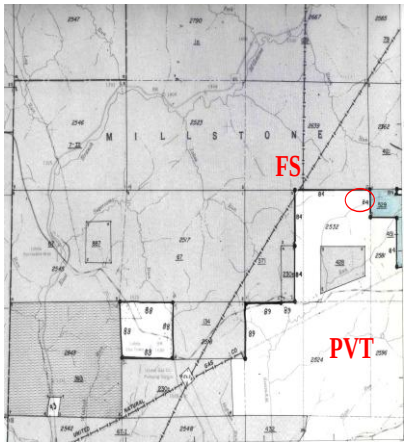
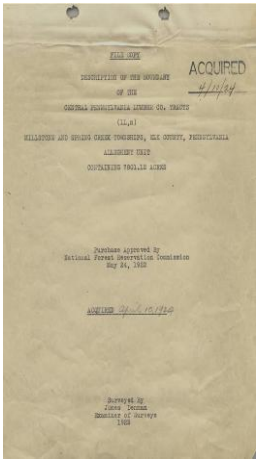


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

So, I began my research in the forest service in-house records and I began in the abstract folder where the forest service acquired tract 1N.

The survey was done in 1923 by a forest surveyor named James Denman and it included a plat where Denman clearly shows one corner for the intersection of all four of these warrants.



METES AND BOUNDS CASE STUDY

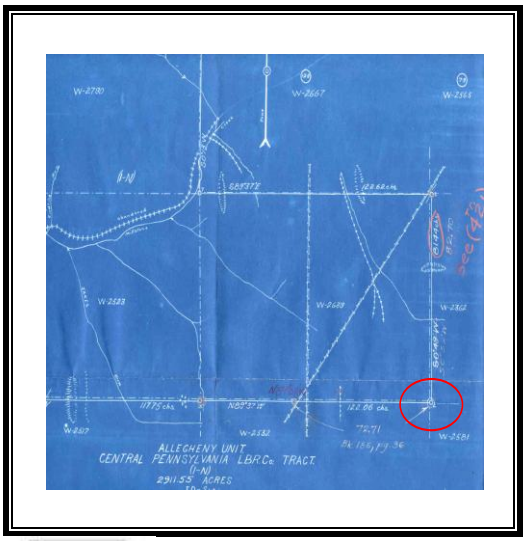
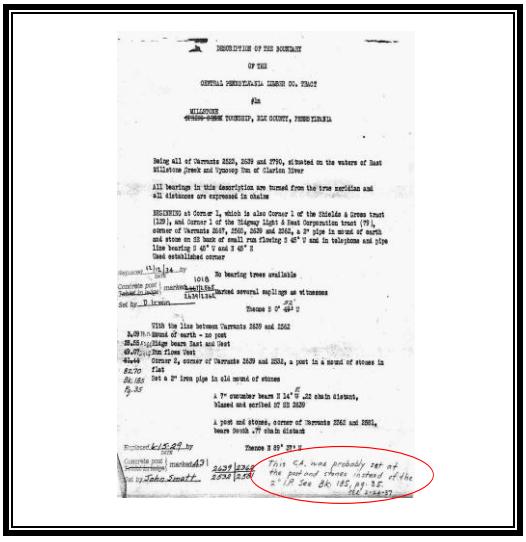


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

I look at Mr. Denman's typed survey notes, which are also in the file, and it looks pretty standard until you get down to this handwritten note at the bottom, which says this CA was probably set at the post in stones instead of the two-inch iron pipe, and whoever wrote this note refers to a book and page.

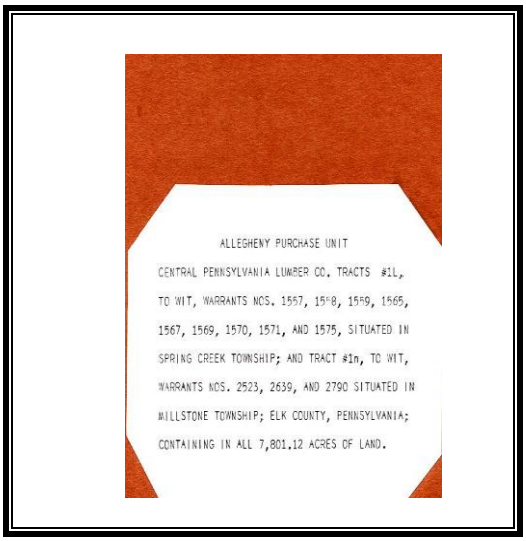


I should take a moment and explain that the CA stands for class A monument which in the eastern states and the acquired forest lands there was a plan to monument with significant corner brass cap concrete posts, the class A monuments that they felt would be a substantial amount of control for future retracements so when he was referring to the CA monument.

So again looking at this document, a pretty standard survey, Mr. Denman says he comes down the 82.7 chains and sets a two-inch iron pipe in an old mound of stones however, a handwritten note is giving me my first indication that there may be sort of problem here.

METES AND BOUNDS CASE STUDY

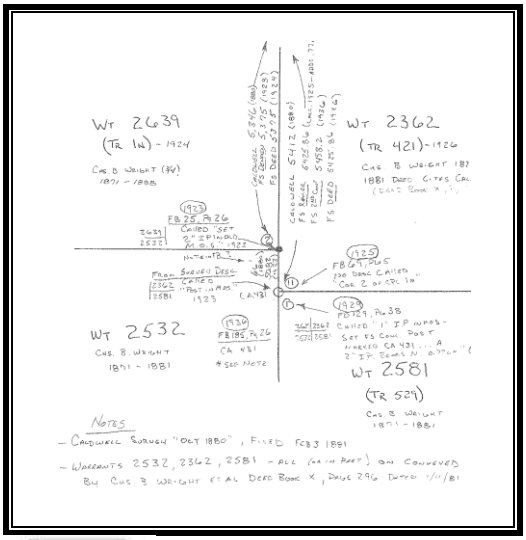
I look at this point I went to the tract abstract, which this is going to have all of the conveyance documents back to the original warrant or patent from the commonwealth of Pennsylvania, a fairly extensive document.



ALLEGHENY PURCHASE UNIT

CENTRAL PENNSYLVANIA LUMBER CO. TRACTS #1L, TO WIT, WARRANTS NOS. 1567, 1568, 1569, 1565, 1567, 1569, 1570, 1571, AND 1575, SITUATED IN SPRING CREEK TOWNSHIP; AND TRACT #1n, TO WIT, WARRANTS NOS. 2523, 2639, AND 2790 SITUATED IN MILLSTONE TOWNSHIP; ELK COUNTY, PENNSYLVANIA; CONTAINING IN ALL 7,801.12 ACRES OF LAND.

As I look through this, I didn't find anything particularly that would shed light on the circumstance but I was able to abstract it back to a point in time where all four of those warrants were owned by a Charles B. Wright.



I apologize for the scribbling here but I imagine as all of you have done your research, you try to get a piece of paper that's going to have all the information you can have on it to start comparing. So what I did was I looked at all the different measurements through the surveys of record that I had through time that showed the relationship to the corner to the north as all the surveys just happened to be tied north to south.

At this point, I am being a typical surveyor, I am looking for a math answer, how could somebody have blown this measurement and come up with two different warrant corners and frankly at this point I hadn't found any sort of pattern.

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

METES AND BOUNDS CASE STUDY

So now I went into the field book in question and started to examine what Mr. Denman had done in 1923.

Reading from the top to the bottom, he is at hub number 11 and if you look on the other side of the page, hub number 11 which bears so and so from the southeast corner of the warrant and then he turns 7908 west and sets the two inch iron pipe.

No BTs unfortunately. 20 length south of an old railroad grade. Look over on the diagram portion of it and you can see him coming in the hub south of the old rail road grade is mentioned, the iron pipe and then he also shows a tie to a 7 inch cucumber.

Now for my friends in the west, a cucumber back east is a type of tree, he didn't actually describe a large gourd. And then he turns north 89 degrees 37 minutes west and goes across to the southwest corner of the warrant.

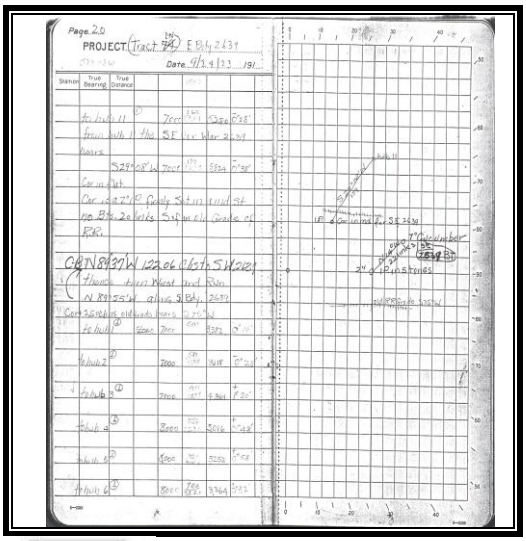


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

In referring to the handwritten notes on the typed notes, I started looking into some of the other field books that address this corner and I find that in1925 the gentleman that was surveying the warrant immediately to the east of that reports that the corners 11, 12 of this line which is 1 and 2 reversed of tract 1N, the distance compared from the notes 82.21 chains rather than the 81.44 chains as reported and he refers back to Mr. Denman's book.

So now even as early as 1925 I have in my own records what appears to be a conflict of where that corner was set and again remember that Mr. Caldwell and my neighbor's attorney seem to believe that there are actually two corners for that corner that is supposed to be common to the four warrants.

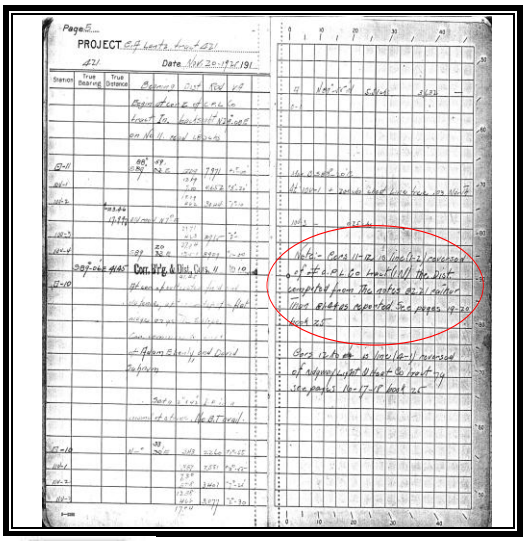


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

METES AND BOUNDS CASE STUDY

Moving on to yet one more record that we had in the Forest Service in 1936, there was a surveyor that was Henry Elrich, that was making geodetic ties to some of these class A corners and he makes approximately the same comparison.

The distance north from the bearing west of the class A monument number 431 indicates that this corner post was set in an old post in stones south .77 chains from the iron pipe described in the tract 1N description. Pretty compelling evidence that not only did Mr. Caldwell feel that there was something wrong out there but subsequent forest surveyors were disagreeing with what Mr. Denman had done.

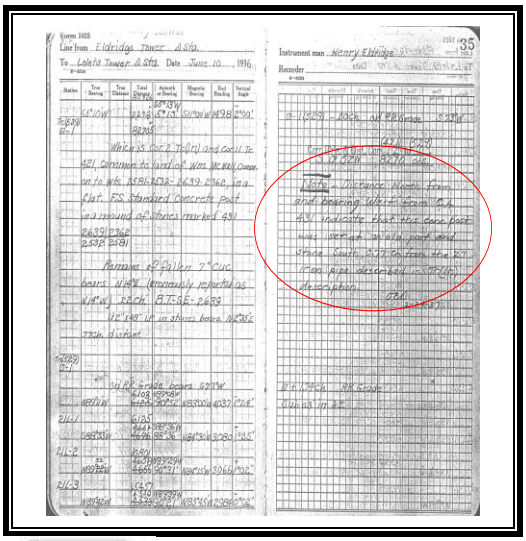


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

To further complicate matters, prior to my tenure on the forest, our neighbor to the south along that warrant line had applied for and received a small tracts act grant.

For those of you that are unfamiliar with it, the **Small Tracts Act** allows the forest service to sell certain parcels of land particularly in cases where there is an innocent encroachment that relied on an erroneous survey.

If you look at this plat that was filed, you will see that in 1997 the dual corners were in fact recognized although it was considered, the gentleman's improvements on the tract of land, were considered encroachment and therefore it qualified.

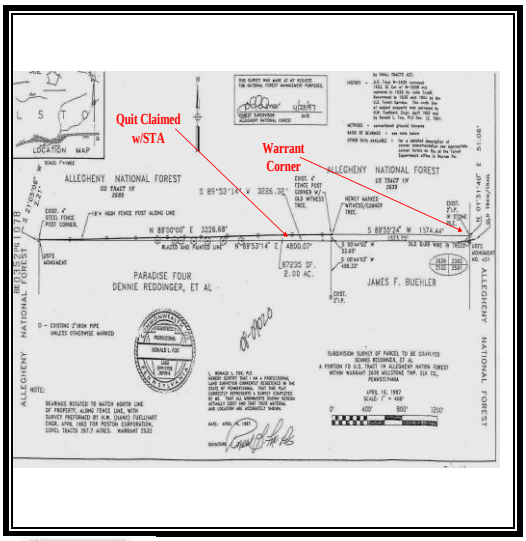


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

METES AND BOUNDS CASE STUDY

So, I've got one more piece of research to do and that's the more modern encroachment case, which my predecessor on the forest, Al Kaiser, done a remarkable job of surmising for me. As you can see 1792 the warrant was issued, the sales agreement, if you will, for warrants for 2532 and 2639. In 1794 the survey was returned.

In 1861 the patents were issued, and then in 1880, Mr. Caldwell surveyed the warrants. Al has an interesting analysis here he feels that Mr. Caldwell's survey, the fact that it was recorded and he was obviously on the ground because he is finding falling maples for an example for an original corner. Led his credibility to Caldwell following the original survey.

Map indicates portions of the survey to deviate from original calls, double corners created at right angle jogs at some line discredits to some degree the original survey.

Well being a surveyor at this point, I couldn't stand it. I had to go out in the woods and measure something. So off to the woods we go. Here is the class A brass cap set in the concrete post.

Survey History of Steck Run Encroachment Case

December 12, 1792

warrant issued for Warrants 2532 and 2639.

November 25, 1794

Survey returned for Warrants 2532 and 2639. Bearing and distance reported between common corners of 2532 and 2639 is East 477 rods (7870 feet)

October 8, 1861.

Patents issued to Warrants 2532 and 2639.Corners of Warrants are common, a maple west, a post east.

October , 1880

Caldwell survey of Warrants **2532 and south 1/2 of 2639** (and 2362, 2581)

Map indicates some original corners found, (Fallen maple, original corner)

Lends credibility to an original survey actually performed.

Lends credibility to Caldwell following original survey.

map indicates portions of survey to deviate from original calls

Double corners created & right angle jogs in some lines.

Discredits to some degree following original survey.

METES AND BOUNDS CASE STUDY

Take a second and really look at this picture because I'd like you to keep that thought of what that iron post that is sitting next to it looks like and that is pretty much the corner that as unmolested, you will see a little bit of red paint around it in the eastern states, depending on the forest, a lot of times when the boundary lines are getting maintained, they will throw a little paint on the mounds of stones that are next to the corners, other than that you are looking at pretty unmolested corner.

In 1923 what James Denman said he set as the corner common to all four warrants. Here is the pipe of dubious repute or pedigree to the north and again just visualize back in your mind what the two inch pipe sitting next to the class A corner looked like.

Well when I did my measurements out there just like the analysis that I had done on paper, I couldn't find anything to hang my hat on. One measurement was a little bit long and another one was a little bit short.

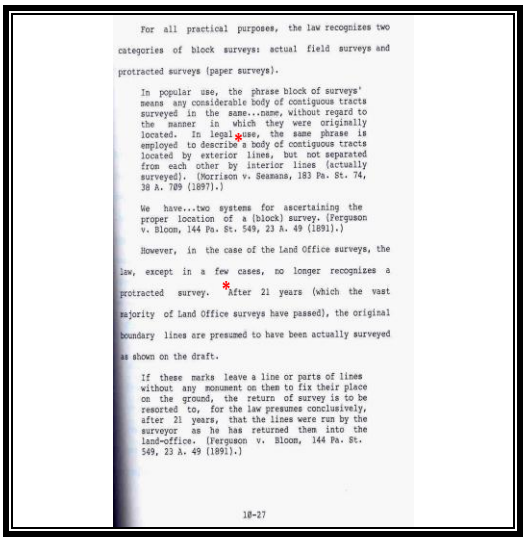
But there was nothing in the measurements that could allow me to discredit what Mr. Caldwell had done in the 1880s nor discredit what Mr. Denman had done nor substantiate the claims that the subsequent forest surveyors had made hand written notes and their old field notes, it seemed to be the fact that looking at Mr. Denman's notes and his accompanying sketches of the corner and its accessories, that Denman just blew it and he made that call too short.

My assistant on this job was an engineering tech and surveyor on the district who at the time happened to be studying for his Pennsylvania license and as I am sitting there eating my sandwich,

METES AND BOUNDS CASE STUDY

scratching my head, Bernie Morocco says to me, you know Bob this situation seems to be very similar to what is outlined in Mr. Hermanson's book on block surveys. Well somewhat embarrassed that I didn't have this information I pulled Newt's book out and here is what I found out.

For all practical purposes, the law recognizes two categories of block surveys, actual field surveys and protracted surveys (paper surveys). In popular use, the phrase block surveys means any considerable body of contiguous tract surveyed in the same name without regard to the manner in which they were originally located. In legal use the same phrase is employed to describe a body of contiguous tracts located by exterior lines but not separated from each other by interior lines. And cited the court case.



For all practical purposes, the law recognizes two categories of block surveys: actual field surveys and protracted surveys (paper surveys).

In popular use, the phrase block of surveys' means any considerable body of contiguous tracts surveyed in the same...name, without regard to the manner in which they were originally located. In legal use, the same phrase is employed to describe a body of contiguous tracts located by exterior lines, but not separated from each other by interior lines (actually surveyed). (Morrison v. Seamans, 183 Pa. St. 74, 38 A. 709 (1897).)

We have...two systems for ascertaining the proper location of a (block) survey. (Ferguson v. Bloom, 144 Pa. St. 549, 23 A. 49 (1891).)

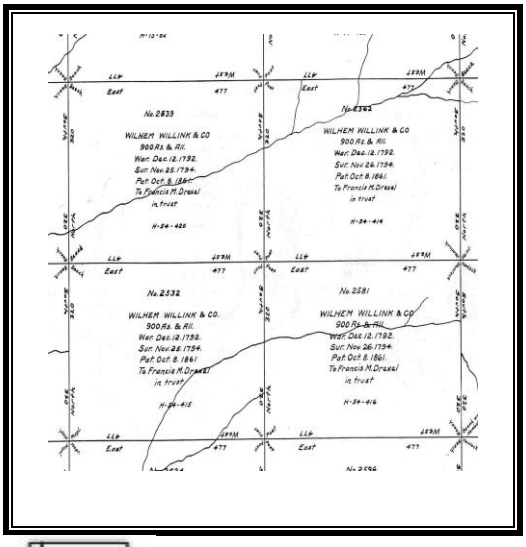
However, in the case of the Land Office surveys, the law, except in a few cases, no longer recognizes a protracted survey. After 21 years (which the vast majority of Land Office surveys have passed), the original boundary lines are presumed to have been actually surveyed as shown on the draft.

If these marks leave a line or parts of lines without any monument on them to fix their place on the ground, the return of survey is to be resorted to, for the law presumes conclusively, after 21 years, that the lines were run by the surveyor as he has returned them into the land-office. (Ferguson v. Bloom, 144 Pa. St. 549, 23 A. 49 (1891).)

18-27

However, in the cases of the land office surveys, the law except in a few cases no longer recognizes a **protracted survey**. After 21 years, which the vast majority of land offices have passed the original boundaries are presumed to have been actually surveyed as shown on the draft.

When looking at the connected draft, if you recall it shows all four corners of the four adjoining warrants to be a common corner but when you take that into the context of a block survey where the same owner that the interior may indeed have been protracted, this is what it seems that we have in the case of these warrants.



When you look around the outside each warrant corner on the exterior of this block is labeled as being a tree marked for the corner, however, on the interior it was merely a post. So one has to assume from reading the text and looking at this, that even though protracted surveys, block surveys weren't actually authorized by the land office, it was an understood practice.

Interesting enough, William Willing here that is listed as the owner of the warrant for the regional survey contract was a member of the Holland Land Company so we can speculate that he was buying up large sections of land and indeed these block surveys, protected surveys existed.

Mr. Hermanson in his text goes on to explain to us how we would

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

METES AND BOUNDS CASE STUDY

go about to replace those corners.

In the above case, all exterior monuments or their positions were identified. Boundaries bearing interior monuments are protracted between exterior monuments as indicated in the original record.

So without the benefit of a survey Manual, such as our BLM Manual, I would indeed have instructions on how to reestablish this protracted corner assuming it had never been set, which does not seem to be the way that Mr. Caldwell would have done it.

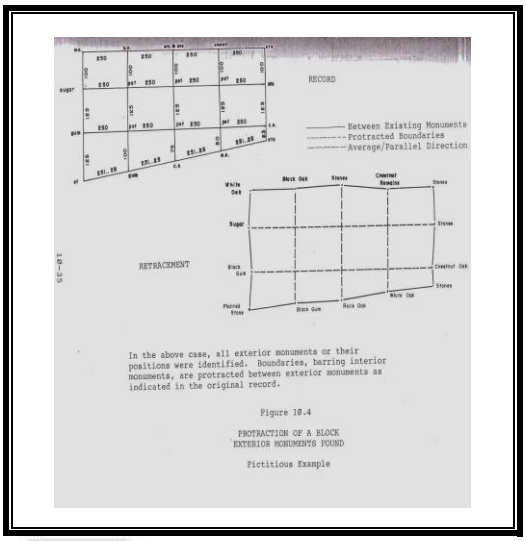


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Going back to the Caldwell plat which I realize is a little busy so let me just show you the approximate center of the four warrants.

It would appear that Mr. Caldwell did not subscribe to the method of reestablishing what appears to be a protracted corner between these four warrants. So to try to put this all in prospective here is what we found out in the field.

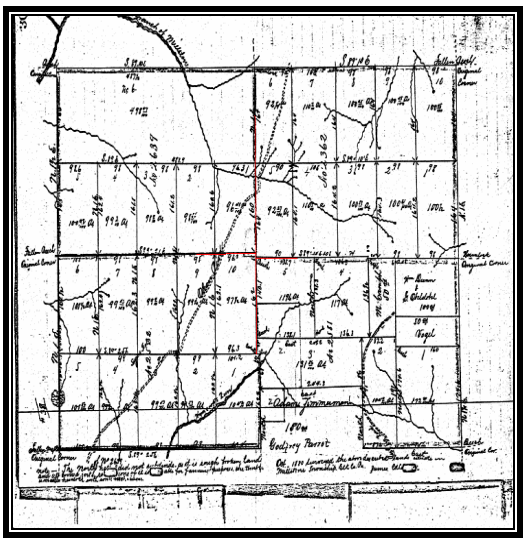
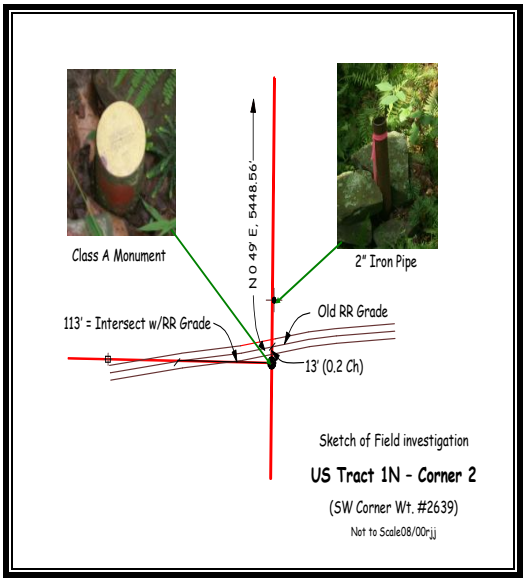


DIAGRAM **A full size version can be found in**

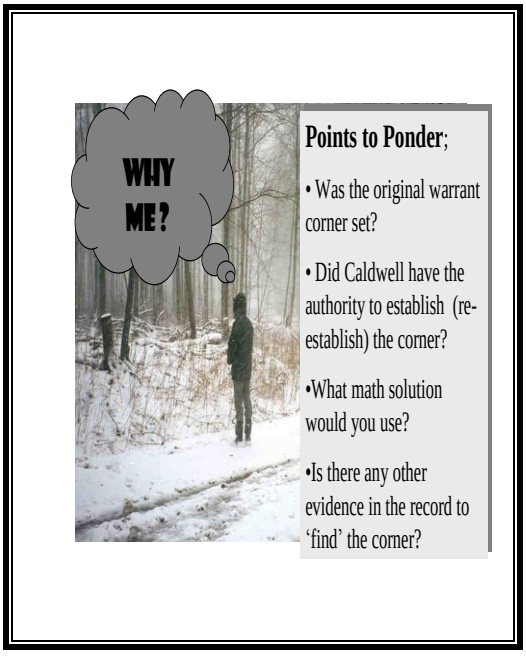
METES AND BOUNDS CASE STUDY

the Diagram section at the end of this study guide.

Here is the two-inch pipe of dubious pedigree and the Class A corner no particular pattern, rhyme or reason to the measurements to the adjacent corners that would make me believe one corner over the other.



So have you ever had one of those days, why me? Why did I inherit this? Well, I think there are some of the important points to ponder. Was the original warrant corner ever set? Did Caldwell to have the authority to establish or reestablish the corner? What math solution would you use and, is there any other evidence to find the record? Well was the original warrant ever set? No, I don't think so.



I think the text in Mr. Hermanson's book speaks pretty straight forward to what we have encountered in the record.

Did Mr. Caldwell have the authority to set the corner? Yes, the fact that Mr. Caldwell made that map and filed it establishes his creditability and like Al Kaiser said the fact that he was recovering

METES AND BOUNDS CASE STUDY

original evidence, gives creditability that even though there wasn't a license test or a CFedS program at that time, Mr. Caldwell probably did in fact have the authority to establish the corner.

Did he establish it right? Obviously, it is becoming a main question. What math solution would you use? Without the benefit of Mr. Hermanson's text, I wonder if I would have been tempted to use some sort of double proportion that remains to be seen.

But fortunately, finding that local expert gave me that answer of how to reestablish it, if I had to go back to math. Is there any other evidence to find the true corner?

Well, let's take a look. I truly, honestly was stumped on this one but because Mr. Kaiser had done that small tracks, I figured he researched it pretty well, and he said, well you know Bob, I think the key, the answer really lies in Denman's 1923 survey when you look at it you want to make that right hand side of the field book be one contiguous picture but think of it of actually being three different pictures, one shows his traverse coming into the fact that he sets the iron pipe, the second being the reference that he makes to the cucumber he describes and the BT that he makes and the third picture corresponds with the next run that he is making out of the corner so something similar to this.

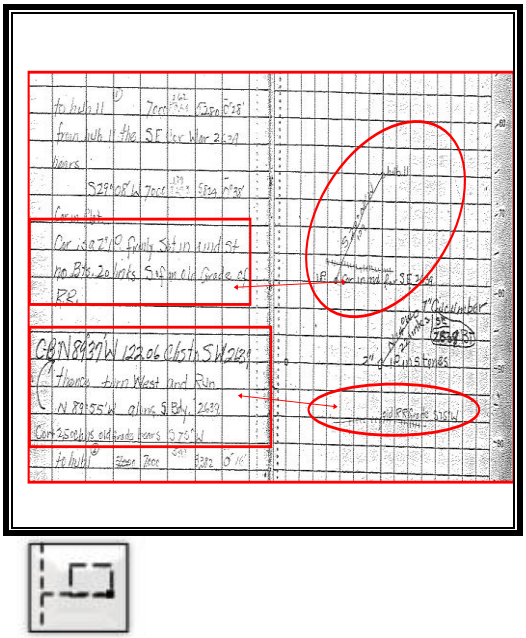
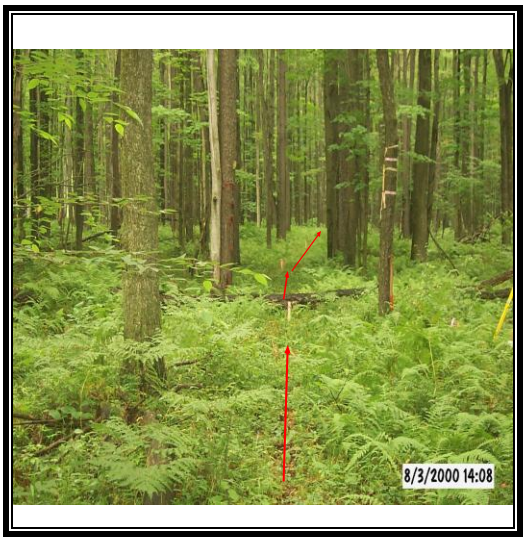


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

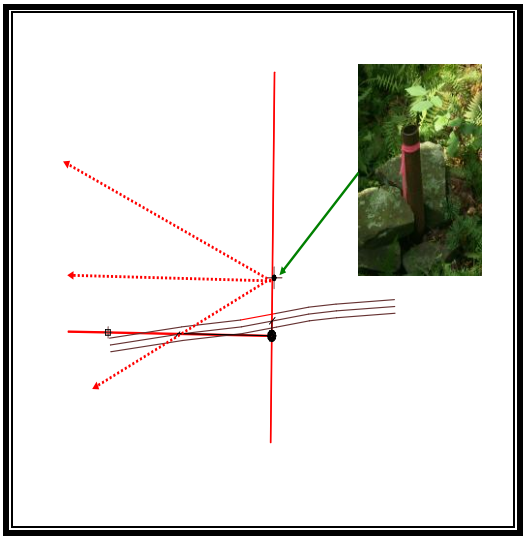
METES AND BOUNDS CASE STUDY

Well in that context it makes perfect sense, because we were able to find that old railroad grade which was truly a tram, prior to logging trucks back east, they ran these tiny little tram roads out through the woods to get the logs out to the major areas of commerce and hopefully you can still even see the tram.



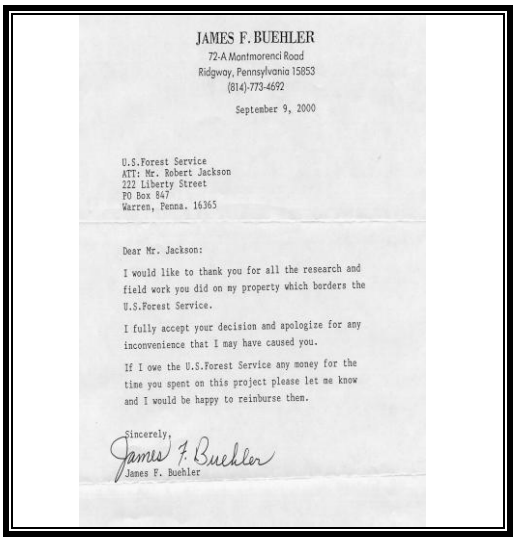
In the picture our stakes are there but you could pull up cinders and gravel and obviously stuff that was not natural material.

And again if you sat on the corner of ill repute there is no way that you could have turned the bearing as Denman did in 1923 begin running westerly on the southern warrant line and intersect that railroad grade.



METES AND BOUNDS CASE STUDY

Given all this, I wrote Mr. Buehler back our neighbor to the south, and said, our evidence shows that Mr. Denman did set the correct warrant corner in the correct place and that the property boundaries are as they are on the ground and I am afraid that we can't honor your land claim to which he replied, incredibly, he fully accepted my decision, apologized for any inconvenience and offered to reimburse us for our trouble. I have often thought about framing that.



JAMES F. BUEHLER
72-A Montmorenci Road
Ridgway, Pennsylvania 15853
(814)-773-4692

September 9, 2000

U.S.Forest Service
ATT: Mr. Robert Jackson
222 Liberty Street
PO Box 847
Warren, Penna. 16365

Dear Mr. Jackson:

I would like to thank you for all the research and field work you did on my property which borders the U.S.Forest Service.

I fully accept your decision and apologize for any inconvenience that I may have caused you.

If I owe the U.S.Forest Service any money for the time you spent on this project please let me know and I would be happy to reinburse them.

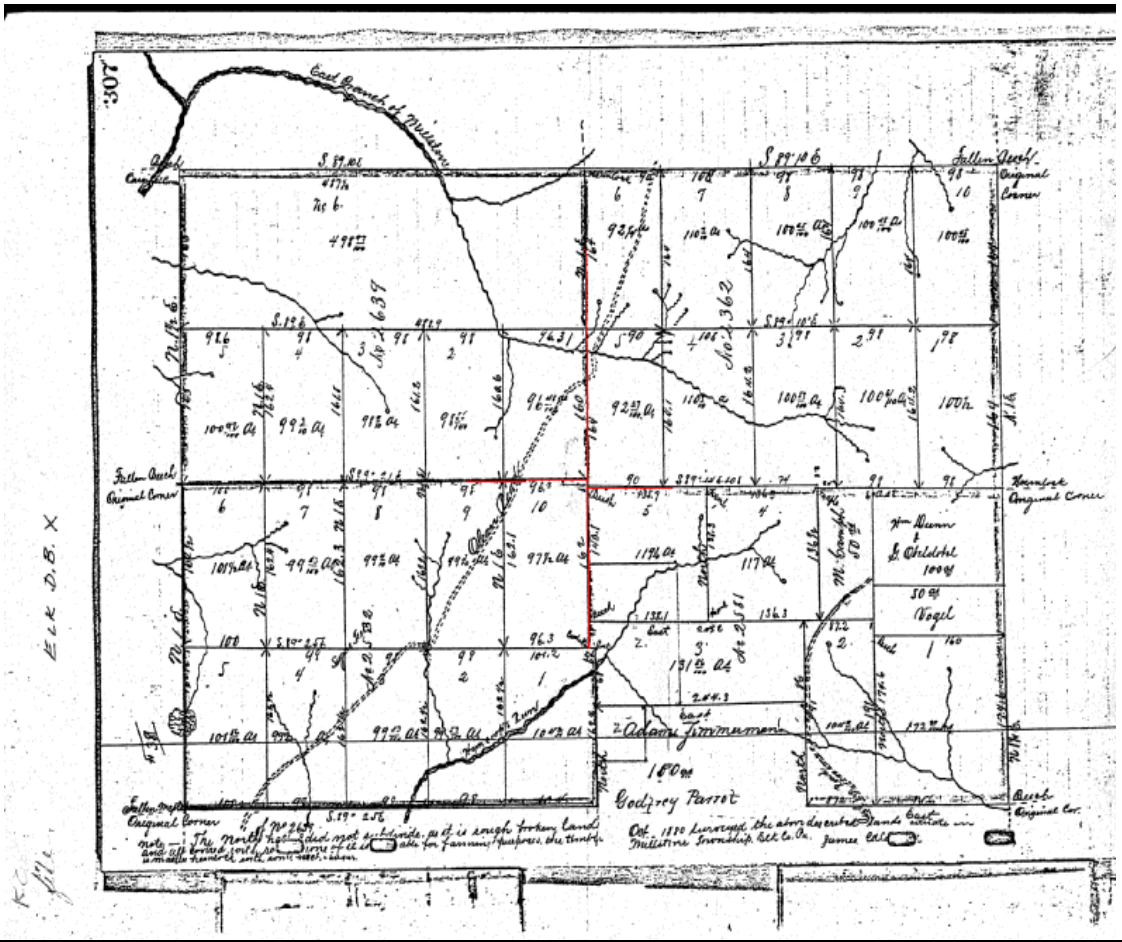
Sincerely,
James F. Buehler
James F. Buehler

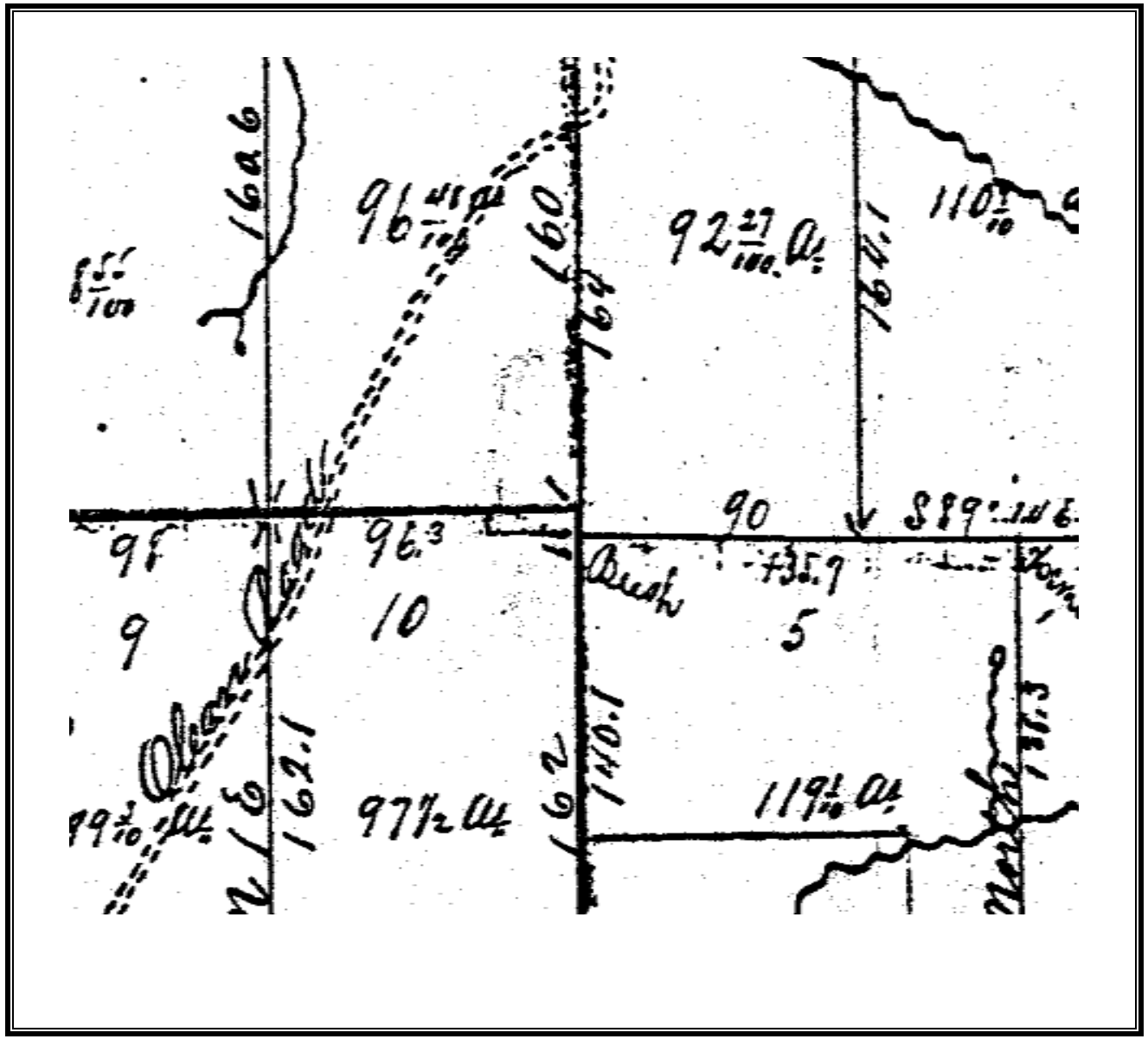
Conclusion

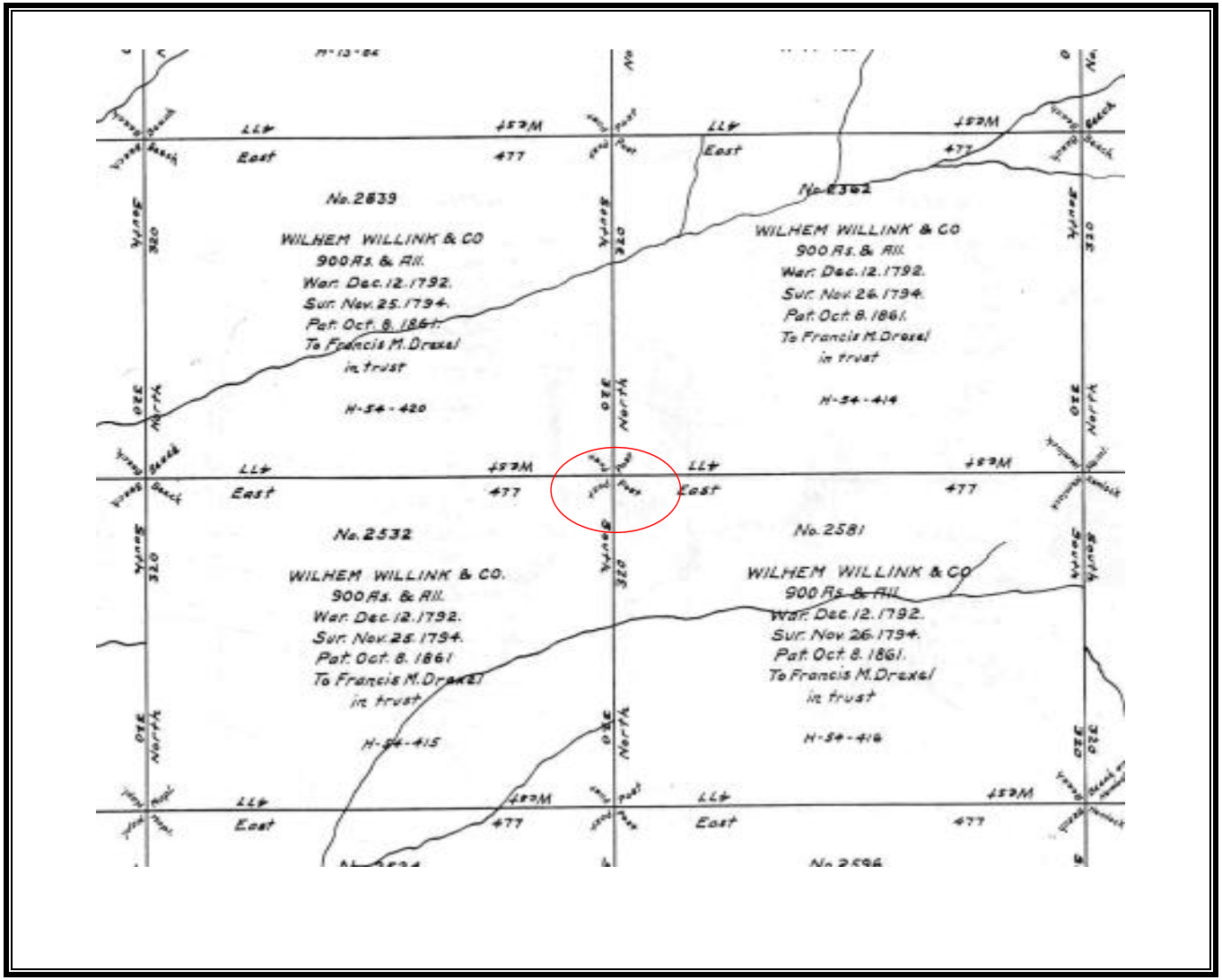
So, have we met our objectives, could you indeed list the metes and bounds retracement key principles, could you describe the origins of private land title of the non-public domain states, could you identify sources of conveyance documents and survey records and identify sources of local expertise, laws and customs because anybody can measure, it's a matter of knowing what to measure to. So that concludes this module on metes and bounds. Thank you very much and good luck with the rest of your studies

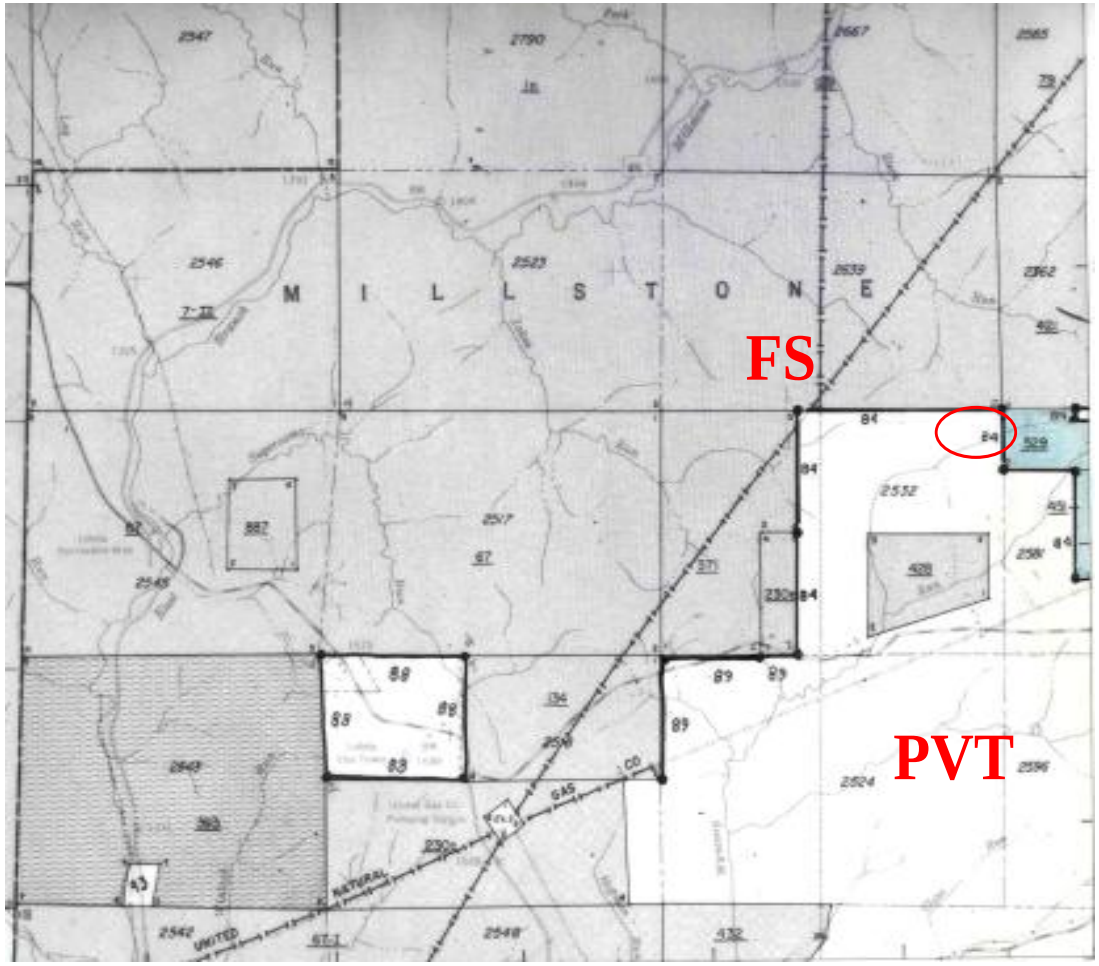
DIAGRAM

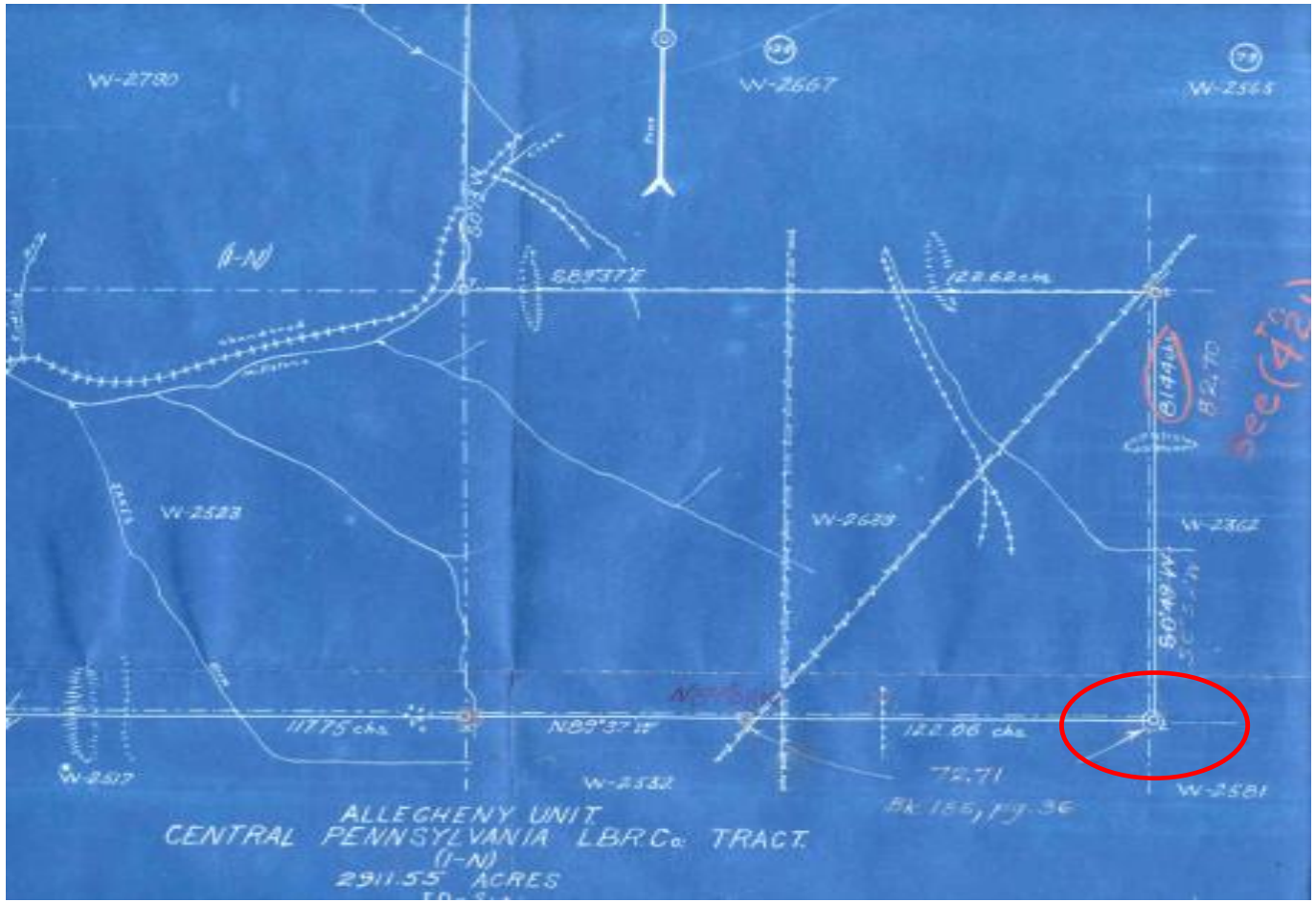
The Caldwell Survey

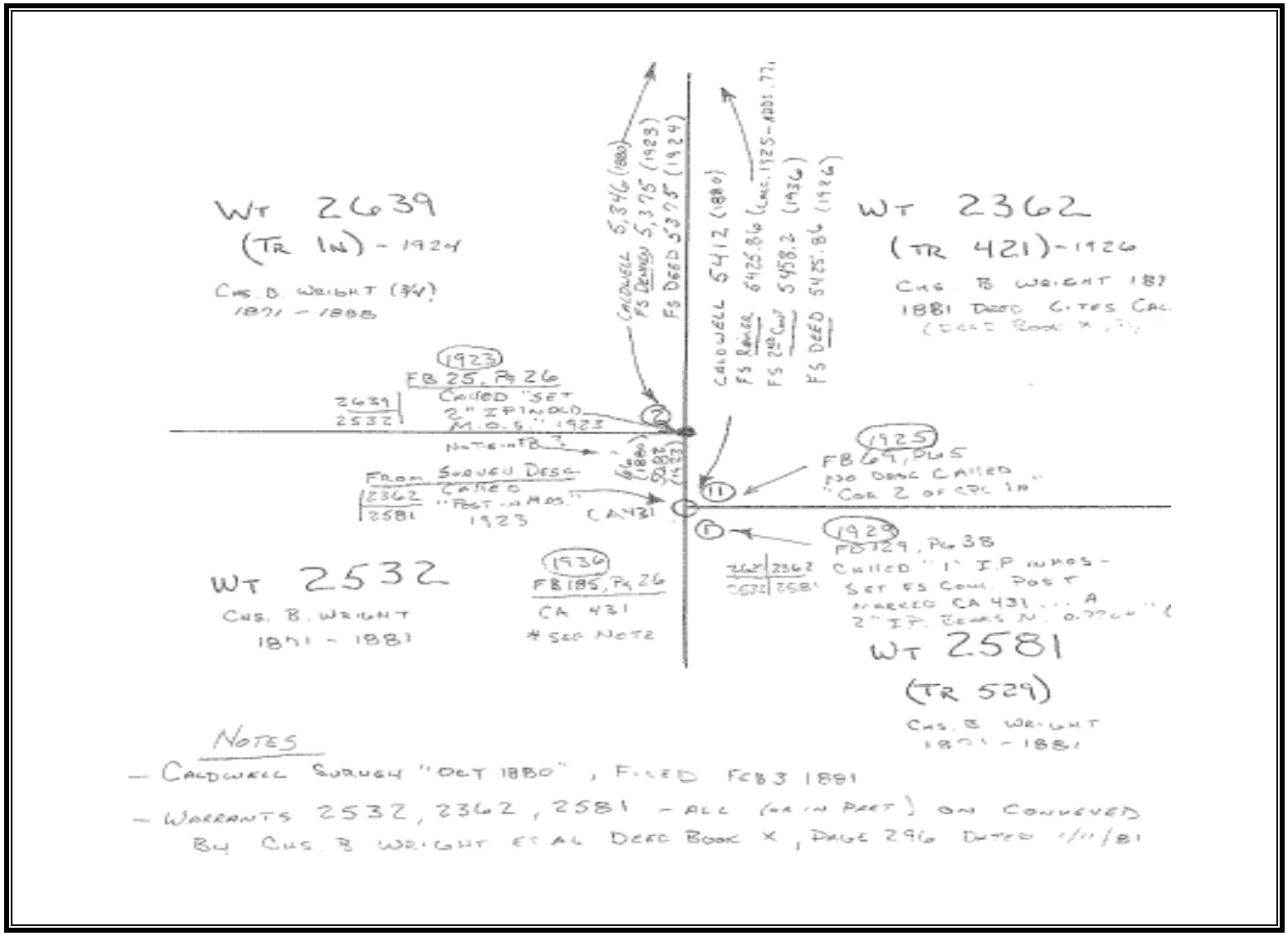


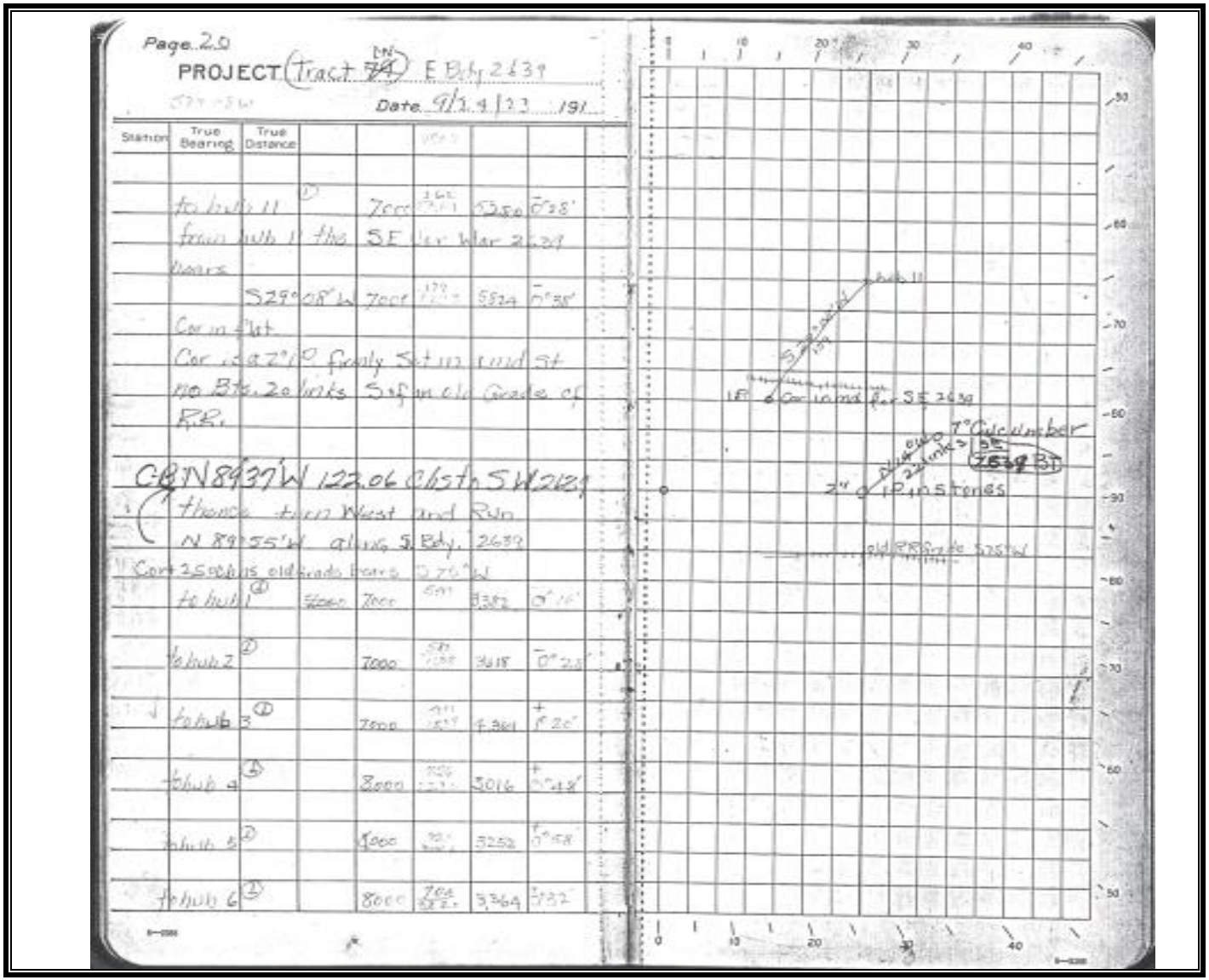

164.6
96 41/100 Ac.
160
92 27/100 Ac.
162.1
110 1/10
90
S 89°
+35.7
9
10
5
162.1
97 1/2 Ac.
140.1
119 1/10 Ac.

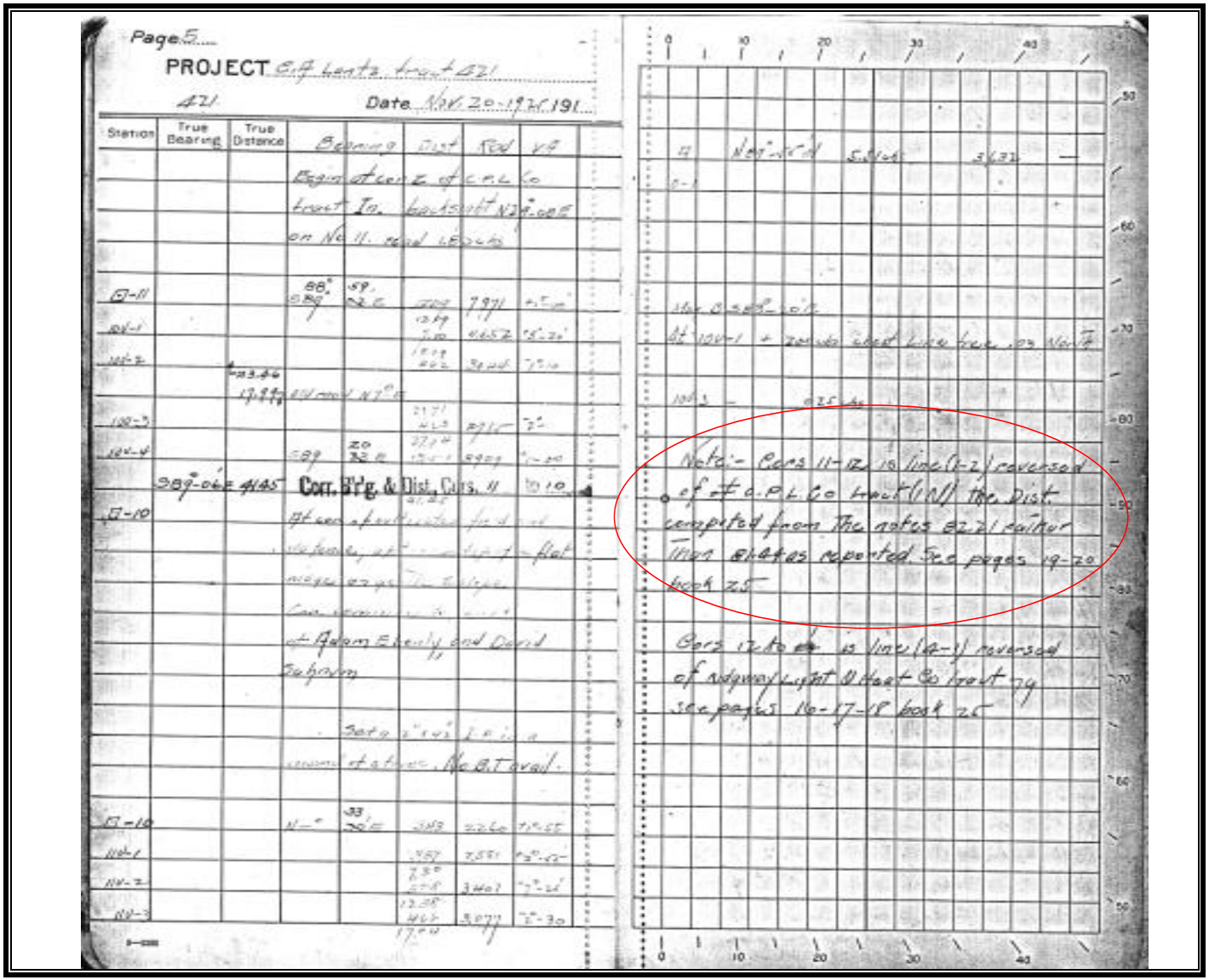

No. 2639
WILHEM WILLINK & CO
900 As. & RII.
War. Dec. 12. 1792.
Sur. Nov. 25. 1794.
Pat. Oct. 8. 1861.
To Francis M. Drexel
in trust
H-54-420
No. 2362
WILHEM WILLINK & CO
900 As. & RII.
War. Dec. 12. 1792.
Sur. Nov. 26. 1794.
Pat. Oct. 8. 1861.
To Francis M. Drexel
in trust
H-54-414
No. 2532
WILHEM WILLINK & CO.
900 As. & RII.
War. Dec. 12. 1792.
Sur. Nov. 25. 1794.
Pat. Oct. 8. 1861
To Francis M. Drexel
in trust
H-54-415
No. 2581
WILHEM WILLINK & CO
900 As. & RII.
War. Dec. 12. 1792.
Sur. Nov. 26. 1794.
Pat. Oct. 8. 1861.
To Francis M. Drexel
in trust
H-54-416
West
East
South
North
477
320

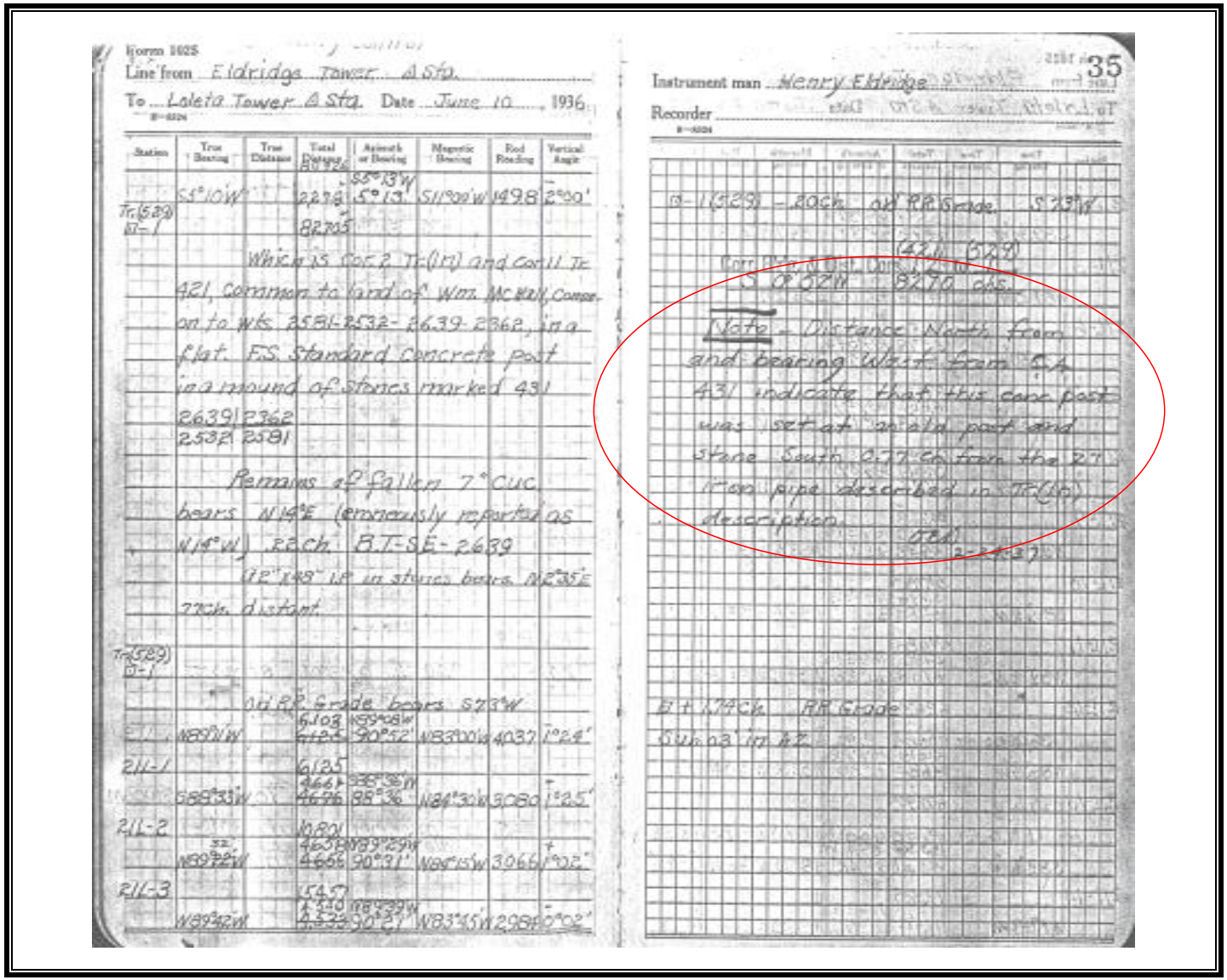

M I L L S T O N E
FS
PVT


W-2790
W-2667
W-2565
11-N
S89°37'E
123.62 chs.
W-2523
W-2683
W-2562
S0°49'W
82.70
11775 chs.
N89°37'E
122.06 chs.
72.71
W-2507
W-2582
W-2581
ALLEGHENY UNIT
CENTRAL PENNSYLVANIA LBR Co. TRACT
(1-N)
2911.55 ACRES


WT 2639
(TR 1N) - 1924
CHS. D. WRIGHT (SV)
1871 - 1885
WT 2362
(TR 421) - 1926
CHS. B WRIGHT 1871
1881 DEED CITES CAL
WT 2532
CHS. B. WRIGHT
1871 - 1881
WT 2581
(TR 529)
CHS. B WRIGHT
1871 - 1881
1923
FB 25, PG 26
CALLED "SET
2" IP IN OLD
M.O.S." 1923
1925
FB 69, PG 5
1936
FB 185, PG 26
CA 431
SEE NOTE
1929
FB 129, PG 38
CALLED "1" I.P. IN MOS -
SET FS COR. POST
MARKED CA 431 ... A
2" I.P. BEARS N
CALDWELL 5412 (1880)
FS RANGE 6425.86 (1925-ADJ.)
FS 2ND COR 5458.2 (1936)
FS DEED 5425.86 (1926)
CALDWELL 5,346 (1880)
FS RANGE 5,375 (1923)
FS DEED 5395 (1924)
FROM SURVEY DESC
CALLED
"POST IN MDS."
1923
CA 431
NOTES
- CALDWELL SURVEY "OCT 1880", FILED FEB 3 1881
- WARRANTS 2532, 2362, 2581 - ALL (OR IN PART) ON CONVEYED
BY CHS. B WRIGHT ET AL DEED BOOK X, PAGE 296 DATED 1/11/81


Page 20
PROJECT (Tract 74) E Bdy 2639
Date 9/24/22 191
Station
True Bearing
True Distance
to hub 11
from hub 1 the SE cor Mar 2.39
bears
S29°08'W 700ft
Cor in flat
Cor. is a 2" Iron firmly Set in mound of
no Bkr. 20 links S of an old Grade of
RR.
GBN 89°37'W 122.06 Chs to SW 2639
thence turn West and Run
N 89°55'W along S Bdy. 2639
Cor 250 lks old Grade bears S 7°W
to hub 1
to hub 2
to hub 3
to hub 4
to hub 5
to hub 6
old RR Grade bears S 25°W
2" Iron Pin & stones
7" Cucumber
Bkr
2639 BT


Page 5
PROJECT C.F. Lentz Tract 421
421
Date Nov. 20-1917 1918
Station
True Bearing
True Distance
Bearing
Dist
Rod
Vs
Corr. Brg. & Dist. Cors. 11
Note:- Cors 11-12 is line (2-1) reversed of the C.P.L.Co tract (N1) the Dist. computed from the notes 82.21 rather than 81.82 as reported See pages 19-20 book 25
Cors 12 to 13 is line (2-1) reversed of Ridgeway Light & Heat Co tract 79 see pages 16-17-18 book 25



Form 1025
Line from Eldridge Tower A Stn.
To Laleta Tower A Stn. Date June 10, 1936

Station	True Bearing	True Distance	Total Distance	Azimuth or Bearing	Magnetic Bearing	Rod Reading	Vertical Angle
	S1°10'W		2279	S5°13'W S11°00'W	1498	2°00'
Tr.(529) B-1			8270			
	Which is Cor 2 Tr.(1n) and Cor 11 Tr. 421, Common to land of Wm. McNall, Compr. on to Wks. 2581-2532-2639-2362, in a flat. F.S. Standard Concrete post in a mound of stones marked 431					
	2639 2362					
	2532 2581					
	Remains of fallen 7" Cluc bears N14°E (erroneously reported as N14°W) 28 ch. B.T.-SE-2639 12" x 48" L.F. in stones bears NE 35E 22 ch. distant.					
Tr.(529) B-1						
	Old R.R. Grade bears S73°W					
	N89°W		6103 6125	N89°08'W S90°52'	N83°00'W	4037	1°24'
211-1			6125			
	S89°33'W		4661 4696	S88°38'W S88°36'	N84°30'W	3080	1°25'
211-2			4696				
	N89°32'W		4638 4666	N89°29'W S90°31'	N84°15'W	3066	1°02'
211-3			4666				
	N89°32'W		4340 4332	N89°39'W S90°21'	N83°45'W	2864	0°02'

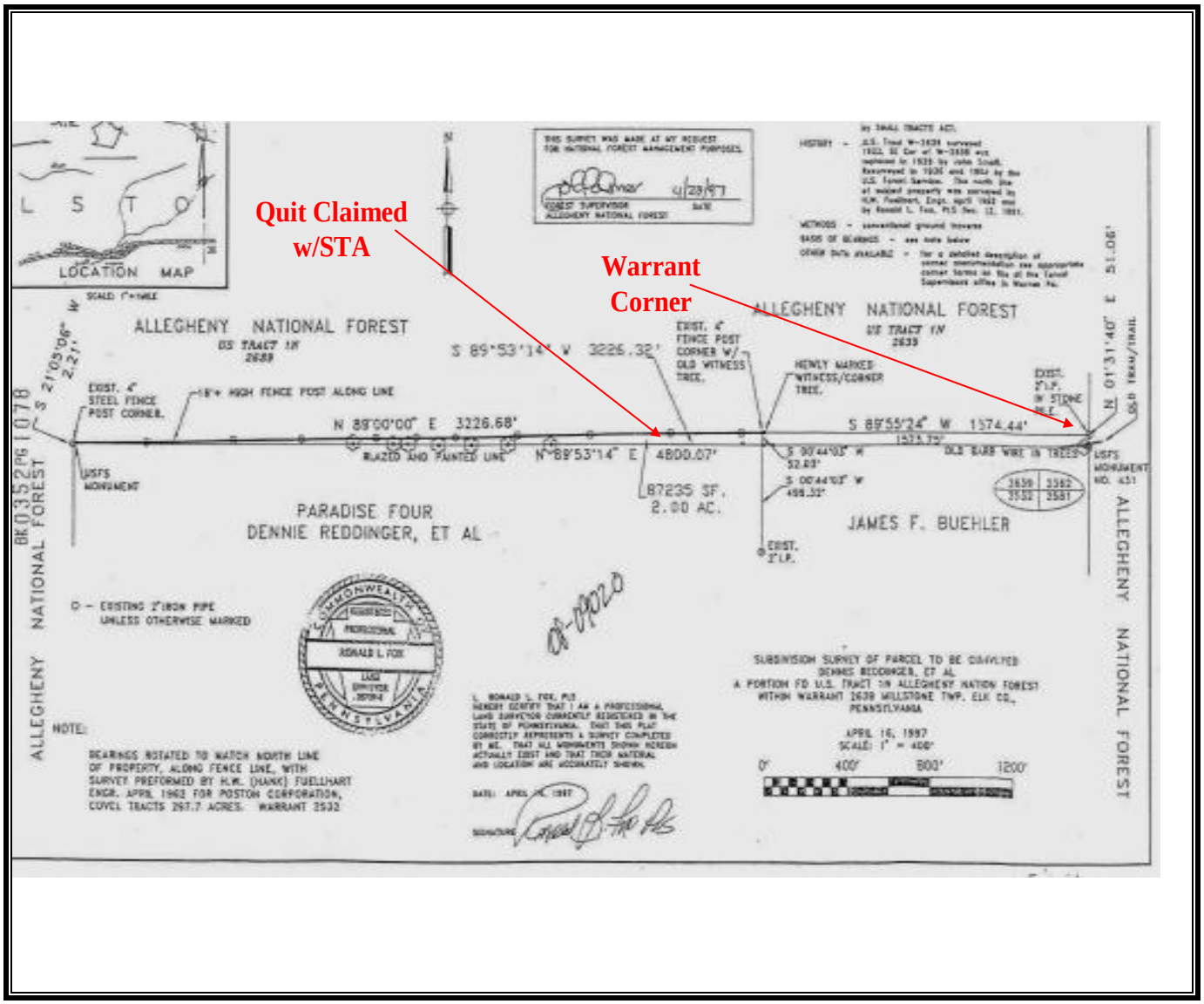
Instrument man Henry Eldridge 35
Recorder

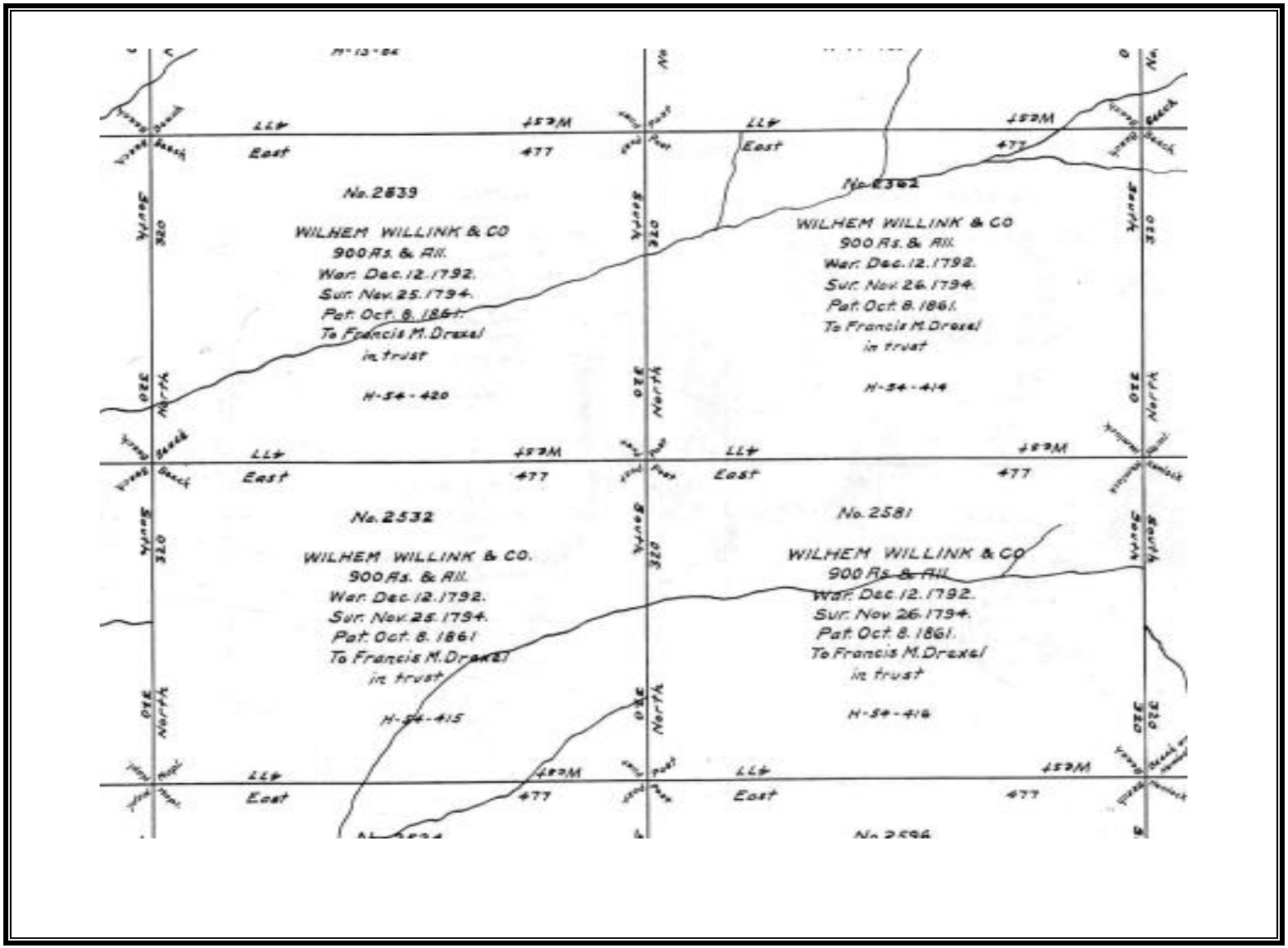
B-1(529) - 20 ch. Old R.R. Grade S 23°W
(42 ch. (529))
Corr. Tr. 421 U.S. Dep. 1 2-10
S 0°02'W 8270 dist.

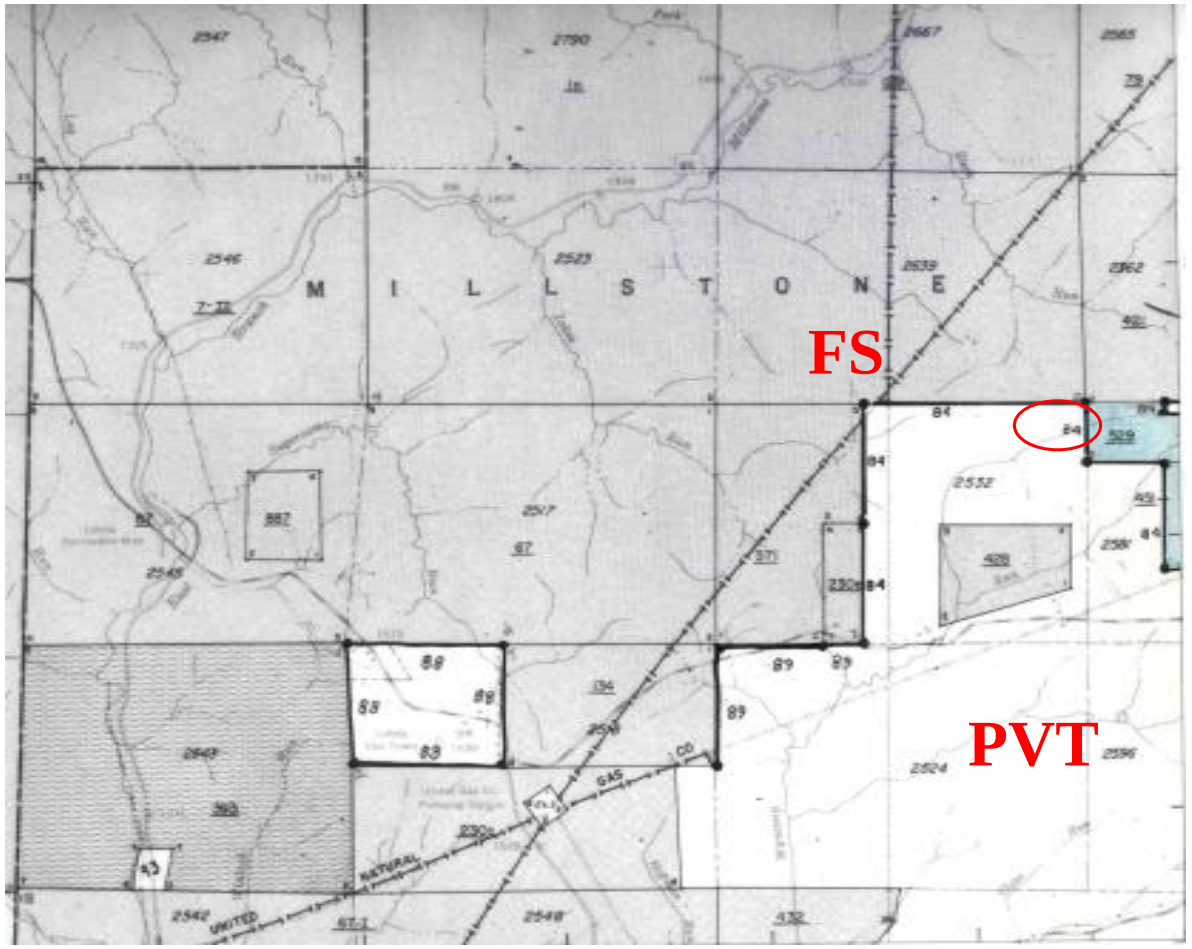
Note - Distance North from and bearing West from C.A. 431 indicate that this cone post was set at an old post and stone South 0.77 ch from the 2" iron pipe described in Tr.(1n) description.

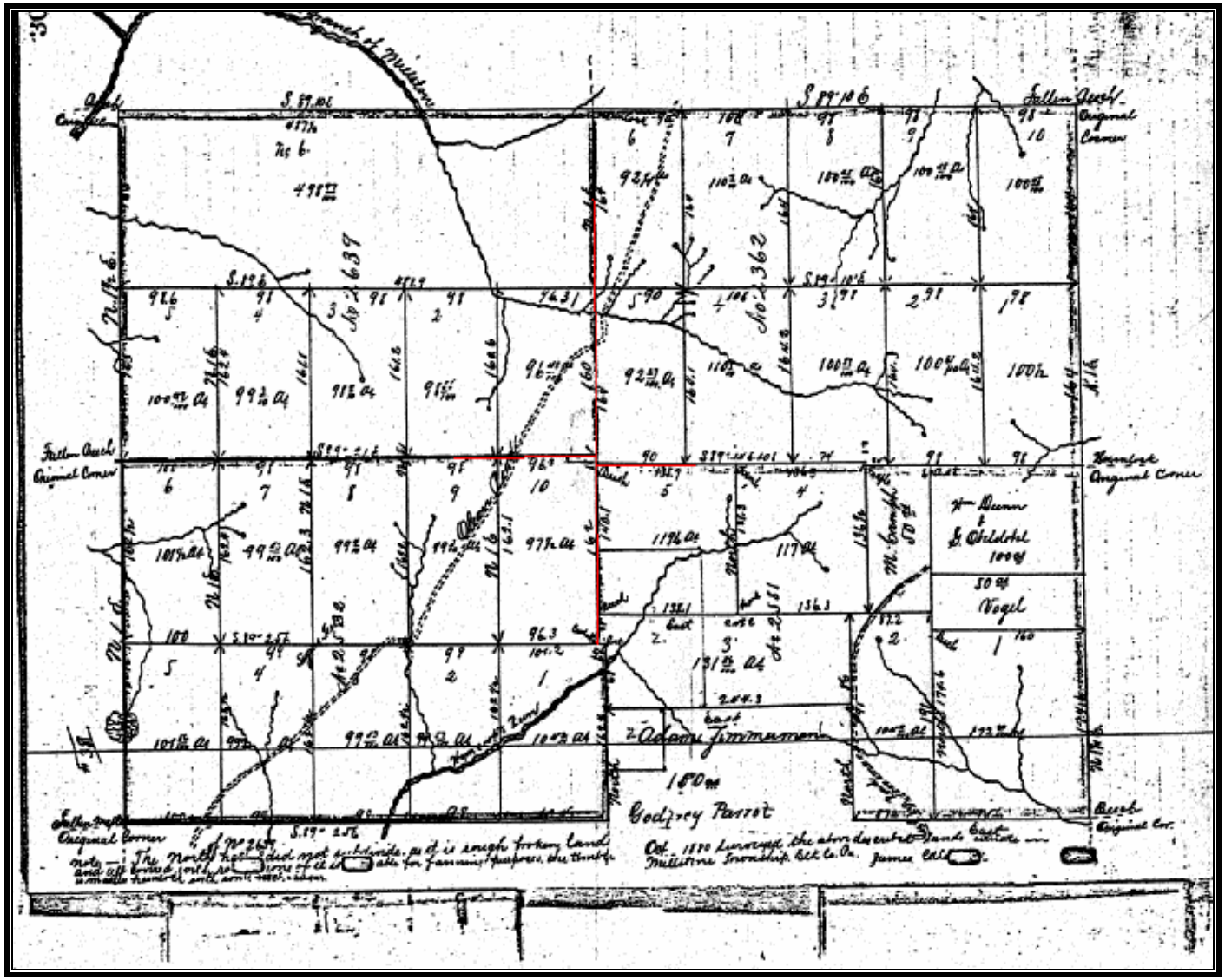
(Tr. 421 2-1-32)

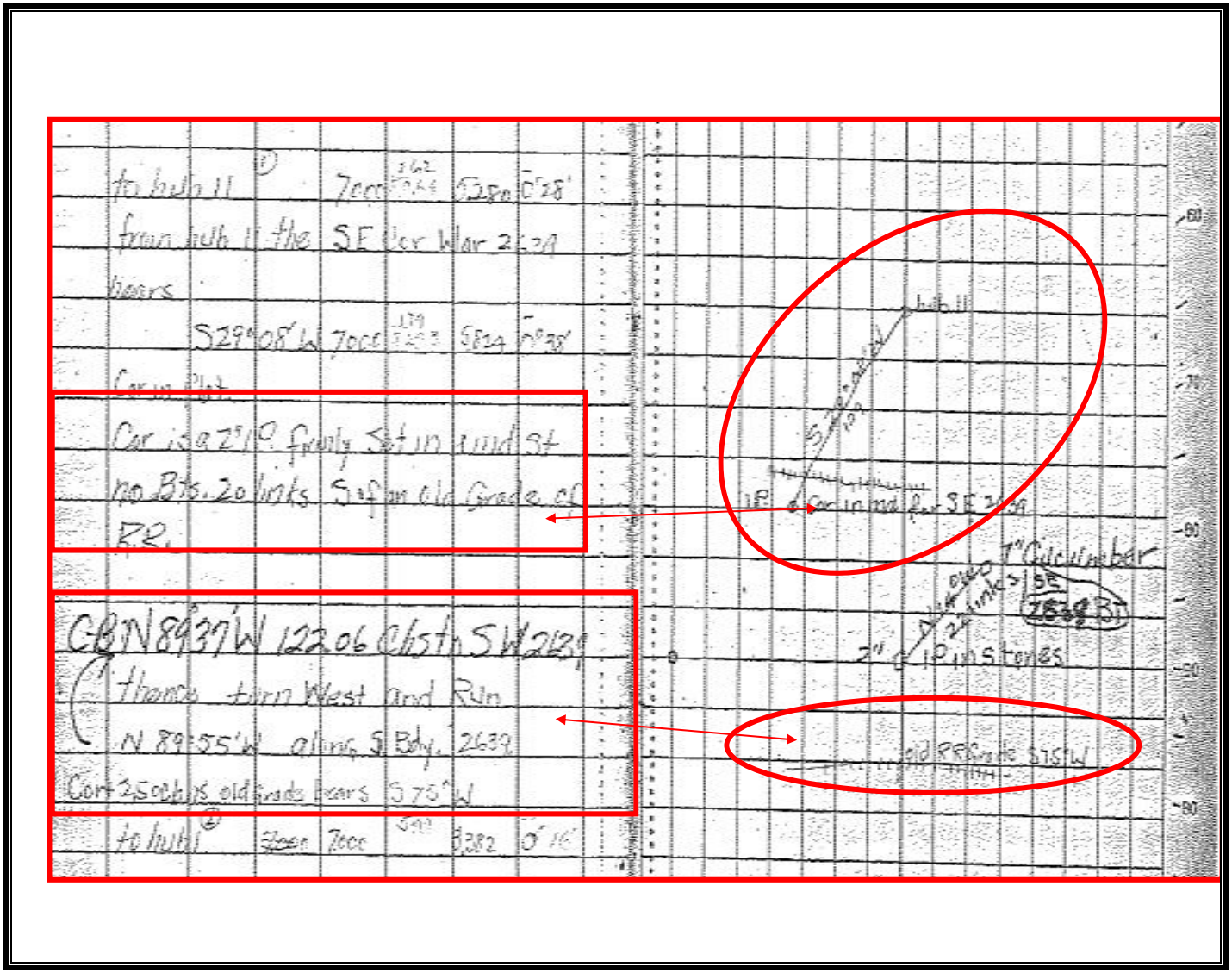
B.T. 1.79 ch. RR Grade
Sub 03' in SE


Quit Claimed w/STA
Warrant Corner
LOCATION MAP
ALLEGHENY NATIONAL FOREST
US TRACT 1N 2639
S 89°53'14" W 3226.32'
EXIST. 4" FENCE POST CORNER W/ OLD WITNESS TREE.
NEWLY MARKED WITNESS/CORNER TREE.
EXIST. 4" STEEL FENCE POST CORNER.
N 89°00'00" E 3226.68'
N 89°53'14" E 4800.07'
S 89°55'24" W 1574.44'
USFS MONUMENT
BLAZED AND PAINTED LINE
87235 SF. 2.00 AC.
PARADISE FOUR
DENNIE REDDINGER, ET AL
JAMES F. BUEHLER
EXIST. 2" I.P.
USFS MONUMENT NO. 431
ALLEGHENY NATIONAL FOREST
BK0352PG1078
O - EXISTING 2" IRON PIPE UNLESS OTHERWISE MARKED
COMMONWEALTH OF PENNSYLVANIA
RONALD L FOX
NOTE:
BEARINGS ROTATED TO MATCH NORTH LINE OF PROPERTY, ALONG FENCE LINE, WITH SURVEY PREFORMED BY H.W. (HANK) FUELLHART ENGR. APRIL 1962 FOR POSTON CORPORATION, COVCL TRACTS 267.7 ACRES. WARRANT 2532
SUBDIVISION SURVEY OF PARCEL TO BE DIVIDED
DENNIS REDDINGER, ET AL
A PORTION FD U.S. TRACT 1N ALLEGHENY NATION FOREST
WITHIN WARRANT 2639 MILLSTONE TWP. ELK CO., PENNSYLVANIA
APRIL 16, 1997
SCALE: 1" = 400'
0' 400' 800' 1200'


No. 2639
WILHEM WILLINK & CO
900 As. & Rll.
War. Dec. 12. 1792.
Sur. Nov. 25. 1794.
Pat. Oct. 8. 1861.
To Francis M. Drexel
in trust
H-54-420
No. 2362
WILHEM WILLINK & CO
900 As. & Rll.
War. Dec. 12. 1792.
Sur. Nov. 26. 1794.
Pat. Oct. 8. 1861.
To Francis M. Drexel
in trust
H-54-414
No. 2532
WILHEM WILLINK & CO.
900 As. & Rll.
War. Dec. 12. 1792.
Sur. Nov. 25. 1794.
Pat. Oct. 8. 1861
To Francis M. Drexel
in trust
H-54-415
No. 2581
WILHEM WILLINK & CO
900 As. & Rll.
War. Dec. 12. 1792.
Sur. Nov. 26. 1794.
Pat. Oct. 8. 1861.
To Francis M. Drexel
in trust
H-54-416
East
West
North
South
320
477


MILLSTONE
FS
PVT


Godfrey Parrot
Adams Zimmerman
Vogel


to hub 11
from hub 11 the SE Cor Mar 2
bears
S29°08'W 700
Cor is a 2"ø fndly Set in mnd St
no Bts. 20 links S of an old Grade of
R.R.
CBN89°37'W 122.06 Chs th SW 2639
thence turn West and Run
N 89°55'W along S Bdy. 2639
Cor 250 lks old Grade bears S 75°W
to hub 1
1" ø Cor in mnd
2" ø IP in Stones
T" Cucumber
old RR Grade S 75°W

Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

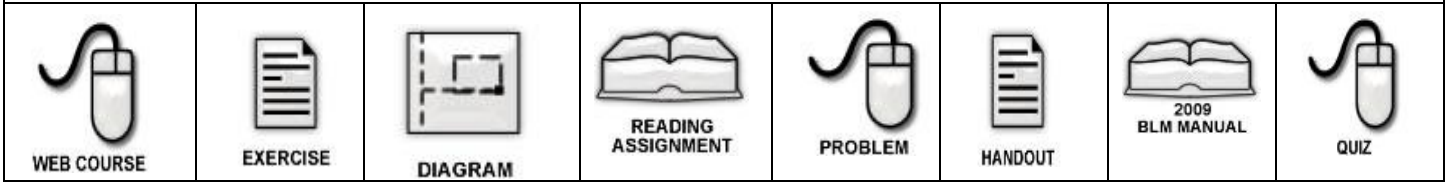
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Chain of Title Evidence Discussion (49 minutes)

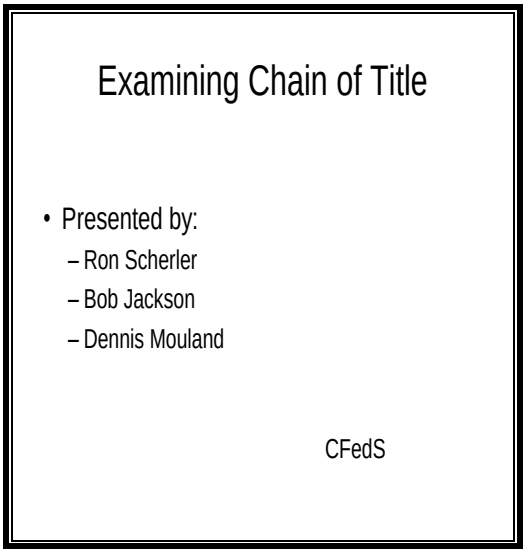
ICON LEGEND



CHAIN OF TITLE EVIDENCE DISCUSSION

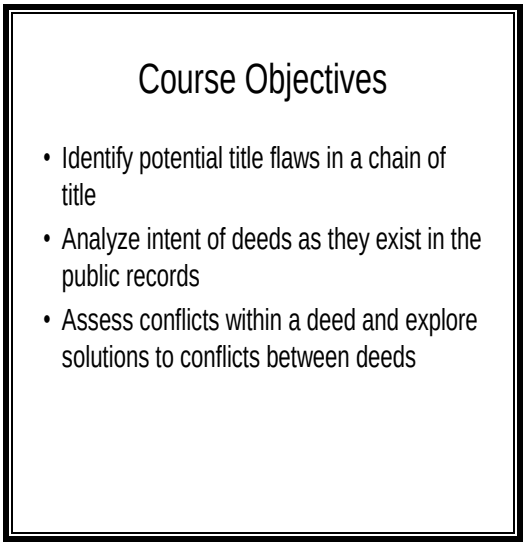
Introduction

RON: Hi I'm Ron Scherler and I'm here today with Bob Jackson and Dennis Mouland and we are going to discuss chain of title evidence and this is an issue that there may be some overlap with other situations or other portions of this training but it is something that we think is important and really wanted to cover and cover it clearly.



Objectives

RON: Now today there are three items that we want to make sure we cover. First, we want to identify the potential title flaws in a chain of title, second we want to analyze the intent of deeds as they exist in the public records and last assess conflicts within a deed and explore solutions to conflicts between deeds. So when you've completed this session, we hope that you're going to have a good understanding of this and be able to accomplish these tasks. So Dennis, how is this an issue with federal interest lands?

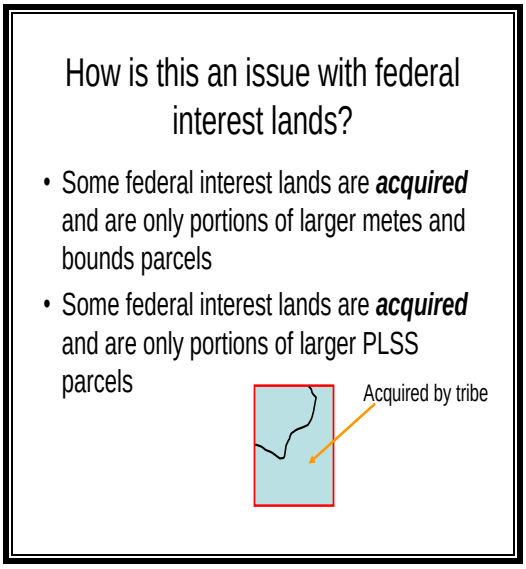


DENNIS: Well that is a good question Ron, many times people think of federal interest lands or federal land and they just think of the public lands in the west, but as we have just heard in the previous couple of lectures that Bob Jackson did and the case study that he had us go through, there is an awful lot of federal interest lands in the east even in the metes and bounds world and we need to remember that. It doesn't matter where you are in the country, we all have to deal with metes and bounds issues and we

CHAIN OF TITLE EVIDENCE DISCUSSION

have to deal with those even in a public lands world.

DENNIS: So the question is how is this an issue with federal interest lands and there is really two different ways to look at it, some federal interest lands are acquired and are only portions of larger metes and bounds parcels, such as the case study and things that Bob was showing us but then also some federal interest lands are acquired and are only portions of a larger PLSS parcel such as shown on the drawing below.



This could be some kind of an aliquot part in the public land system, but as you can see this portion was acquired by an Indian tribe and this portion here remains private land. So we have these sorts of issues all the time. Wherever it is that you are working in the country, with the public lands and especially on acquired lands in public lands in colonial states, we always have to deal with issues of title and title problems.

RON: Does it seem to you that when we are dealing with these often times, we are dealing with the most valuable pieces of property too and we are dealing with some of the most complex issues in dealing with these pieces of acquired land, which makes them doubly important? They have value and then there is complexity there.

DENNIS: You know Bob may want to comment on that, I'll say just that it seems to me that an awful lot of acquired land even here in the west is along really high value land such as waterfront. That may be true back in the colonial states or in Texas where you had worked too, Bob, would you say that?

BOB: Absolutely, the riparian areas are hugely valuable for not only the land management agencies, but as well as the public would like their slice of heaven, so they become the highest dollar lands around. I'd also like to add to this when you are speaking of acquired lands, how about the local customs where maybe the PLS system isn't completely adhered to where 660 X 1320 has been mislabeled the northwest northwest or even given a metes and bounds description around it.

CHAIN OF TITLE EVIDENCE DISCUSSION

RON: Yes, and I will tell you I believe we see that a lot in Indian lands where an aliquot part at some point in time changed from the aliquot parts description to some kinds of a metes and bounds that is 1320 x 660 and it distorts the meaning and causes problems. Yes. Good point.

Thousands of parcels are conveyed every day. What are the key issues, the key parts of information that we look at a surveyor when we are dealing with one of these land descriptions, these metes and bounds descriptions?

DENNIS: Well, you know as I think it was me that mentioned in an earlier lecture and I think Bob did too, we are talking about the intent of the parties and we have got to remember that the whole idea of the statute of frauds was that the deed has got to be written, that it is a written contract, and that in the United States it has to be recorded in almost every jurisdiction and so that is public notice, constructive notice, to the whole world of what the intent of these parties were.

And we have to remember that its pretty rare that we were allowed to go outside of the deed itself to find out the intent. It is supposed to be the binding contract, the words that were used to convey.

RON: So if we can't go outside the document, first of all, where are we allowed to go to find intent. Is that always?

If a deed appears to have enough information to put it on the ground can we think about what the intent is or do we just have to put that thing on the ground as written?

CHAIN OF TITLE EVIDENCE DISCUSSION

BOB: Let me share something with you first from my research back east from Mr. Bigelow from Vermont that I mentioned earlier.

Bigalow on deed calls...

"Parallel lines" are any lines which do not actually intersect each other within the vision of a rather near-sighted person. Any lines which do visibly intersect always form 90 degree angles" or "right angles".

"Northerly" means any direction except due south and may occasionally include that.

"100 acres more or less" means somewhere between 5 and 500 acres.

"A stake and stones" means a small twig long since rotted away, surrounded by up to 3 small cobbles well concealed under 6 inches of dead leaves. If there has been logging in the vicinity, there will be at least 3 tree tops over the leaves.

An **"iron stake"** is a figment of some lawyer's imagination. It was mentioned in his reference book example of survey descriptions. Many hours have been wasted by surveyors looking for these "iron stakes" on the ground.

"Beginning at a point in the road" means beginning at what the farmer,in 1872, imagined to be the center line of traveled way, the center line of right-of-way, the edge of traveled way, the edge of right-of-way or any other convenient point near a road from which to start pacing.

Mr. Bigelow speaks to deed calls and he said parallel lines are any lines, which do not actually intersect each other, or within the vision of a nearsighted person any lines, which do visibly intersect, always form 90-degree angles or right angles.

He goes on to say northerly means any direction except due south and occasionally it may include that. 100 acres more or less means somewhere between 5 and 500 acres. One of my favorites is stake and stone means a small twig long since rotted away surrounded by up to 3 small cobbles well concealed under 6 inches of dead leaves, if there has been any logging in the vicinity, there will be at least 3 tree tops over the leaves.

An iron stake is a figment of some lawyer's imagination. It was mentioned in his reference book example of survey descriptions. Many hours have been wasted by surveyors looking for these iron stakes on the ground.

And finally beginning at a point in the road means beginning at what the farmer in 1872 imagined to be the centerline of the traveled way, the centerline of the right of way, the edge of the traveled way, the edge of the right of way, or any other convenient point near a road from which to start pacing.

So, yes, in other words, Ron, it is truly where you find the intent of the parties. However, it needs to be examined with due diligence.

DENNIS: You know I am not certain whether Mr. Bigelow is a realist or a pessimist, but the deed language is exactly where we have to go and Bob's examples are perfect there because I am sure all of those are things Bigelow actual experienced there. He was Pennsylvania right? No, Vermont.

And that is the key to intent, isn't it? Of us trying to figure out what did they really mean at the time what did those words mean at that time?

RON: If the deed is confusing; can I just talk to the parties, if they are still available? What do I do?

CHAIN OF TITLE EVIDENCE DISCUSSION

BOB: No, that would be taking on a verbal contract and as Dennis said before, it is a written contract that really matters and shows the true intent.

RON: So I've got this that deed and I can't figure out what it says or what it really means, but I just can't go to the people who signed that deed, what do I have to do there?

DENNIS: It is like any kind of a written business contract. We agree that I am going to sell you my car for $5,000 so we have a written contract. That is part of the reason why we have title that we have to sign on the back of the title in most jurisdictions.

There must be some form of a written contract, and later on if you want to say no, no, no I didn't sell him that or no, no it was for $10,000 then the court is supposed to go back to the words in the contract and frankly, even with a boundary situation, let's say the deed puts the line here and both parties say we no we meant to have it over here.

The surveyor still does not any authority to change that. It is going to take some kind of either a correction deed if it is relatively quick or quit claim this if they can, it depends on your jurisdiction and zoning and certain things you would have to look into, but it has to be taken care of in the official record because the contract is the contract and that is what will be held up in court.

BOB: Dennis, I am glad you didn't say boundary agreement. We'll skip right over that.

RON: So is a properly completed and filed deed absolute?

BOB: No, no, absolutely not. As you said earlier, you could put a deed on the ground but you felt that there was some conflict with it. Obviously, there is going to be something on the ground that leads you to believe that the wording in the deed is incomplete and so maybe it is a matter of occupation lines or through additional research you found a senior right that that would appear to conflict with.

DENNIS: Well, let me just make quick drawing here on the overhead to illustrate an example of what Bob was just talking

CHAIN OF TITLE EVIDENCE DISCUSSION

about. And I want to show what happens when we don't go back in the chain of title and look at what is occurring with the parent parcel.

RON: So exactly what is a parent parcel?

DENNIS: Good question. Now you may use different terms in various parts of the country, the master parcel, or whatever, but what we are talking about, is that one person owned a significant chunk maybe that is what came from the government in patent or one of these warrant and things that Bob was talking about and so they start with the out boundaries of what it was they got from the sovereign and then they start to cut it up that is the parent parcel.

And there can be other subsequent parent parcels in the chain of title but it is when you start to carve something, not the whole, but something out of the parcel that had first gone to ownership so let me just draw an example, and forgive the lack of auto-cad abilities here folks but this is the parent parcel, these boundaries are perhaps fixed or are well known, I am just going to make that assumption just for this discussion. There are corners there.

Now let's say that the owner of this entire parcel wants to sell off a piece so perhaps he or she begins down here at some position and then follows a creek and then comes up a ridge and then does this, that and the other. All of this is fine but what if they go outside of the parent parcel, down here and then close out.

You can see the question that Ron asked is a deed absolute? No it's not. Because this person can't convey this land because they never owned it. It is completely outside of that. It could also be that they had sold this to maybe to A and then sold another piece to B over here and then B's parcel overlaps. And there is another situation where B's deed would not be absolute because this portion had already been sold and of course that is an example of junior senior rights and title, which we had looked at in an earlier lecture. So absolutely no.

The deed is not absolute. It is subject to what rights the grantor had to give and subject to what else is going on in the neighborhood.

CHAIN OF TITLE EVIDENCE DISCUSSION

RON: So then we often have to look at other parcels in order to figure out our parcel. Is that correct?

BOB: Absolutely, if nothing else from the junior/senior rights aspect but how else again going back to putting it on the ground, how else would you identify that conflict?

For example, if you look at the assessor's plat, everything is going to fit fine, but until you start putting those measurements on the ground and unless you see lines of occupation that would disagree or whatever how would you know its in conflict unless you look at the adjoining bounding properties, if you will.

RON: Do those bounding properties sometimes help you to interpret maybe some of the language in your deed? Does that happen also? We have some kind of conflicting evidence as we were talking about earlier; does an adjacent parcel sometimes help us to do that?

DENNIS: I think it can often clarify maybe there is even just a typo in your deed, and yet when you put it together with what is going on next door at all, all of a sudden it makes all kind of sense.

And I am going to reflect back to something that Bob had mentioned in his earlier lecture, and that was, when we are talking about metes and bounds, a bound is this limit its something you are up against and the law considers a bound to be that you are saying I am not in conflict with that, I am not across it, I am not shy of it, I'm right on it when you call for a bound.

So using some of Bob's examples, where it said thence north to the south boundary of the Smith property, then you are going to have to go because your deed has called for that boundary as a limit, therefore, you need to know where that boundary is. So in reality to do a proper boundary survey, it often takes quite a bit of research of not just your chain of title but the adjoiner's chain of title.

BOB: I would even take it one step further, Dennis, and say almost to a point you could exclude the bearing and distance because if it bounds on another parcel, that is where the line has to terminate.

CHAIN OF TITLE EVIDENCE DISCUSSION

RON: Well, it seems to me in our discussion about the parent parcel then, even though we are talking about one of the smaller parcels, we may have to identify the boundary of the parent parcel. Any comments about that?

BOB: Well, yes, I think that in the Caldwell example that proved out absolutely. At some point time, some surveyor in history, and I didn't mention this in my discussion, but I suspect that Mr. Caldwell in the 1880s even though he was trying to establish an already established warrant line, at least by law by that protraction thing, for some reason he ended up with two corners.

I suspect that he for some reason actually monumented an occupation line, which in this case, the four warrants, the four parent parcels were in deed owned by the same person, but had there been two other owners in there, he would have erred in the fact that he would have either left a gap or created an overlap.

RON: Any comments about that Dennis, before we move on? So we have mentioned chain of title a few times so we are kind of getting to what this chain of title is with a parent parcel and then on. Do you want to comment on that at all?

DENNIS: Chain of title is a term used in the title industry, not just surveyors and it is really going back as far as you have to go back to figure out if there is junior/senior, it depends on the language in your description that you are dealing with as well as some of the language in the adjoiner deeds too as to what other documents you have to get and take a look at and assess.

But I think that it is important that we remember that the chain of title in the title world is just talking about who owned it, who gave an easement on it, who had a lien against it and it kind of follows that. The surveyor is going to pay attention to another aspect of chain of title and I have actually given it another name. I call it description history. Because I am interested in what words were used in all of the deeds down through time since we came out of our parent parcel.

A good example that we had just a little bit ago was where they have changed the description system, maybe we had a public lands description that was for 40 acres and they changed it to a metes and bounds. Or maybe you had a metes and bounds description

CHAIN OF TITLE EVIDENCE DISCUSSION

and somebody in history rewrote that description as the westerly 100 feet and thinking that that was one and the same thing and actually not realizing that they were changing the intent.

So we as surveyors have to pay close attention to this description history to see what language is used and you guys have seen as I have where the original deed and the next 10 didn't mention monuments and all of a sudden there are monuments called for or vice versa. You know, that helps you to understand. I think one of the biggest problems in surveying today and especially in a non-public lands world is that so many people believe that the deed that the client walks in with or in your case if there is some federal interest lands and whether it is an individual Indian or a tribe or the Bureau of Indian Affairs or any other agency for that matter, they hand you some deed and we just go put that on the ground. You can't just do that.

It's very rare that you can get away with that. You almost always have at least somewhere to go back in the chain of title and as I am concluding here pay attention to the words that were used to describe the land and not just who owned it and when those dates were.

BOB: Dennis, did I mention that an iron stake is a figment of some lawyer's imagination. That is how they show up in the deeds. I'll take that one step further, and say I found in irregular parcels in particular, you need to go back even to the patent.

In the case of what we run into a lot on my forest of mineral claims there can be a save and except section in there that unless somebody picks that up that can be lost in time and people quite innocently are selling things that they didn't own.

RON: Save and except? Explain that.

BOB: For an example, if I own mineral survey that is now patented 2316 but when Theodore Roosevelt conveyed that to me it was in conflict with unsurveyed or unpatented claims.

There may be a clause at the end of that that says save and except that portion of said survey, which overlaps. And it is a reality to me particularly in the case of irregular boundaries, because it is a metes and bounds description.

CHAIN OF TITLE EVIDENCE DISCUSSION

You need to make sure that it was conveyed in whole.

RON: Now getting back to this deal of descriptions changing, this history of descriptions, I get a feeling from your comments, Dennis, that this is very common. It is not the exception. It is very common.

DENNIS: Well, unfortunately, let's put the cards on the table, how many people really know how to write a legal description, okay? There are a few states where it is required that it has to be a land surveyor to write a legal description.

Most states haven't gotten caught up with that and probably never will, and part of the reason is because the lawyers are charging plenty of money to write legal descriptions and title insurance companies, abstractors, and even the real estate agents are in many cases writing the legal descriptions.

And frankly, there is a huge body of law, both common law, case law, and statutory law in many states about legal descriptions and how to interpret those and the words and everything have to be so carefully crafted and so that is why I guess I will just put it if amateur gets into that chain of title and oh well, this is what they meant or I'll just add iron stake, or I'm sure this is really what they meant to say, it just bungles up the title and creates all sorts of difficulties.

And frankly, that is our job as surveyors is to identify those things so that they can be fixed through the proper procedures, not necessarily our subject in this lecture, but so that they can be addressed, or otherwise no one ever knows about these things until a good professional surveyor goes on the ground.

BOB: Bounds is I think a good example, everybody is pretty comfortable with bounds on a senior tract, then the terminance point is fixed, although you may have to establish the line of the senior tract first. Dennis, just to throw a kink into the conversation about, thence along a fence?

DENNIS: Well. You know thanks, Bob. You know thence along a fence, well I'll assume I know where you are going with this. First thing I have to do if there has been any time at all is figure out is this the fence that they are talking about. Has the fence been

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rebuilt? Has it been moved?

You know thence along a fence is a call for a monument technically, a physical monument. As with any other call, a bound or a fence, I need to make sure that that is the one that was intended and then take a look at it.

But I have seen some that said very clearly thence following the fence in a westerly direction. You go out there and the fence is doing this and as far as I am concerned every one of those angle points was the intent of those parties, unless there is some senior right or something like that that could conflict with it.

RON: You know as we are talking about language in the deeds, one that I have run into over and over again that causes a lot of confusion is "subject to" as opposed to "except", where the deed writer used except when they were talking about an easement or right away, which normally the proper language is subject to when we are talking about an easement and except when we are taking something out of the deed. Have you guys had similar problems to that?

DENNIS: Well, I'll be happy to draw you a picture about that. I have been designated as the official picture drawer in this sequence. All right.

Let's say this is our parent parcel here and I convey to you this parcel, let's just make up some dimensions, 1,000 feet by 1,000 feet, if I convey this 1,000 by 1,000 to you and then I say except the southerly 25 feet. In the law, when I say except, that means I sold this entire parcel, but not this piece. That is what an exception is.

Whereas a subject to or another one we see a lot used here in the west is reserving there from. In fact, you will see deeds that say reserving and excepting there from. Well, those are opposite. Those are opposite things. So you have to go back in the chain. Sometimes you can look at the acreage of the entire parcel that was conveyed versus the parent parcel to be able to determine if they included it or not. But you have to figure out was this an exception or a reservation?

A reservation, if on the same drawing, I was to reserve the

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southerly 25 feet, what I have done is I have sold this land, but I have reserved some right on it, usually it is an access sort of a thing, I have reserved some right on it. So those are really quite different circumstances. And you are right those words are used interchangeably by a lot of novices in description writing and you have to figure out what really was intended and what was capable of being intended.

BOB: So in other words those are red flags to you when you find them in a description and it is something more that makes you want to get involved out on the ground and see what is really going on.

RON: So what we have just said here is that you can go outside of the deed to start trying to define and figure out what that deed is talking about. Is that correct?

DENNIS: That's true but it is really limited. The courts, and Bob you throw anything you want in here, the courts are loathed to go outside of the deed, it is the written contract between the parties. And really there are only two or three circumstances that the courts will allow anyone and especially a surveyor to go outside of it and one of those is to just to figure out what did the words mean at the time.

There could have been words and one of my favorites is, back of the lot. They sold the 25 feet in the back of the lot. Well since the time of that writing, the street has been moved to the other side or they abandoned that street, so back and front and left and right, sometimes they mean different things. So you can go look at what was historically the facts of the time to figure out what they meant. Also you are allowed to go outside of the deed to clarify words that they used there are some words that should not be used in legal descriptions, and the courts have given us an idea of what we are supposed to end up with on those.

If you can't figure out what they meant by it and the courts have given us, well here is your answer. If you can't figure out the intents of your parties with those bad words that they used or poor language that they used, then you can go outside. Then one other is you are allowed to go into the field and examine the field conditions to figure out what they meant, for instance, thence to the centerline of the road, well if the road has been moved since

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that 1900 deed was written, then you have to go out and find evidence of where that road was to be able to determine what their intent was. But pretty much that is the limitation of getting outside of the words in the contract itself.

RON: What about measurement, distances? We have a lot of different units of measure. How do we go about determining or can you give me some examples of some interesting units of measure and how you go about determining what they are?

BOB: Well, I talked a little bit earlier about the gentleman who tried to retrace some documents that had been supposedly recorded and measured in chains when he was actually able to find somebody who had worked on a crew and it turns out that they were using a rope because they couldn't afford a chain and that they had tied off knots at 50 ft. because any fool knew that a chain was 50 ft.

Another interesting one is veras. If you are working in Texas the definition of a vera has changed throughout the years so it is a matter of, I probably sound like a broken record here, but I think its a matter of getting on the ground and putting those measurements into a context that you can see and feel.

RON: It seems to me what we are saying is take a little bit time, make sure that you read the document carefully and make sure that you do the research that it takes.

DENNIS: You know what I think it takes more, in some boundary surveys, you spend just as much time and effort and energy and worry doing your research and trying to piece it all together as you do the stuff in the field.

I think sometimes we get that backwards in our modern day; where we want to hurry up out in field with our GPS and boom, do this, that or the other. But quoting Bob in his earlier thing, you know, the issues are rarely in the math; it is rarely in the measurements, it is usually in the words, and in the intent and in the law.

BOB: But the good news is that so much of this information is getting put online nowadays. The Reid County where I work has plats scanned back to the 1900s and so I know we all try to do

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things quicker and faster, and boy that is a help, but if you don't have that it is still not an excuse to not look at that record.

RON: I can think of a survey in our office several years ago where we spent the entire budget for the survey doing the research. And we had to go get more money to actually go do the survey. So, yeah, I can identify with that. What about conflicts or disagreements where we actually have out and out conflicts or disagreements. How are we going to handle those?

BOB: In general? What you find on the ground is, let me rephrase that, you are going to find a conflict because it conflicts with what is on the ground? Is that correct?

RON: Generally, yes.

BOB: First you have to start with your junior/senior rights, the principle, you can't sell something that you don't own. That is the first one that comes to my mind.

DENNIS: I think maybe you can expand on that a little bit too. First of all you can have conflicts within your own deed. Right? Yes. In fact I have always said whenever you have more than one call, you are going to have a conflict. Thence north a hundred feet. That would be nice. Just leave it at that.

But thence north a hundred feet to rebar on the south bank of the creek. Now we are getting all that stuff and we have talked about in earlier lectures the seniority of calls and maybe this is a good time for us to pause and think about that for a moment. You recall the seniority of calls, it starts out with, depending on what text book you are reading, but calls for natural monument, call for artificial monument, call for ties to survey distance, bearing, area even coordinates down at the bottom sometimes. But we need to understand something about conflict within your own deed.

That seniority of calls or I think Bob you called it the dignity of calls, right? Yes, that is what some of the textbooks call it and we need to realize that that is not some kind of a decision matrix like an engineering decision matrix that you would use to solve the problem. The way I like to think about is that you don't go to that list until it is 4th and 50. You know 4th down and 50 yards to go. When it first and 10, you do your best. You know in other words,

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if your deed has a conflict, you want to see if your deed will answer the conflict. You want to let your deed resolve the conflict. And you would be surprised at how often they do.

What has happened a lot in modern surveying is that if there is a conflict, we don't even have to think about it, we just have to go to this list and come up with a, you know, well a natural monument over an artificial monument, so that is how I will answer it. Well, that's not true.

And we need to realize that that dignity of calls is a guidance given to us by the courts, when you can't figure out the intent of the parties or cannot resolve the conflict within your deed itself. Then you go out and look for that. Now there is some other things too within your own deed that we need to think about, and Bob mentioned when you are talking about other deeds, junior senior, those sorts of things, but even within your own deed, the words that are used, and I mentioned this a few minutes ago, we have words that don't mean what people think they mean.

Put it that way. I will give you a couple of examples here. My favorite one is adjacent. You see this in deeds all the time. They say adjacent and what they think they are saying is that I am adjoining you, that we are contiguous. Well that is not what adjacent means. Go to Black's law dictionary and see what the lawyers are going to look up when they go to court on this. The courts have ruled that adjacent means close but not touching. So that is an example. So don't use adjacent. And when you see it in an old deed, it doesn't guarantee that they were saying adjoining and if it goes to court, the courts are probably going to look at past court decisions and say well it didn't have to mean adjoining.

Another one that I like is, and I can't imagine who fought this in court, but you know where there is a strip description where it is 50 ft., 25 ft. on each side of the centerline. If you say 25 ft. on either side of the centerline, the courts rule well either is a choice and you only got of the 25 ft.

That had to have been the same person who sued McDonalds for the hot coffee. Those are the kind of things that we need to be aware of and when you look at a book like Gurdon Wattles and some of the others, there is a whole chapter that is devoted to terminology and words that we want to be careful of and that is

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another thing within your own deed, if you can't figure out they meant by due north, if you can't figure out the basis of bearings from that deed, than the courts have said due north means astronomic and that is probably not what they intended but if you can't figure out what they intended, then the courts have given you an answer.

So we need to be aware of inside our deed as well as with adjoining deeds.

BOB: What I would like to bring up at this point, sometimes a conflict can't be resolved and as we all know the surveyor's role is quasi judicial and sometimes it is just a matter of putting what the deed description says on the ground and taking it further to other parties from there.

RON: Now we have this new business practice about to become a common business practice. The regulations are just about written for our boundary standards and one of those is a legal description review.

What I see happening there is that a lot of this kind of information is going to end up in a legal description review, a land description review.

BOB: Yeah, fortunately, my agency has had that for several years, and what it has really done is that it has kept the realty folks who are well meaning and their mission is to acquire and exchange land and of course they get caught up in that mission but now that they have to present a legal description verification form to me or another forest land surveyor to review when we are going to sell or purchase. It saved a lot of those problems from happening up front.

RON: And now we are going to be using CFedS in some situations within Indian country to be doing that same process too so that will be interesting.

DENNIS: You have another form or business practice that we are calling the chain of surveys.

That is exactly what we have been talking about here and the certificate of possession and inspection which we have used for

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years in federal agencies, you know, and it has almost been a joke at times, but for CFedS it is going to be taken seriously on trust lands or any federal interest land for that matter. That is a certificate that is really occupied.

There is no outside occupation of a parcel of land that the government has acquired or is about to acquire. The CFedS will play an important role in all of these practices.

RON: And this is something that many of you have not heard about yet. Later on in this training program there will be a session about boundary standards and you will see these certificates and you can get a little better handle on what they are about.

BOB: You know sometimes you can learn from the past, I want to go back to the thick abstracts that I showed you in the 1920 and 1930s. That used to be the business practice they had every description, every transaction on that land that they were going to acquire. So maybe we could take a lesson from that.

RON: What are some of the common errors that we find in deeds?

BOB: Well, I think we have talked about most of them. Let me look what we have here. Conflicting calls within your deed, and conflicting with the other deeds.

A change in the description system when the intent was to convey the northwest of the northwest, but yet someone in the chain of title decided to call that west 660 and north 660, as well as what leads us into the other point, the ignorant of the parent parcel, or as in Dennis' example that he gave where the metes and bounds would extend beyond the point of the area that the original grantor would have owned, as well as an ignorance of basic boundary law which kind of wraps them all up and we could go on and on about people writing descriptions and the errors that were made but one just needs to be aware of it.

RON: Dennis do you have anything to add to that?

DENNIS: Well, I will throw in a couple of, you know, sometimes there is just assumptions made about the parent parcel.

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Throughout time people who have been too cheap or too dumb to get a survey done. And so that shows up and I'll show you an example on the overhead with another one of my custom drawings. This was the parent parcel; there was a state highway through here. They got a USGS quad sheet out and scaled and thought what they did was sold off the westerly a 1000 feet and assumed that it hit the road. They didn't want to pay for a survey.

Well when we actually surveyed this the boundary came down here and missed. I will blow this up for you here. There is the right of way; there is the property corner. It was only 3 feet away.

In other words, this parcel was sold without legal access to the highway and so they paid a real price because by the time they discovered this with a survey, this parcel over here had been sold to another party who was not very conducive to giving an easement and they had to sue to get the right of way for that 3 feet.

The point being that the writing of this description, westerly a thousand feet and just scaling it off a map and not being willing to get a survey done to actually know how to describe that piece of land.

RON: So they saved a few bucks in the beginning, but they paid dearly for it later.

BOB: Ron, surveyors, good surveyors are like the Fram filter people, you either pay us now or you pay us later.

DENNIS: I've heard that before. One other thing, there is another thing that happens, maybe lets say 1900 metes and bounds parcel is created, there is no mention of a survey, no mention of monuments perhaps, just basic bounds and then so it changes hands 10 – 12 times, and then somewhere in there someone hires a surveyor to go out and do that property.

Now if the surveyor did it right, no problem. But what we find often as a common error is that some survey has been made somewhere between now and when the parcel was actually created and didn't follow in the footsteps or the intent I should say of the parties, so all that does was add more confusion to what you and I are doing and a lot of times the current owners have assumed that that survey is right, maybe the plat has been recorded and they

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think it is right and they may have occupied to it which is another issue.

But my point is that just because a survey has been done some time since creation of the parcel, doesn't mean that you have to accept it. You need to look at it carefully and make sure that it did exactly what you have to do and that is you have to meet the intent of the parties.

RON: So what do we, all right, we got previous, almost every place we go when we are dealing with these boundaries, we are dealing with some kind of previous record on one of the parcels we are dealing with. If, you are telling me, if that previous survey of any one of these parcels that are adjoining mine or the parcel that I am surveying was not done properly, then what do I do?

How do I go about doing my survey now when either my parcel or one of the adjoiners did not follow that chain of history of that legal description?

DENNIS: Well obviously as I just mentioned a tremendous amount of confusion occurs when the survey hasn't been done right. I think that one of the biggest problems is the expectations that people have, that well I have already paid for a survey and you find it isn't.

Well, Ron, I think that you are asking that question as if I am a CFedS going out doing this survey, and especially but it doesn't have to be tribal, but we are focusing on that here. You as a surveyor have a tremendous responsibility to first of all show all of the facts, to draw out the research that you need to do to make sure that you understand the intent when the parcel was first created. See what has happened to it since then, see what the occupation and subsequent surveys may be showing you on the ground.

But I want to turn that just a little bit, Ron, because in particular folks, when you are a CFedS and you are operating on Indian trust lands, you are acting on behalf of the Secretary of the Interior, even if, when I say that whether you are working under BLM instructions, or you have just been hired by an individual Indian for his land, you have a responsibility to understand what the trust responsibility is that the Secretary to the Interior has to the Indians

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and it is quite broad, its quite sweeping.

I mention that because sometimes lets say you are a CFedS and you are doing a job, it is not directly being overseen by the BLM, but you discover all sorts of conflicts or perhaps some unwritten rights or that sort of thing, I am going to strongly recommend that you talk to your BILS, that you go to the Cadastral folks in the state office, and usually through the BILS is the first place you want to go.

Because when it comes to these kinds of lands, the Secretary of Interior has some responsibility to help fix it, not just report the facts and throw it at them. Now that is more true what I just said in the private sector, when we are just surveying private land but when there is Indian trust land available, we need to realize that there is this trust responsibility and you would be surprised that it is even in federal statute, 25 USC 194 in particular where disputes of all sorts, the benefit of the doubt goes to the Indian.

You need to think about the impact of that even if you are working on private land right against tribal land. You need to think about what some of those situations you have there and I am again recommending that you get some help on that, not that we have all of the answers, but we can certainly provide a lot of in put to it so talk to the BLM.

RON: I think that is interesting Dennis. We really have to be aware of the Secretary's responsibility when we are working as a CFedS.

That is the reason for the program at this point is the Secretary is diligently trying to do that job and do it well. Well to wrap up, do you have anything else that you kind of want to toss in that we have missed along the way that you would like to mention, either one of you?

DENNIS: Well, there are a couple of things here that I and they may seem totally off the wall here but a couple of things that I have noticed recently in some survey work that I have looked at, there seems to be an assumption by people with chain of title that lets say, there was a parcel of land and across it was an easement granted to some third party for access say.

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And then the parcel is sold to someone and it doesn't mention the easement. This is a common problem that we have because people don't realize that that easement is going to pass with it whether it is mentioned or not, so don't fall for that mistake that well this most recent deed didn't mention the easement so it doesn't exist.

No, in order to extinguish that easement, it is going to have to take some action by that third party unless there is some language in the easement that had it expire after so many years or upon some event, but usually they are not that way. So easements exist and that is another reason, if you go with the current deed only and it happened to have left out an easement you are not going to be aware of that unless you get a title commitment from a title company perhaps or an abstractor.

So you want to be sure that you go back in the chain of title at least a few deeds to see if something has changed or been left out. Usually you are going to have to go further back. That's one and then if I can completely change gears, we have one other that I see that just boggles my mind and it is one of those because we are in the high tech, computer digital world now right, GPS and AutoCAD and all that stuff, you know if you have some old deed from 1880 or 1950, I don't care and it shows all of the bearings to the nearest degree or the distances to the nearest foot or even 10 feet, I have seen some like that.

We need to remember something we learned back in fifth grade, significant figures, or sig figs, you know, and kind of combine that with a discussion of simple rounding. And I will give you and example if an old deed is written to the nearest foot say, there is never any hundredths ever given so you are looking at the deed as a whole to figure out this intent and see that is part of the intent of the parties I think, the fact that it is not written to the 100th of a foot or to the second.

So it says thence north 100 feet to a rebar and you find a rebar at 100.49, we need to realize that you do not have a discrepancy there; there is no conflict there. If it says 100 feet and it is to the nearest foot, then it is plus or minus a half foot. So in other words it may measure 100.49, but in the law's eyes, it is right on the money.

And that kind of fits in, well those are some of the things that I

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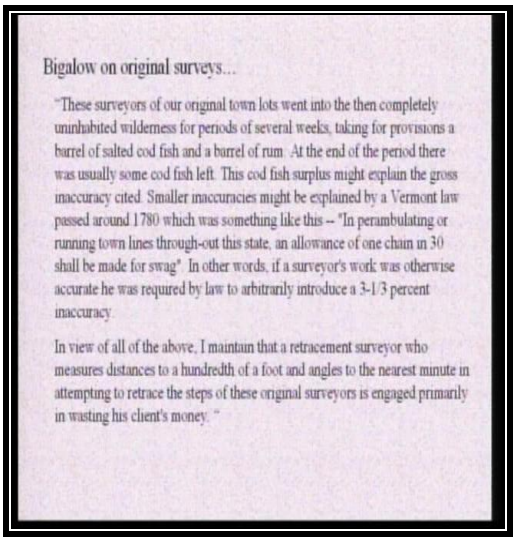
was thinking about, and I know Bob that Mr. Bigelow from Vermont had some additional thoughts on this, and maybe we should share some.

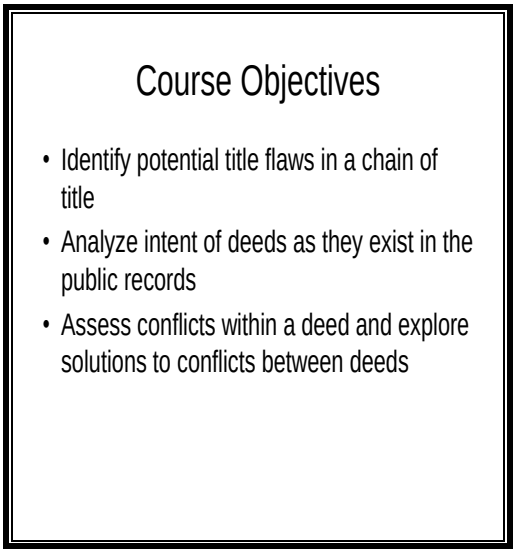
BOB: Glad I had the opportunity to share this. My favorite quote from Mr. Bigelow and he says, these surveyors of our original town lots, went into the then completely uninhabited wilderness for periods of several weeks, taking for provisions a barrel of salted cod fish and a barrel of rum.



At the end of the period, there was usually some codfish left. This codfish surplus might explain the gross inaccuracies sighted. Smaller inaccuracies might also be explained by a Vermont law passed around 1780 which is something like this, in perambulating or running our town lots throughout this state, an allowance of 1 chain in 30, shall be made for swag.

In other words, if a surveyor's work was otherwise accurate, he was required by law to arbitrarily introduce 3-1/3 percent inaccuracy. And in view of all of the above, I maintain that a retracement surveyor, who measures distance to a hundredth of a foot and angles to the nearest minute in attempting to retrace these original surveys, is engaged primarily in wasting their client's time.

RON: That is a good one. Thank you guys, Dennis and Bob for this discussion. We appreciate it. One more thing that I want to talk about just briefly before we finish up and that is documentation.



And I know that we have hit upon this several times and you will hear it throughout this program, but we need to do a thorough job of documenting our research, documenting our answers, documenting all the information that we considered and do that in such a fashion that it is available for those who follow us because we can do all of this work, we can do a great job, come to good decisions, but if it is not documented, it doesn't help the next person down the road much. So do a good job of documenting.

Well to finish up lets review our course objectives again. So lets see if we have done that. Identify potential title flaws in a chain of

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title. I think we have done all right there. Analyze the intent of deeds as they exist in the public record and we have talked about that, the intent and how we find that and where to go and what that does for us. Assess conflicts within a deed and explore solutions to conflicts between deeds.

You know we really do have to look at those adjacent parcels. Sometimes there is a lot more work. We can't just go with that deed that we are handed as Dennis talked about. We may have to look at that chain of descriptions going back a long time and the adjoining parcels.

I hope that this has been beneficial and will be helpful as you go about your CFedS career.

EXERCISE **Before moving on to the next topic, complete the "Title Concepts" exercise which can be found in the Exercise section at the end of this study guide.**

Next, read the following in your 2009 BLM Manual. Chapter 3, Chapter 4, Chapter 5 Section 5-10, and Chapter 7 Section 7-41, Section 5-15 and Sections 5-24, 5-25, 5-28, 5-29

WEB COURSE **For additional information, you can complete the optional web course "The Public Land Survey System" which you can access from the course description page.**

EXERCISE

Exercise Two – Title Concepts

Question 1 –

As a form of review, match the type of interest with the appropriate Basic Estate:

Basic Estates:
1. Freehold Estates
2. Leasehold Estates
3. Statutory Estates
4. Equitable Estates
5. Not an Estate

A. Easements
B. IRS liens
C. Life estate
D. Homestead rights
E. Tenancy at will
F. Permits
G. Fee simple
H. Community property
I. Conditional fee
J. Easements appurtenant
K. Tenancy for a time period
L. Coal leases
M. Zoning
N. Fee tail
O. Mechanics lien
P. Solar easement
Q. Trust patent

Exercise Two – Title Concepts, continued

Question 2 –

Match the following terms/concepts to their definitions:

A. Certificate
B. Trust patent
C. Quit-claim deed
D. Patent
E. Statute of Frauds
F. Livery of Seisen
G. Bundle of sticks
H. First in time, first in right
I. Gaps
J. Indian treaties
K. Constructive Notice

1. Analogy used to describe the mixture of rights one can own in land
2. A quit-claim deed from the federal government which is usually the first document in the chain of private title
3. English legal concept that requires all land transactions to be in writing, regardless of value
4. Requirement to record documents for all to see
5. Document used in lieu of a patent in Alaska for individual Indian lands
6. Land left between two or more parcels, usually belonging to the parent parcel
7. Document which simply says "If I have an interest, it is now yours"
8. A quit-claim deed from the federal government to an Indian for his/her allotment of land, but held in trust by the United States
9. Underlying concept of junior/senior rights in title
10. Formal documents that settled tribes on reservations as well as them ceding land back to the US
11. The delivery of possession in English law

ANSWERS:

Question 1:

A.	Easements	**4**
B.	IRS liens	**4**
C.	Life estate	**1**
D.	Homestead rights	**3**
E.	Tenancy at will	**2**
F.	Permits	**5**
G.	Fee simple	**1**
H.	Community property	**3**
I.	Conditional fee	**1**
J.	Easements appurtenant	**4**
K.	Tenancy for a time period	**2**
L.	Coal leases	**2**
M.	Zoning	**5**
N.	Fee tail	**1**
O.	Mechanics lien	**4**
P.	Solar easement	**4**
Q.	Trust patent	**3**

Question 2:

A.	Certificate	**5**
B.	Trust patent	**8**
C.	Quit-claim deed	**7**
D.	Patent	**2**
E.	Statute of Frauds	**3**
F.	Livery of Seisen	**11**
G.	Bundle of sticks	**1**
H.	First in time, first in right	**9**
I.	Gaps	**6**
J.	Indian treaties	**10**
K.	Constructive Notice	**4**

Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

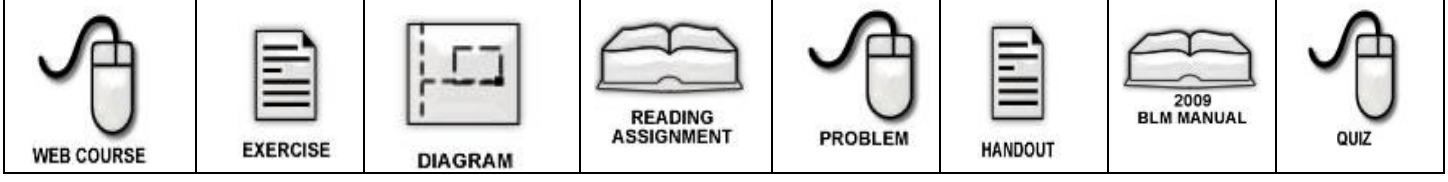
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Federal Boundary Law – Part 1 (56 minutes)

ICON LEGEND



FEDERAL BOUNDARY LAW – PART 1

Introduction

Well hello once again, Dennis Mouland here and I have the opportunity to bring you this module of course number 2 and this is where we go into the public land survey system itself and start looking at some to the details of that system and actually before we even go into the course I want to ask an important question and that is are you new to the PLSS, the Public Land Survey System?

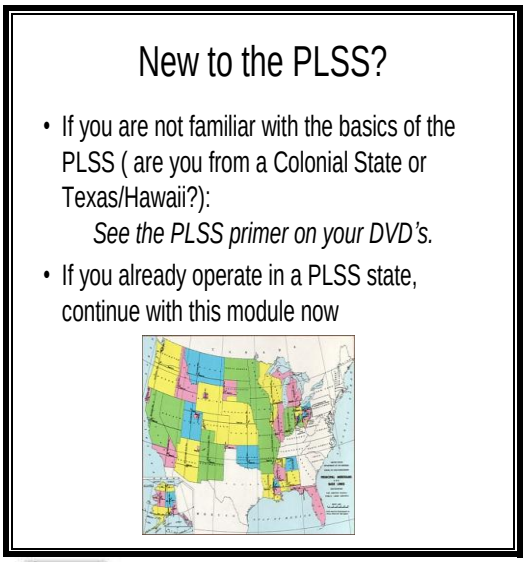


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Because if you are not familiar with the basics of that system as you can see from the slide if you are from a colonial state or from Texas or Hawaii, then perhaps you want to take the PLSS primer that is on your DVDs. That is for you folks that don't have that information.

If you are already operating in a public land system state, you should continue with this module now. And the reason we are doing that is because we recognize for those that are licensed or at least have experience and understanding of the basics of public lands, there are a few key things that we are not going to go into in the CFedS program.

But for those of you that are from states that are not public lands, or not at least the federal public land system I should say, then we have provided an extra training module that is an interactive thing and we'll get you up to snuff so then you can take this course. So that is how we are doing it.

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Objectives

So let's set some objectives for this module then. What we are going to go through here. By the end of this module, you will be able to explain the fundamental operations of the PLSS, you will be able to describe the procedures and concepts behind dependent resurveys and also the same thing with independent resurveys and then we will be ending this by citing and explaining three key US Supreme Court cases that are about the Public Land System. There are actually quite a few more than that but there are three in particular that I think you will find of interest.

Module Objectives

By the end of this module, you will be able to:

- Explain the fundamental operations of the United States Public Lands Survey System (PLSS)
- Describe the procedures and concepts behind *Dependent Resurveys*
- Describe the procedures and concepts behind *Independent Resurveys*
- Cite and explain three key US Supreme Court cases about the PLSS

So our roadmap here today is simply this, we'll see how the public land system works, we'll talk a little about the records that it produces and what kind of information we are able to gather, talk a little bit about the evidence that is created and left on the ground and we'll talk about dependent and independent resurveys as I mentioned and then we will talk about those Supreme Court cases.

Road Map.....

- How the PLSS works
- Types of records produced
- Types of evidence and corners created
- Dependent Resurveys
- Independent Resurveys
- Supreme Court Cases

"Gunters" Chain

You can see there in the lower right why I have you a picture of a **Gunter's chain**, most surveyors are familiar with that, that was the actually measurement device used for the surveying and measurement of the public land. It is amazing if you have ever picked one up and seen how much they weigh and what a pain in the neck they are, you know it is just bad enough to string it across a room, just imagine running through the brush and trees and over stumps and all those little links that it has, the little connections, and getting caught constantly. It is amazing that they got out of Ohio.

So anyway, the Gunter's chain is a pretty neat device and it was basically the measurement tool used. We will talk a little bit about the chain as a measurement tool as well. Because in fact most states, the Bureau of Land Management still operates and publishes all of its measurement data in chains.

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Why chains?

And a number of surveyors have asked me over the years, well why do you do that? You know it is a archaic system, well I don't know that it's archaic, you know so are feet and meters, they are archaic too. But you have to understand something that a lot of surveyors don't realize that the chain has a real special mathematical relationship to acres and if you never known that, I will just mention that now.

If you take a rectangular parcel and that is what the public land system is about, right, and it could be a rectangle or a square, it doesn't matter. But a rectangle: roughly cardinal directions on the sides. If you take one of its dimensions in chains and multiple it by the other dimensions in chains so that is chains times chains divide by ten, you have acres. So chains are a very simple of way to compute area and in fact people other than surveyors and Cadastral folks, use chains quite a bit.

I know that in BLM and the Forest Service, when they are estimating how big a fire is and they are going to report it over the radio or how big a forest fire was or something, they measure it in chains because they can compute very quickly to acres, so they just kind of rough it out into rectangles the area that is burned and use that so. We are not the only ones that use chains and use that convenient method of converting to acreage. So it works pretty good.

And that is a little bit if you want historical background, that is why we use chains and how we got started using chains and Gunter invented it and it seems like it was in the 14^{th} or 15^{th} century in Europe and it became a real standardized method and that is what we adapted in the Public Land System.

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Basic Principles

So now let's talk about some of the principles in the Public Land Survey System and we have brought you up to some of these in the previous lectures that you have seen and you have heard this from me and Dominica both, one of the basic principles was survey it first, before anything could leave federal ownership, it had to be surveyed.

We're going to describe that land by a name or some kind of identifier not by metes and bounds. We are going to have an **approved official area** that will be on the plat and that's it, there is no arguing about areas. We will create a permanent **public record** of all that was done and as you have heard, that was done with a plat as well as field notes or running notes, as we often call them.

A couple of other principles here, which you'll hear about during the CFedS program. We are going to protect **bona fide rights** of prior claimants. That can be someone who has already occupied the land and Congress allows them to or it can be places where we have occupied the land and there were people there with valid titles, such as the Spanish land grants.

Another principle is to create, as many aliquot parts as possible and I will define some of these terms here in a few minutes. Another principle is to maintain rectangularity and they set up a system of what that meant to maintain that rectangularity because the Public Land System is a grid system, although it recognizes that it is on a round earth, but it is a grid system, which is made up of close to rectangular shaped parcels.

Principles of the PLSS

1. Survey it FIRST!
2. Describe land by name, not by metes and bounds
3. Approve an "official" area
4. Create a permanent public record of all that was done
5. Protect bona fide rights of prior claimants
6. Create as many aliquot parts as possible
7. Maintain rectangularity

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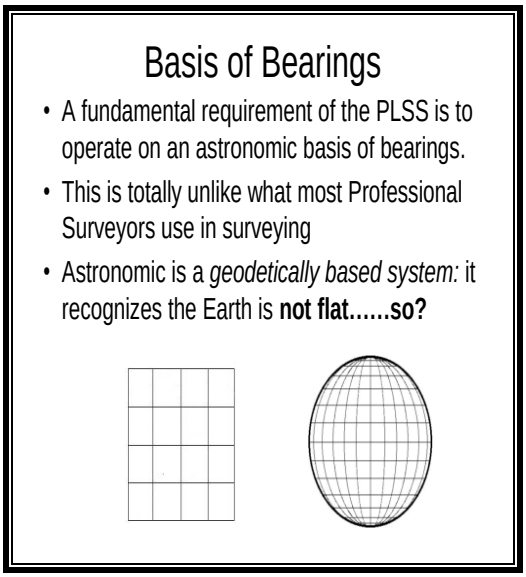
PLSS Basis of Bearings

Now one of the other principles that I want to cover and do it with a separate slide and that is the basis of bearings.



There is a fundamental requirement of the Public Land System and that is that it will operate on an astronomic basis of bearings. That is completely different than what most of us professional surveyors are using in modern day surveys. Astronomic is a geodetically based system. It understands that the earth is not flat, so what does that mean?

Well, if you look at the two drawings down below there, I just brought it a couple of graphics just to point out something. You and your calculator and your computer and AutoCAD and whatever type of COGO program you have, it operates under this sort of a system, this is a Cartesian coordinate system, if I tell it that I am going north on this line here and then I tell it I am going north on this line here, it makes those lines parallel. Right? That is supposed to be the double dash for parallel. It means that we are running parallel. That is what your computer does. That is what all the computations that surveyors work with. Our state plane coordinates systems or anything else that is where we are at.

However, a geodetically based system is operating with the North Pole here and the South Pole down here, that all of the north south lines converge at those points. So we need to understand that when I say I am going north on a geodetically based system at this line, I am converging there and when I say I am going north here, I am converging at a different rate and that these lines are not parallel to each other.

Now I will explain that and show that to you when we get to looking at the plats themselves, especially the sample plat in the back cover of the Manual to make sure that we understand that. But I am just going to make this very plain to you, everything you do as a CFedS is required to be on **astronomic basis or bearings**. And it is not our intent to totally show you how to do that, many of you if you have been around in surveying for a while you know how to take a solar or to shoot Polaris or frankly to shoot, if you have the ephemeral data, you can shoot just about any heavenly body up there and figure out where you are.

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I know a guy in the BLM that figured out to shoot the moon at any time and he had to do some heavy duty work, he was probably doing it on government time anyway, but he was figuring out how to do that. But hey that works. It can work.

Now there are many other ways to get on astronomic and you know tying in the triangulation stations and that sort of thing. But I will offer this; most of you are using GPS.

GPS of and by itself, when you think about it, the WGS 84 coordinate system is extremely close to astronomic, close enough for anything we will ever do. But the problem is that although your GPS device is collecting data coming down from the satellites, it is collecting data that's in WGS 84, it converts it to some kind of Cartesian coordinate system, be it state plain, user defined, some local coordinate system that your city or town or county may have.

So recognize the fact that just because you are using GPS does not in any way guarantee that you are on an astronomic basis of bearings because that is totally dependent upon on how you have defined your grid system or coordinate that you are operating under. So don't be fooled by that. Some people are.

But here is what is really important you know I will repeat this because it is important, everything that you do as a CFedS has to be on an astronomic basis of bearings so you need to prepare yourself how to do that and understand how to do that and as we go through these courses here as part of the CFedS program you will understand more and more why that is not just a requirement of the BLM, it is a requirement of the Pubic Land Survey System that you have to be on an astronomic basis.

If you are not on an astronomic basis of bearings, there are a number of opportunities you'll have to screw things up, including double proportions, including setting corners off of one accessory and 2-point control, 3-point control, there is a number of other things where your basis of bearings is absolutely critical.

So that is kind of an important thing that we want to mention here in the beginning of this so just understand that from this point on whether anyone says it or not, in any course in the CFedS, we are

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always assuming you are on, the records are already on an astronomic basis, but you are on an astronomic basis of bearings.

Now let's think for a minute, why did Congress require initially that everything was going to be on the true meridian? They actually backed off from that for a couple of years, because the surveyors were complaining it was difficult to shoot the sun, or see Polaris in Ohio and it was cloudy, blah, blah, blah, the trees were in the way and they actually relaxed it for a little while there in the original northwest area, being Ohio and Indiana and Michigan.

But then they came right back to the astronomic requirement. That didn't last very long. And of course it didn't matter that much there because in that part of the United States the **magnetic declination** is relatively small and in some cases too small for them to have measured it even with a compass that they were using.

But remember that the people that helped design this and draft that 1785 Land Ordinance Act, they all, not all but most of them were land surveyors and they understood the problem with magnetic bearings. And you and I should understand that too.

Magnetic bearings have a few problems with them, one is that the magnetic pole moves constantly, a little bit every day and it is moving around, wanders around, does it's thing wherever it goes, but over time sometimes it can change the declination by more than two or three degrees. That's pretty significant if we are going to try to retrace somebody.

So you see the problem is that by the definition of magnetic bearings, the pole, since it is changing all the time. It is not repeatable. That is the big problem with it. Then there were other things, if you have ever held your compass, whether it was a silva compass or a boy scout, you know if you hold it near your big belt buckle that is made out of iron, it pulls it over or if you are standing next to a barbed wire fence or some other metal object, there is a junk car sitting right there and you hold it, it bends that way over. And so we call that in surveying, we call that **local attraction** which is a totally random error. And cannot be determined and can change even during the day let alone over a period of time as the object rusts more or whatever.

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So magnetic bearings were subject to even the things that the surveyor had on him, wearing or tools that he was carrying so it was known throughout surveying even in the late 1700s that in order to maintain a regular basis of bearings that was repeatable, and not subject to local attraction and that was only one option and that was to go with an astronomic basis of bearings. And some folks have wondered why didn't they just start somewhere and just run the gird and everything is 90 degrees.

Well, we as surveyors should understand why you couldn't do that because the earth is round not flat and your east west grid, your line east and west, as it moved further and further west, say from Ohio moving west, it is going to continue to get a heavier and heavier bearing on it and by the time you get to California, I don't know it might be 20 or 30 degrees off from west, maybe more, I don't know I've never sat down and figured that out. I suppose we can ask that on the test, but we won't.

But let's understand this is supposed to be a rectangular grid and everything is supposed to be within certain limits of cardinal and so you can't put a rectangular grid on a round earth. Just try putting a piece of graft paper on a basketball and see what happens just from one end to another.

You are no longer at the same **parallel of latitude** on the ball and that is the main reason that those surveyors and therefore, Congress enacted that it is all going to be on cardinal. And when they backed off from that, it was a big mistake because by the time they got to Michigan all those iron ore deposits, things really went down the tubes because you start getting section lines running off 20 or 30 degrees bearings because that is what we call heavy bearings.

They would run off these heavy bearings because of local attractions, big iron ore deposits, so section lines go out and around those big iron ore deposits.

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Clarifying what they did

So let me also mention since we are on that subject, a lot of surveyors will read the GLO notes and say well look, they are not using a solar compass because that wasn't invented until 1840 or so 1950 – 1860, some time in the middle 1800s, they weren't using a solar compass so therefore they weren't using a solar transit, they were using a compass. That's right, they're using a compass for the first 70 – 80 years, but that doesn't mean that they were operating on a magnetic basis of bearings.

What it means is this, one of the first things that they did when they got to the job site, let's just say that they are using Polaris that was the easiest one, so they site Polaris and they have that in their sites so then they would turn the needle loose on the compass that were using and it would go off to some other degrees, say 5 degrees declination.

So now they knew that whenever they could not see Polaris, they would just come back that 5 degrees from magnetic and that would put them on astronomic. So let's understand that for much of the Public Land System, they were using a compass as the actual instrument. The basis of bearings was still astronomic.

Now you can understand thought that even if you were in Michigan or anywhere else where there were iron ore deposits that that practice would also cause you to veer away and that is where William A. Burt came along and invented the **solar compass**. So that is a little history, but it helps us to understand what was going on.

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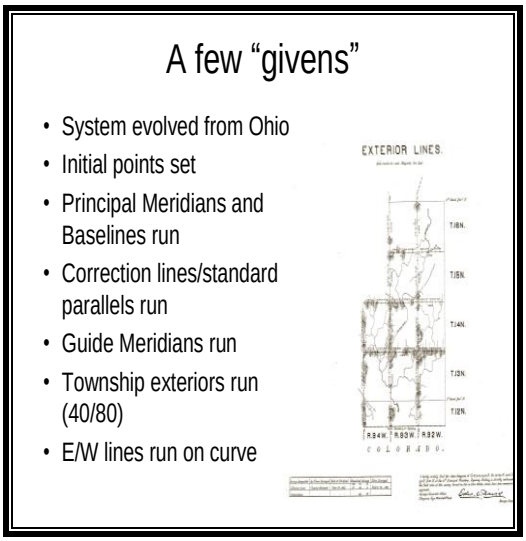
Now we have a few other givens that I want to cover, and they are these, first of all understand that the system evolved from Ohio, Ohio had really 6, 7, 8 different versions of it, different numbering schemes and all sorts of things, and also understand that we are not going to discuss initial points, where I am going here is that what I am going to describe is the Public Land System and how it operates today and how it has operated for the last 150 years or so, the principal meridians and base lines were run, we are not going to cover that, correction lines, standard parallels were run, guide meridians were run.



But let's also understand that I am going to start this discussion assuming that township exteriors have already been run. All right?

You see there on the right, it's just a small version of it but it is one of the plats that shows the exteriors of townships. You are looking at several townships, several 6 mile by 6 mile townships that the GLO ran and one contractor would go do the exteriors of maybe 10 to 20 townships and would set the corners at 40 and 80 chain increments for the most part all the way around those exteriors and that is where we kind of pick up our story in this course is that the township exteriors are run and we have existing evidence on the township lines, and if you are not familiar with any of the stuff that I just talked about, then you will want to take a look a that PLSS primer that we put on here that I mentioned at the beginning of this lecture.

Latitudinal Curve

Now there is one more thing that we want to understand in the givens and that is let's understand that in a geodetic system, with a geodetic basis of bearings, what does that do to our east west lines, lines that are running relatively due east and west, it makes them curve. We should understand that. All right?

It is like when you look at a properly projected map of the United States and you look at our north boundary with Canada, it is a curved line.

It is defined as a **parallel of latitude**, that is a curved line on a round earth. And that had to have been built into the system so as

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you start running west or east on a east west line, as you go you have to curve the line to maintain that bearing because what you are actually doing is marinating your relationship to the north pole, distance wise more or less. That is one way of looking at it.

So, there are certain lines that are definitely run on a curve in the Public Land System. They are the base line itself, the **standard parallels**, which were called **correction lines** initially, and then these north and south boundaries of township lines.

Now I am going to go over to the elmo for a minute because I just thought of something that I want to show you and I am going to go back, I have to find it, okay there it is, and I am going to zoom in a little bit, this is page 54 in the 1973 BLM Manual and what you are seeing here is a diagram is how one, of the two methods mentioned in the Manual, on how to run these lines on a curve and this is basically how they did it.

They ran a straight line with temporary points and then computed moves north so that the actual line is on a true parallel of latitude. Down below is the formula if you want calculate it. There is actually a table in what we call the **Red Book** and that is included in your resource CD. And there is a table that tells you how far those moves are and you can use that in kind of a backwards way to figure out how to proportionate lost corners on something that was curved.

That was one method and then at the top of page 55, we have another method. They both essentially create the same curve, it was just what line you were going to run for control and this one here is called the secant of the parallel and as you can see they ran a straight line here and had computed some moves north, this corner and this corner of course are right on the line and then these others they moved south but either way what it left on the ground was a set of evidence or monuments that are on a curve.

And we will want to keep that in mind on a number of things as we go through the CFedS program as we talk about the public lands because those are some of those givens that we have to have in mind as we go through this.

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Accuracy Issues

There is also one more thing that I want to mention before we dive in and that is I have heard surveyors say, oh all those old **General Land Office** surveys, and they weren't done very well.

Let's put the cards on the table, they were done well enough, Dominica mentioned that several lectures ago about it was actually some amazing precision for the time it was done. I also want to remind you who was doing this. This wasn't the government.

Let's remember that almost all of the original surveys were done under a contract from the General Land Office to private surveyors who were deputized during their contract.

Contracting was ended in the early 1900s because there was fraud and corruption and the majority of that was in northern California, but it was enough that it got the GLO's attention and they cut off the contract.

Of course, the BLM is back to contracting now. We have much better and stronger contracting laws and we inspect things. That was one of the big problems with the GLO, they weren't inspecting anything. But we just need to realize that the vast majority of the contracts were done correctly and accurately and we don't have any room to complain about it.

As we'll see some other principles as we go along here, well the fact that they didn't get it just right, really didn't matter because they were the original surveyors and we'll talk about what that means and will also talk about what that doesn't mean for you and I, so that will be some good stuff. So I'm giving you some background stuff here so that we can discuss these things.

Remember:

- Almost ALL the original surveys were done under contract from the GLO to private surveyors who were "deputized" during their contract
- Contracting was ended in the early 1900's due to fraud and corruption
- But the vast majority of the contracts were done correctly and accurately

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Basic Land Units

Now I want to give you some definitions of what I call the three basic units.

Now there are really three types of land units that are used in the Public Land System and we used one of these terms just a minute ago and that is the **aliquot part**. So the first of these is the aliquot part.

Now aliquot from a French word which means that it is contained the exact of times in another. A part of a measurement that divides the measurement without a remainder.

Let me give you an example of that, six divided by two is three. It goes in exactly three times. So six and two and three have an aliquot relationship in this case. But if I were to divide two into five, it goes two times, but then it has a remainder. And the literal definition of aliquot is equal with no remainder.

So how that fits in here is that as we recall that one of the basic tenets of the Public Land System was to create as many aliquot parts as possible. These are parcels that are evenly divided. For instance, in a half a mile on the Public Land System, the record says it is a half mile, but we find it 5 feet short, but the corner in between is going to go at midpoint if all the parcels in there are aliquot because they are all going to share equally in any excess or deficiency that is found in the measurement, but that is not true of all the parcels out there, this is just one.

This is the aliquot part and we have more aliquot parts than anything else, and that is because that was the rule, and you can still read it in Chapter 3 of the Manual. Create as many aliquot parts as possible.

Aliquot parts are at the subsection level of how we divide up the public land system. You are familiar with these for the most part, when you read a legal description that says southwest quarter, that's an aliquot part, southeast of the northwest, that's an aliquot part, north half of the south half of the south west or the south east, that's an aliquot parts, when you have those half and quarter relationships those are aliquot part descriptions. And that is what

The three land units

1. Aliquot part- Contained an exact number of times in another; a part of a measurement that divides the measurement without a remainder.
- Aliquot parts are the sub-section level subdivisional unit of the Public Land Survey System.

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they are talking about when they say create as many aliquot parts as possible, they go evenly.

The next land unit is the **lot**. Lots are defined as a *non-aliquot subdivision of a section*. They are still a subdivision of a section but they are not aliquot. They are not described as aliquot; they are designated by a number usually. They may be regular in their shape or irregular in their shape. But lots are a very different entity. Their area will often vary from the normal aliquot acreages.

Aliquot acreages would be 160, 40, 20, 10, and 5, those kinds of things. When you see lotting, these are my words, it is like a red flag, hey hold on, there is something different about this parcel and you need to research the record and find out what is different about that parcel.

Often times you will see lots from the public land system called government lots, that is okay, that's fine, we don't necessarily call then that internally in the BLM, but they are often called a government lot and that is simply to distinguish them from other things that are called lots especially like subdivision lots and lots that people own, small parcels of land. So we have the first of these three is the aliquot part and then the lot.

The three land units

2. Lots- A subdivision of a section which is not described as an aliquot part, but designated by a number. May be regular or irregular in shape
- Area will often vary from normal
- Considered a "red flag" that something is different in this parcel
- Often called a "government lot" to be distinguished from private lots

Now the third one is what we are going to call **non-rectangular entities** for the purpose of this course, and they are often called **tracts**, although you'll find that word used in different ways at times in the past but non-rectangular entities is more of a modern term that people are using now.

That's a cadastral survey, which involves an unusual application or deviation from the rectangular system. A lot of examples of these tracts or non-rectangular entities are listed here, town site surveys, homestead entries, minerals, donations, land claims, small holding claims, US surveys, trade and manufacturing sites, lighthouse tracts and a whole bunch more. There are all sorts of these non-rectangular entities and you heard Dominica a few hours ago on lectures explain some of the background of some of those things and help you understand those.

The three land units

3. NRE (Tracts)-Cadastral survey which involves an unusual application of or deviation from the rectangular system.
- Includes tract surveys such as: townsites, homestead entry surveys, Mineral Surveys, Donation Land Claims, Small Holding Claims, United States Surveys, Trade and Manufacturing sites, lighthouse tracts, etc.

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The Sample Plat

Now I want to do a brief exercise then for a moment, that I will just do with you but, let me ask you this, if you get that sample plat that is in the inside back cover of your Manual (the 1973 BLM Manual) inside back cover there should be a folder in there, and there is a bunch of stuff in there, and actually there are two sample plats, one is mineral survey, you don't want that.

You want the one that shows a sample township from Montana and that is the one that you want to pull out and we are going to make reference to so the exercise is this, can you find examples on that sample plat, can you find examples of all three of these land units that we just discussed, aliquot parts, lots or non-rectangular entities.

So take a look at that and we'll look at them here in just a second.

Exercise:

- Can you find examples of all three land units on the sample plat?
- Aliquot parts
- Lots
- NRE's

Let's take a quick tour of this sample plat first. It says it is 15 north 20 east of the principle meridian of Montana, this is actually a made up township, it was used in two or three reasons of the Manuals previous to this 1973 version, and with a few minor changes here and there, but it is a great exercise.

It's a great tool and we are going to use it a lot during the CFedS course because it has a little bit of everything in it and you can get a general sense, if you are not familiar with the general land office or BLM plats, you get a general sense of the layout of it and the true meridian is always noted and the mean declination of the magnetic is there and all the bearings are to the minute.

Occasionally, you see better accuracy than that, but not a lot, all the distances of the chain, we'll talk about that and it has a place for a signature down here for the authority to make it an official survey, as Dominica explained to you some time back and as many of you do in your own private practice we have some blow ups of certain areas on the plat.

So it is basically like most plats, just government plats have a little bit of common look to them for the most part. What we are asking here is where are the three land units here, aliquot parts, lots and that sort of thing. So let's take a look at this.

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You will notice that there are a lot of sections that have 640 acres. So let's take a look at the plat now in particular to identify these three land units that we are talking about. Now I am going to zoom in here for you to talk about aliquot parts, now let's zoom in kind of to the middle of the township here. So notice section 15, section 16, section 21 and 22. They are all 640 acres, which is a perfect section. That means that they are all aliquot. Everything in there is aliquot.

There's no other nomenclature there, they're all aliquot. And if you look at the entire plat, you will see the majority of the section are just that way which is the compliance with the create as many aliquot parts as possible regiment or rule.

Now we also have lotting. Let me give you some examples. The most common places for lotting are on the north and west side of a township, although we are going to digress from that quite a bit and see some of the other possibilities.

But let's just take a look at the elmo again and notice that we have these land parcels against the north and west here, which have numbers in them. Those are lot numbers and have different acreages, not aliquot acreages. Let's see what is this one has 40.09 well normally that would be 40 acres if that was not an aliquot part. I am going to zoom in on section 6 for you. So you see that's 40.09, 40.06, and 40.03. You see these are not aliquot parts, these are lots. And we have a reason for lotting on the north and west side and we have reasons for lotting in a whole lot of other places, but as you can see, those are examples of non-aliquot parts, they are still subdivisions of a section, but they are non-aliquot parts.

Now we want to also, and I am going to zoom out into the whole township again and as I recall Dominica showed you these same things, but I want to show you examples of non-rectangular entities.

If you look at the plat up in sections 4 and 5, we have some mineral surveys and we have a blow up of those, which I will also blow up here. We have some mineral surveys, MS numbers those are their names, the MS number whatever that number is, we

lotted around them, and I will explain some of that to you later, but those are non-rectangular entities.

And if you also look in sections 7 and 18, you will see the Lake City Townsite, which we also have a blow up of, and you will see that it is partially rectangular but then it is not over here. And we will explain that too.

So we have those two non-rectangular entities and I will slide the plat over and you have probably found this other one in sections 11, 12 and 13, we have the Rancho San Blas Spanish Land Grant that is sitting in here and it is obviously not conforming to the rectangular system and so it stands there as it owns separate entity so it is a tract or a non-rectangular entity, a parcel that at least the rectangular part of the Public Land System is not controlling.

Water Issues

Now if you look at the plat, while you are there, you will see that there are a few other places where we have especially lotting and I want to mention some of them now and we will cover later why that is.

I am going to zoom in on the south east part of the town ship and you will see the Yellowstone River, passing through, and notice that there are aliquot parts all out here, but as you get to the pieces especially of the generally 40-acre parcels, when they are invaded by the river, we lot them instead and we give them acreages that are less than 40 acres.

The same is true at Clear Lake down at section 33 we lotted around it and the same is true at Lins Lake, the larger lake over at the west part of the town ship, we lotted against that. But I want to point out that Lins Lake and the Yellowstone River and Clear Lake, those are not non-rectangular entities.

Let's understand, they are not non rectangular entities. And the reason is that they are not entities of and by themselves. You will learn about meander lines and things as we go along, but those water bodies were excluded from the survey but the boundary that was used to compute the area is not a fixed boundary.

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The river could move, the lake could shrink, there are a lot of things that could happen. And you will get a little bit of that in the water boundary segment that we have much later in the CFedS program, but my point is this, a non rectangular entity is actually fixed metes and bounds boundary that is not going to move, that is what those NREs, non rectangular entities, are so don't let the fact that there is lotting around non rectangular entitles, but then there are also lotting around lakes and rivers some of them, don't let that confuse you and make you think that there is some kind of a fixed boundary and a non rectangular entity sitting there in the water, that would very rare that you will have anything like that at all. So that was just our exercise and kind of review and look at those things.

Original Survey Process

Let's take a look at the original survey process in a normal township.

Most townships are normal. We have some abnormal situations out there and some of those we will discuss during the courses here and some we will save for a later day for whatever. So what is the original survey process.

Townships were to be laid out and surveyed in a specific order and fashion. What we are talking about here is the subdivision of the township into sections and remember a few slides back, we were going to start this discussion assuming that the township exteriors have already been surveyed and monumented.

So within any given township it was to be laid out and subdivided into sections in a very specific order. Don't forget that the first thing that the surveyor would do is to establish his true meridian when he got there so that he would know what his basis of bearings was and he would begin in the south east portion of the township.

His north south lines he would actually be running true line. He was actually running the line as he creates it.

The original survey process:
In a *normal township*

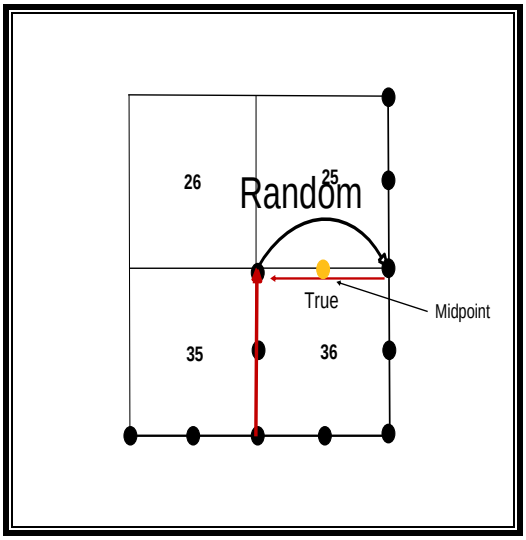
- Townships were to be laid out and surveyed in a specific order and fashion
- True meridian was first established by the surveyor
- He began in the southeast portion of the township, running true line N/S
- Running random and true on E/W

FEDERAL BOUNDARY LAW – PART 1

However, we have a different situation on the east west lines and that is what I want to explain to you. In a normal township they would begin at the south west corner of section 36.

Let's understand that that is a monumented position that the surveyor that we are talking about here has never seen, unless just by chance he was the one who did the exteriors but that was not usually the case, so he has to come out here and find this thing to begin with and once he finds it, he establishes his true meridian.

He knows where north is and he runs this true line (the red one here and I am drawing next to it) he runs that line, true line so let's just say for now that he is going north and he goes 40 chains and sets that quarter corner and he goes another 40 chains and he sets that section corner.



So that is the true line portion of what he is doing and that should be simple enough for us to understand.

However, when he ran the east west lines, we have to understand the process that was used. Let's understand that the surveyor just set this one, so he knows where it is, but he has never been to this one.

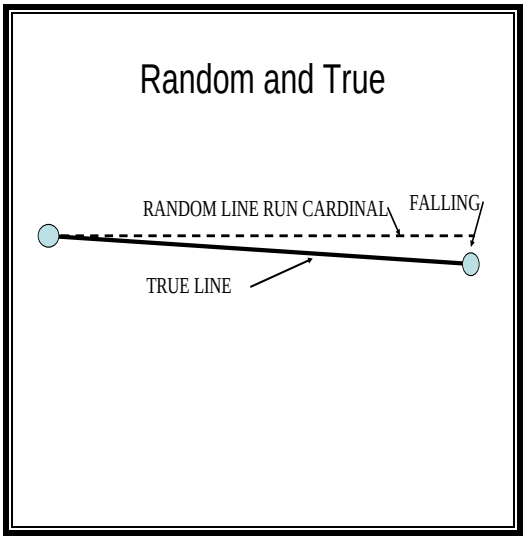
So they had to have come up with a way for the surveyor to figure out to get over there to get a straight line, because what is going to happen is he has to set this quarter corner at mid point and on a straight line between those two section corners, one of which he knows where it is and the other which he has never seen. How would you do that back then?

You and I today, we'd take our distance meters and zap up the hill and zap down here, compute it in two seconds, zap that in and we're done. Well, that's not how it works. They didn't have those options then, so what did they do?

FEDERAL BOUNDARY LAW – PART 1

So what we are seeing is that on the north south section lines, they ran a true line but on the east west section lines, they had to run a random line first and then run back to figure out where the true line was.

Now that takes us to the next slide to explain the **random and true process** itself.



Here are the same two corners, this is the one that he just set and this is the one that he has never seen before. So what does he do? He takes off from the section corner over here and he runs on a due east line or a cardinal line and that is the dashed line that you see heading out there and he runs out there and he goes 80 chains, because he knows that a mile should be 80 chains long.

When he gets to 80 or close to 80, he starts looking for it. So he is up in this area here somewhere but he starts to look for this corner here and when they find it, it is not going to be exactly 80 chains, and they probably didn't run straight to it, it will probably look like what I drew here, that he missed it by some distance.

Now that distance that he misses it by, this one here, that is called a falling and you will find that term used in the Manual. That is called a **falling** and it is how far he fell off the line. So what we have is the surveyor running a random line in a cardinal direction and the beauty of this is that that makes it real easy for him to compute things. He measures what his falling is and let's say that he got down here and by the time he got to this point he is 80.10, it's a little long, but it is 80.10 and let's say that the falling here was maybe10 links, he missed it by 10 links.

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He would look up in the book of tables that he had which we call the **Red Book**, he could look up and see that 10 links here in a half a mile is such and such minutes and degrees, seconds going back on this line, so what he is going to do is use this distance here and this distance here, the falling, and divide those and be able to come up with the bearing of the true line.

Now he knows how to run the true line. Now in the field notes, when you read the running notes, you will see generally, there may be some exceptions, but generally, then start running east on a random line and he comes out here and says at 80.10 I fall 12 links north of this, and he is giving you his falling is then he runs back on a true line at whatever bearing it is, and I don't know just say north 89 degrees west, you see he has computed what that is so he can run back on that line.

And he also knows his length to here was 80.10 so he knows that the quarter corner is going to go in here on this true line at 40.05. That makes sense. That is how the surveyor knew what he was doing out there. That is how they would connect two known corners, well one known and one unknown, well once he finds it now its known and he would actually connect them with a straight line and put a quarter corner at midpoint between them. That was the process that they used.

Now this is probably the most common place where they short-cutted to and we will explain some of that a little bit more later, but that does not nullify the validity of the survey, not at all, it simple means or helps us understand some of the short cuts that they may have taken and helps us find their footprints, and their evidence of where they were actually running. So what line actually gets approved on the plat, well it is the true line.

It is not the random line; the random line was just something he ran to figure out where he was well, it was kind of like a control survey if you want to call I that. Then he measured the falling and that is another part of his control and then he would compute what the true bearing was and he would run back on that true bearing and he would put the quarter corner at midpoint or if it was something different, in some cases if it would be, then he would put it there.

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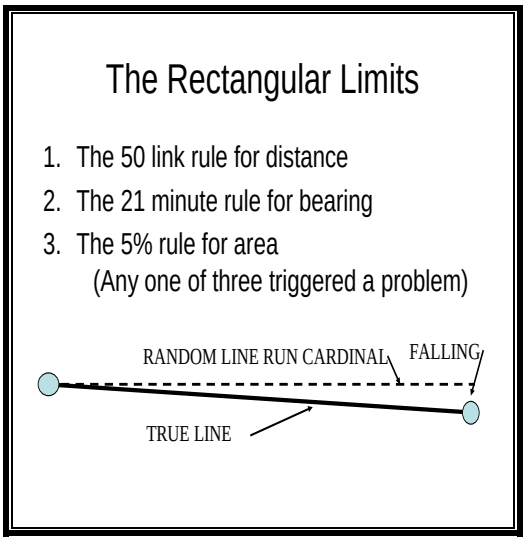
That is how the random and true process worked.



Now while we are here then, we need to understand something called **the rectangular limits**. Now on the slide I have got the exact same drawing down below about the random line being run cardinal, the falling and then the true line.

Now it is time for us to understand something called the rectangular limits. There are three of them. There is in the modern system the **50-link rule**. Now what that means is that as long as the distance from section corner to the other section corner, as long as that distance between those is within 50 links of a mile, than it is okay. That means that the mile can be anywhere from 79.50 chains to 80.50 chains and it is still okay.

The second one is the **21-minute rule**. The 21-minute rule says that as long as the bearing of this line, of the true line, is within 21 minutes of the cardinal, then it is okay. Now if you sit down with a calculator, you can discover that there is a mathematical relationship between the 50-link rule and the 21-minute rule. I will let you do that yourself.

Now we have another a third rectangular limit and that is what is called the **5 percent rule**. And anyone of the three would trigger a problem or situation. The 5 percent rule says that as long as the area of a parcel computes up to be within 5 percent of a perfect aliquot acreage, then it is perfect. I kid with people sometimes, but this is at least in my opinion where the expression, close enough for government work, came from.

Because of the 50-link rule, the 21-minute rule and the 5 percent rule. What are those talking about? They are talking about rectangular limits.

Now understand rectangular limits are about, remember the rule, maintain rectangularity and we had another, create as many aliquot parts as possible. Now we are going to understand how you define aliquot parts in the sense, how close do they have to be to still be called an aliquot part. That is what the rectangular limits are about. 50 link rule, the 21-minute rule and the 5 percent rule.

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Now we will go back to the elmo, and look at the sample plat, section 36, that's where he first started. So, if the surveyor did exactly what we are saying, then he started here and in this case, he went north 1 minute west, so he came up 40 chains, put the quarter corner in, came up another 40 chains, put the section corner in, so yes, 80 chains. Then he had to run a random and true, but they are not going to show the random line on here, all they are going to do is show the true line and he ran a random line due east and he had some falling, and when he computed it up, it was north 89, 56 west. That is not cardinal, but it was within the 21-minute rule.

How far did he find these two corners to be apart from each other, they are supposed to be exactly 80 chains, but he found them to be 79.96, but that is within the 50-link rule. And because it is be within the 50-link rule and the 21-minute rule, you notice that section 36 reported its official acreage is 640 acres. That is the 5 percent rule in effect. Do you see why?

See because if you went out on the ground and found this section to be on the ground exactly as this plat says, the dimensions are all correct, then there would be less than 640 acres in there, Right? And how do I know that? Because there is 79.96. See in order to be 640, it would have to be 80 X 80 perfectly on all four sides, but it is not, this side is 79.96. But it is within the 50-link rule. And when you compute the area of this, it comes within 5 percent of 640, so it is officially called 640. And that is how that works.

If you look at the rest of the plat, anywhere on that plat, you will see that the bearings of these section lines are a different bearing every mile but they're always within the 21 minute rule.

You will see these distances are rarely exactly 80 chains, not one small, but here is one here, but by coincidence comes up 80 chains but they are always within the 50 link rule, with the exception of the closing sections over in the western tier and sometimes the northern tier and I will talk about those here in a little bit. But you can see those rectangular limit rules running and actively going on here throughout that plat.

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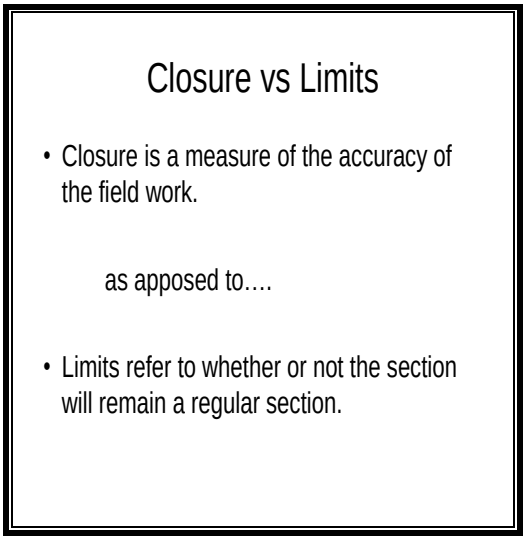
Closure vs. Limits

Now, there is a common misunderstanding that surveyors have about these limits, and I just want to make sure that we understand that this has nothing to do with **closure**. It has nothing to do with closure. Closure is a method or measure of the accuracy of the fieldwork. It sees how well you could measure.

The limits are whether you can refer to the section or the parts of the section as normal or regular they are simply helping us define how close does it have to be to certain cardinal and rectangular rules in order to still qualify as rectangular.

So understand that the rectangular limits have nothing to do with the precision of the survey they have everything to do with whether we can call it an aliquot part or not.

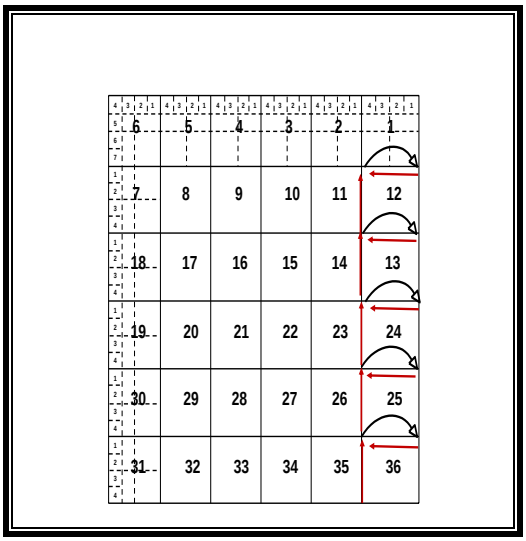
That is a lot of information there that I am giving you but its really good basic stuff to help us understand what's actually going on.



Now that we understand that process a little bit, let's take a look at this slide and see that the stair step process was used then to run this township.

True line, random and true, true line, random and true, true line, random and true. They would run up through a township and this is the order in which it was supposed to be run just like that. This was the manner and the order in which these lines were to be run.

So let's answer that question, what do we do in sections 1 and 2?



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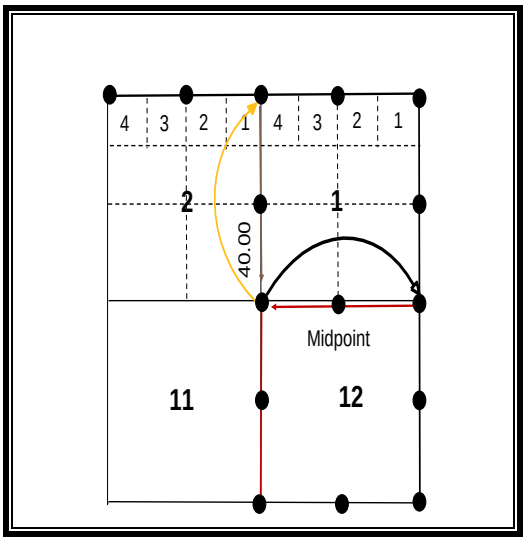
Here we are, blow up that area. We came up 40 and 80, random and true, we understand that, but now we switch to a different procedure.



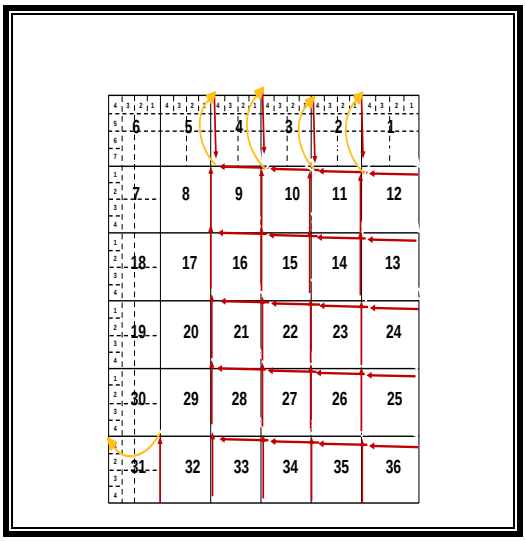
Now there are a couple of possibilities here and it changed over time and historically this is how it would be done.

Many times they would continue with whatever the bearing was of this line, they would just continue that up here. However, if there were offset corners up here and they had a chance and where it was really close where it would hit, then they might just bend the line a few minutes or whatever and be able to hit it.

In other words say you had a corner right here and you could bend this up to there and still be within the 21-minute rule, well then that was fine. You'll find that more often in some of the older surveys in public lands, but most of the time it would just continue, whatever this bearing was is the bearing that would continue here and they just set a corner here and we'll talk about closing corners later but that is what that is up there.

So there was usually no random and true, frankly there are some situations that I will mention where there's a corner up there and they would run a random and true and especially if they could get it within the 21 minute rule. So that is kind of the same thing.

FEDERAL BOUNDARY LAW – PART 1



But there is one major difference though that we need to make note of, if you have noticed that on all of the things we've been looking at the quarter corners have been going at midpoint, all of them have been at midpoint.

On a **closing section**, that's my term for these section 1 through 6 across the top and across the western again section 6 in the quarter and section, 7, 18, 19, 30 and 31 those are what we are calling closing sections. And that is where we are closing against the other township boundary.

So notice that with very few exceptions the quarter corner on a closing line does not go at midpoint but rather goes at exactly 40 chains, meaning that if the distance here is anything other than 80, which is almost always, then you are going to have a non-midpoint quarter corner and that quarter corner is going to go at 40 chains and some other distance here.

And that is important to remember because that is one of the basic differences that occurs in a closing section is that the quarter corners were not set at midpoint.

So when we understand what was going on here, we realize that everything was being maintained as regular as possible here in the process but when you have a closing, they knew that this distance is probably going to be something odd and in many cases way outside of the 50 link rule so what you did was very simple, you knew that if you went 40 with this and in fact if you notice on the plat that you are technically going 20 here because these are aliquot parts, so by going 20 there on the plat, you created as many aliquot parts as possible. You got them all over the place.

And the only place you had non-aliquot was across the northern tier where you see lot numbers, which we defined. So that is how they did that first tier of sections up the east side of the township and then as you can well imagine it was a relatively simple process to continue with the survey by going back down to the township line and starting it up again.

What we did was this tier of sections here. When they finished up here, they walked, rode or whatever back down to this corner now

FEDERAL BOUNDARY LAW – PART 1

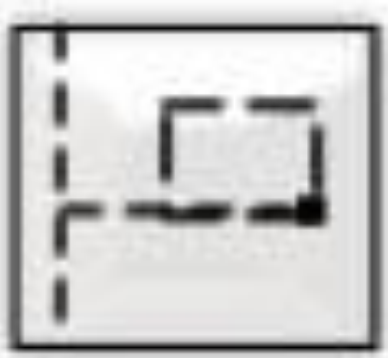
and north 40 80, random and true, north 40 80 random and true, north 40 80 random and true. Same thing here and back down to there. And continue the entire township that way.

Now what that would do though if you will notice down in section 31 then we got a little different situation here, we would come up 40, 80 random and true, and then we would either have to random and true again here or we would project some bearing and as long as within the 21 minute rule, it didn't matter. But even on these closing sections to the west the quarter corners, I should use an arrow here, all of these quarter corners, are at non-midpoint just like the other way just like we had up here. Same thing here.

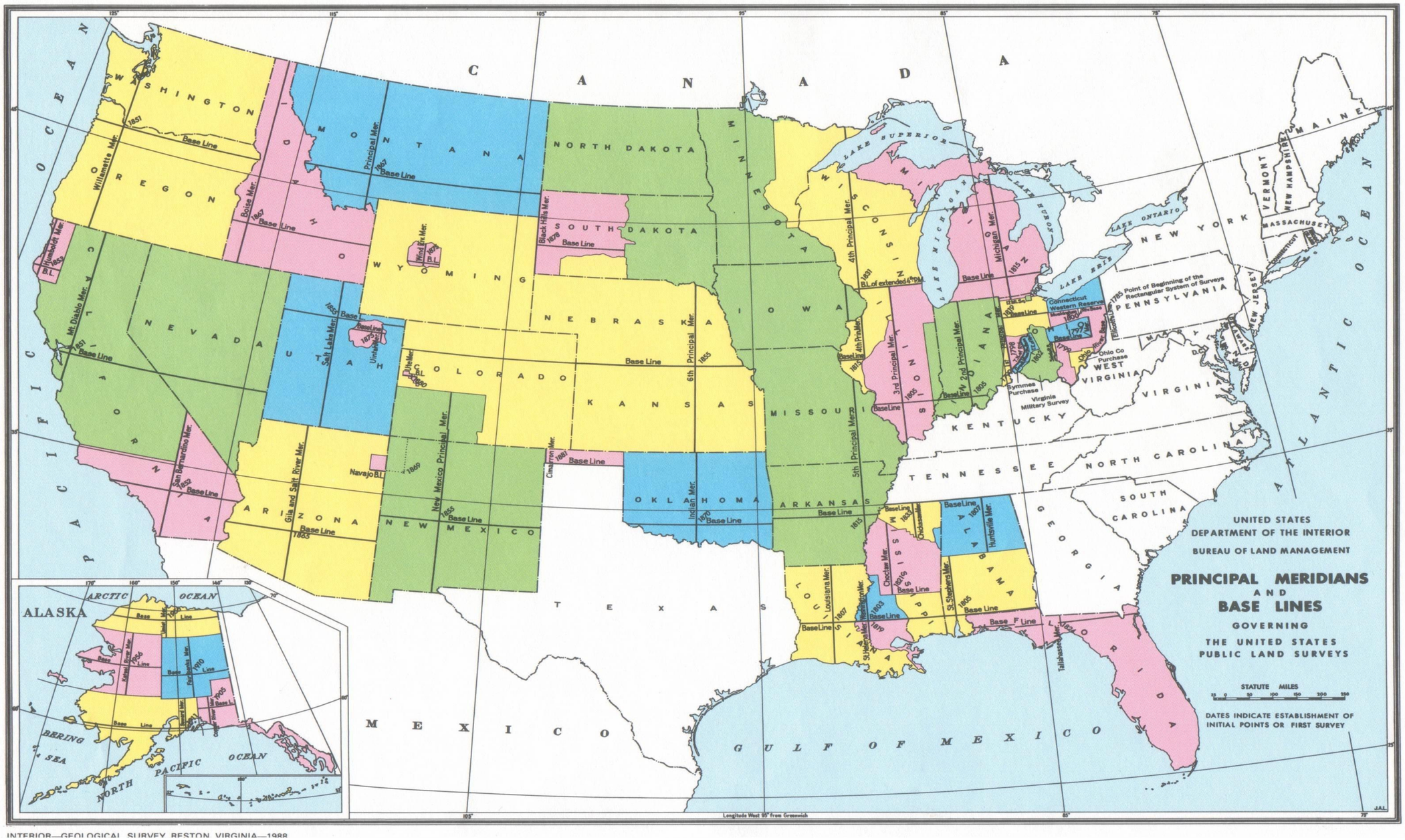
These quarter corners here are not at midpoint; they are at 40 chains from the east. And of course there are some exceptions to that and the way that you find your exceptions is by reading the plat and then you will know exactly what your situation is. So that is how a township was laid out. And obviously when you get to section 6, and we will look at that here in just a section because what I want to do is use the sample plat to review this. It is very important that we understand this order.

You might be asking why does it matter if I know this because that is the original survey, that's the old GLO and the BLM up in Alaska now, but that is what they are doing but that that is not what I am doing I'm just in there retracing things, well it is going to help us understand why things are done the way are, why some sections are different than others, it helps us understand when we are retracing where to look for evidence, it helps us when we are restoring lost corners, that we will figure out other situations there as to why we do things differently even in proportioning because it is all based on what was done in that original record.

Now that's about it for this video lecture and I'm going to bring it to an end but I'll pick it up in the next one and we'll continue this discussion about the basic operations of how the Public Land Survey System actually works. I'll see you over there.



DIAGRAM


UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
PRINCIPAL MERIDIANS
AND
BASE LINES
GOVERNING
THE UNITED STATES
PUBLIC LAND SURVEYS
STATUTE MILES
DATES INDICATE ESTABLISHMENT OF
INITIAL POINTS OR FIRST SURVEY
Longitude West 95° from Greenwich
INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1988

Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

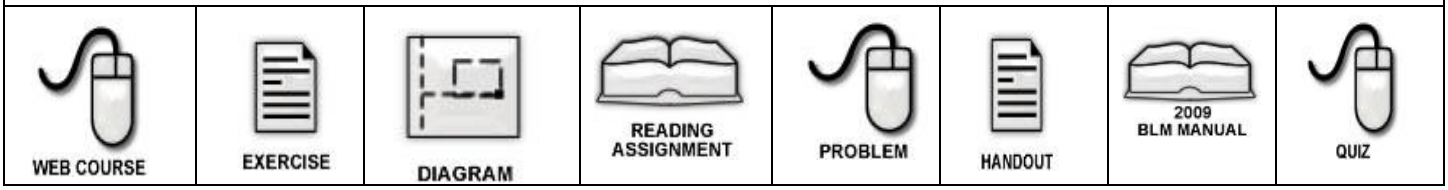
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Federal Boundary Law – Part 2 (45 minutes)

ICON LEGEND



FEDERAL BOUNDARY LAW – PART 2

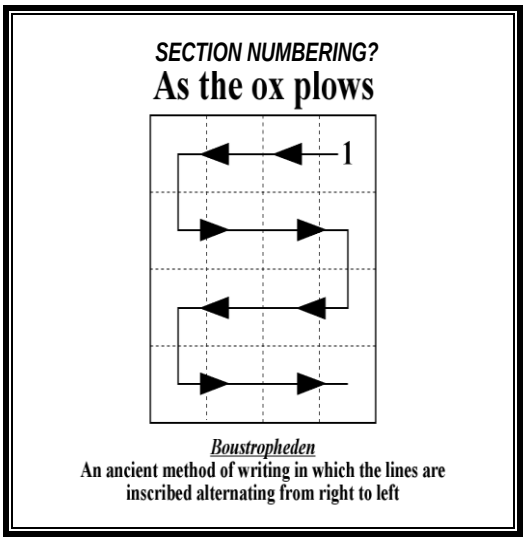
Introduction

Well welcome back to the next video lecture, continuing our discussion on the Public Land Survey System. We just went through some basics of how original surveys were done. We are gong to review that using the sample plat. But first I want to answer a question that quite a few surveyors ask about and that is why are the sections numbered in the pattern that they are.

There was actually 3 or 4 different versions of that through the evolution of the public land system there in Ohio, why they settled on this one, I don't recall, it may be in Al White's book, which you have in your resource CD, so I don't know, it might be answered in there.

Section Numbering

But what they ended up with the option that they choose, but it is called the **Boustrophedonic** pattern. And on the slide you can see that boustrophedonic is a Latin term meaning "as the oxen plow the field" and it is also the name we have ascribed to an ancient method of writing that follows this same sort of a pattern.



Now I know that I just have 4 squares here but this is how it started up in the northeast corner and it just follows that pattern and that is called a Boustrophedonic pattern of numbering things and that is how sections are numbered and you will also notice that if you pay attention to individual sections, that have lotting in them you'll see the lotting numbers follow that same pattern.

We've just gone through how a township and how sections of a township are numbered and how we subdivide that township.

FEDERAL BOUNDARY LAW – PART 2

Now what we are going to do is go back and review just a little bit very quickly what we talked about in the previous hour and that is because this is really some important stuff. But this time I want to use the sample plat as we go through it. So let's take a look at that.

Here we have section 36 and as you will recall, section 36 in a normal township was the first. They ran a true line north, 40 chains and 80 chains and then ran and random and true over to the east and we talked about that. Then the closings when they got to the top tier were a little different, as you will recall.

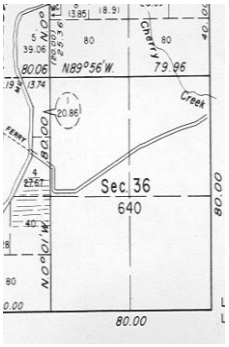
You notice what we are doing is **maximizing aliquot parts and maintaining rectangularity**. Those are the things that we have been talking about.

They stair stepped through the township and as we already showed you, after they ran up these lines here, random and true, they came back down here and did it again. So it is a very logical process.

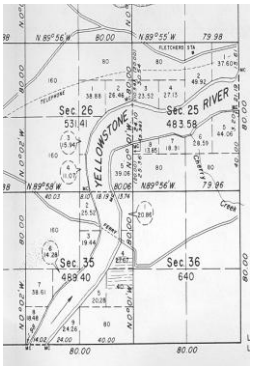
That is the order in which the notes are written and so it is real easy for you to find the right records of what you need. So north 40 80, true line, random and true, east and then continued to the closing sections and then begin those steps all over again on the south boundary of the township.

Let's review the original survey process on your sample plat…

- Section 36 was first
- True line north
- Random and True on the E/W lines
- Closings done differently…no mid-point ¼'s
- Max aliquot parts and maintain rectangularity



Stair-Steps through the TWP



- North 40 and 80 True line
- Random and True to the EAST
- Continue to the closing sections
- Then begin steps again on S. Bdy. Of Twp

FEDERAL BOUNDARY LAW – PART 2

The **closing sections** differ as I explained the original system, they would try to make those corners common, whether random and true or what is done more often now is just set it on the closing line and have an offset. That's okay. They added **closing corners** to save money.

We are going to talk about closing corners later in this discussion. But the thing to remember is that in the closing sections, the quarter corners are not at midpoint. The plat creates lots at 20 chains from the quarter corner; we talked about that how in the closing sections they still tried to maximum as many aliquot parts as possible.

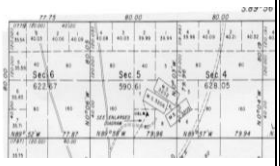
That should be pretty self-explanatory now we have been through that.

Now continuing our review here in the western tier of closing sections, similar process. But remember they would come up the north 40 80, random and true over that way and north 40 80 and random and true but they were also either doing random and true's this way or as I explained most likely again they just ran out on a bearing that would be within the 21 minute rule and that would be fine.

So this reminds us of this so you have this in your handouts. Setting of closing corners again we will talk about that later.

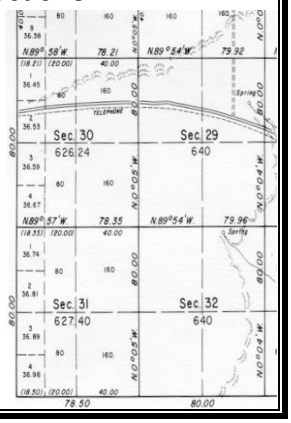
Closing Sections Differ

- Original system: make them common by random and true or set it on Twp line if offset
- Added closing corners to save money
- Quarters not at midpoint
- Plat creates lots at 20 chains from 1/4



Western Tier of Closing Sections

- North 40 and 80
- R & T to east
- R & T to west or..
- Set a CC



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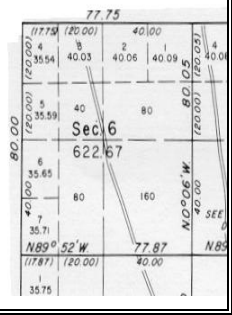
And then finally we get to section 6, which in a normal township this was the last section to be surveyed, and so obviously we have our maximum circumstances going on here.

We have just come up to this point in the random and trued to the east but now come on up and close here and close here. So section 6 is a little bit different isn't it because of some of the things there. You have a closing in both directions. It creates 7 lots instead of 4 as we saw in the other ones.

Lot 4 is going to be the real oddball and it is in section 6. Lot 4 is the real oddball because it has the non-20 chains or the non-aliquot distances on both of its sides.

Section 6

- Closings in both directions
- Creates 7 lots
- Lot 4 both dimensions are non-20 chs



Allowing for Convergence

We have looked at those things twice kind of quickly there but now I want to ask you some very important questions about what did you notice about some things?

Did you notice when you were looking at the sample plat, what was going on with the north south section line bearings. Now what I want to do here is we are going to go over and look at the elmo and use the sample plat again. And I will zoom all the way out on it for a moment.

Let's see there we go, I think I've got it where I want. Now let's take a quick tour of this sample plat. The east line of the township, the bearing on that is north, you have your own full size one you just take a look there, the east line of the township is north and the west line of the township has a north bearing.

Now in a **Cartesian coordinate system**, those would be parallel, but what did we discuss in the previous hour's lecture, we discussed that this is on an astronomic basis of bearing. So what does that mean? That means that these two lines are actually converging on each other as they head toward the North Pole.

Now if you look at the plat, and I will zoom in on the west side of the plat, you can actually see the effect of that. Look at the acreages in these lots. They are getting smaller as we go north.

Did you notice?

- What is happening with N/S section line bearings?
- See effect of rectangular limits on the E/W section lines?
- See impact of 5% rule?
- Why lot on the north and west?
- A different type of "junior/senior relationship" exists; based on approval of survey dates

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You can follow those all the way up. Of course we have the lake there and we will have to get around that. But by the time you get up in here, they're a couple of acres less each one. They're getting smaller as they go north.

The reason for that is because the convergence between those lines not being parallel but converging on each other that is what is going on. Now again when we go back and look at the whole plat then once again. Now let's learn some things that are going on in this plat. The east boundary was due north.

When you come in one mile, this whole section line through here is north one minute west, you come over another mile, it is north two minutes west, north three minutes west, and north four minutes west, north five minutes west. Now why are they doing that to these lines?

Well, let's understand. That if the intent of the public land system when you are subdividing the township into sections, is that all of the north south section lines, this is the intent and it doesn't turn out that way in reality, we understand that but we are not to reality yet, we are still talking theory here, the intent was that the lines are all parallel to the east boundary.

So if you think about that if your east boundary is due north and if you come in a mile and if you run it a mile due north, it is going to converge so you kink it slight west to force it to be parallel to the east boundary and that is what they are doing. Now that is a function of what latitude you are at the on the earth.

Now this project said 45 degrees up in Montana north latitude. So what that does apparently by reading the plat is apparently 1 minute per mile. So that is what they are trying to do, they are trying to force all of the south section lines to be parallel to the east line.

Now I want you to think about that since we just a moment ago looked at where convergence is going on here. Yet if all of those lines in there are parallel, then where does that put all of the convergence? The intent is to put the entire effect of convergence in the western tier of sections. And so as we look a little more closely at it you will discover that instead of going midpoint with

those closing quarter corners, but instead, and I am going to zoom in on one of those, there section 30 is a good one, remember we are not going midpoint with these quarter corners we are only going 40 chains. So by going 40 chains here and 40 chains there, and then implying 20 chains at all of these places, what are we actually doing?

We are forcing the entire effect of convergence to be in the lots. And that will become an important factor in a later discussion when we talk about subdividing, especially **fractional sections**, such as section 19 and how that affects you. That's an important thing. Did you also notice the effect that the **rectangular limits** have on the east west section lines? I mentioned this earlier and we talked about the rectangular limits, and we talked about the 21-minute rule and the 50-link rule.

Look at that whole township and see what those things are. Also did you notice the impact of the 5 percent rule on that entire township? That there isn't one section in there that actually computes to 640, yet the majority of them compute to 640 because they are within the 5 percent rule. Another question that comes up often is well why do we lot on the north and west? Well let's answer that for a moment.

Junior/Senior is Different in PLSS

There are actually several reason why we lot in the public land system, but the most common one is lotting on the north and west. And for us to understand it we have to understand that there is a different application of the concept of junior/senior when we are talking public lands as opposed metes and bounds.

You will recall that in metes and bounds we talk about junior/senior, we are talking about date of deeds but you will also recall that the public land system is primarily a giant simultaneous creation there is not a lot of junior/senior situations when it comes to title, you know deeds, but there is a junior/senior situation or relationship that exists in the public land system, but it is different it is not one based on the date of the deed, but rather the approval dates of the survey.

What that means is that a survey that is approved first by the

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surveyor general or his designate, that takes on a senior status to any survey that is approved later. Now if you think about it in the way I have presented this, you've got this township we are going to subdivide, the township exteriors are already there, there are already approved, the plats are already drawn, the surveyor general has signed off on it, it's done.

Therefore the exterior of the township takes on a senior status. So now here is the township line as we come in with a line from the south in a township where we are subdividing it into sections, that line is actually junior.

So we have a junior/senior relationship now but it is not a title. It is not based on deed, it is not based on title, it is based on the date of the survey and the senior survey is the older survey. And there is a general concept there are some exceptions but there is a general concept that we ought to understand in the public land system, that a junior survey cannot affect the senior survey.

Let's take for instance if the township line is defined by its two corners, and this junior survey comes in 20 years later and is up too high, goes across the line, are we going to bend the township line to that? No. The people that are basing their fencing, their agriculture, their ownership, their title and value and all that, they are not subject to something that came along later. Their title, their patent, their deeds, their rights are based on the survey that created their land. And that is how junior senior works in the public land system. It is about survey dates.

Then answering the question, why do we lot on the north and west? Well the general concept is that well notice that we started on section 36, the south east part of the township and we moved out that way. So the idea is that when you close upon the west and the north, you are going to have excesses and deficiencies. Things are not going to measure perfectly. The township isn't going to work out perfectly.

Because of that you throw those excesses and deficiencies into those last parcels which we call lots. So again when you think about how this ties in with the concept of maintained rectangularity and in particular create as many aliquot parts as possible, then you realize that the system is designed to throw all

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of that, at least that what it can anticipate, into the north and west sides so that we can maximum aliquot parts and rectangularity in the township.

That is the idea and the general reason why we have lotting on the north and west. The way I like to put it is this basically any time in the public land system where you have a junior/ senior relationship where junior surveys are abutting senior surveys, you'll get lotting. That is because that is where things can give.

The junior side is going to have to give way to the senior side as in that example that I gave you a minute ago. So that is a fundamental reason and simplistic, but it explains the reason for lotting on the north and west sides.

Now everything we have talked about so far have been normal townships, are there any abnormal situations or non normal townships?

Well yes there are. And where we are going to start is to look in the Manual and we look at those pictures here in a minute, but you have to remember that we are attempting to maintain rectangularity at all times and sometimes we have to create other control lines inside a township which are needed to maintain the rectangularity.

You might be wondering what I am talking about, well let's talk a look at the elmo at page 72 in the Manual and we are going to look at some exhibits in here.

What about non-normal townships?

- See BLM Manual, Figures 3-16 thru 3-22
- Attempt made to maintain rectangularity
- Creation of other control lines inside the township
- Notice where this can place lots
- Notice the potential for double corners along certain lines

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Defective Exteriors

Now if you have read this, as you were supposed to, then you will have already seen some of this although you might be wondering what the heck they are talking about.

Let's just focus on figure 30 and I am just trying to maximize it for you on the screen so you can see it. Notice these are just townships and they are showing us what has happened.

Here is a case where they found that the south boundary of the township is defective in alignment; it is running at a heavy bearing. It's not running within the 21-minute rule. You see if you start to build the township just like we have talked about and you do all of the stair stepping through here, then you will put this error in bearing into the entire township.

So rather then do that they will run what they call a sectional correction line, and you will see plats that did this so they could base the survey off of that so they could maintain rectangularity inside the township even right down to here.

But notice what does it do when they do that it puts lotting on the south side, in fact here we have it on the northwest and south sides. You can see it even more in the example right next to it. Look how heavy that bearing is running up that line. And so what do they do.

Again, it is going to put all of these things out of limit so they run what they call a sectional guide meridian in there which maintains rectangularity for the whole township. Puts lotting across the north and west just like normal. But now we are going to have lotting on the east side because these are not aliquot, they are not normal. There is something different about them.

So you can see how they had to create other control lines inside the township when they found that the exteriors were out of limits because they didn't want to mirror that out of limits throughout the entire township. So as you saw that puts lots in a lot of different places.

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And you might also have noticed when you were looking at that, not that I am going cover that in detail but there is a lot of potential for double corners along those lines where the lines are not lined up with the township next to them so you end up on the township lines not having common section corners, you have two different corners maybe just a few feet apart, one for the township to the east, the other for the township to the west.

You know we have a lot of non-normal township situations.

Protect the Plat

Now I have been asked by a number of people, because I have taught these kinds of subjects for over 20 years, a number of people have asked me over the years, what does this really matter what do we care, I am a resurveyor, you know I am a retracer, I just find what they did.

Let's ask that question and answer it. Why does all of this matter? Why do we need to know about aliquot parts and lots? Well there is a term, a concept called **protect the plat** and it is a concept that BLM holds and it actually came from at least originally some of the first inference of it came from the US Supreme Court case in 1888, **Cragin v. Powell**, one of the cases that we are going to look at the end of this course.

Cragin v. Powell was a very interesting case where the court said that well if the plat said this about that land and as long as those things were not false, you know or erroneous to begin with then that is what it is. And we will see what that means. But in particular which is very interesting in the Cragin case they were actually talking about topography calls.

So here is what that means, it means to protect the plat, then you are going to uphold all the factors that are given on the plat, including topography, but look at this, the intent of the plat, the ratios of the plat, see is it aliquot or not aliquot, the equities what you do with the excesses or deficiencies all of those things are going to be a function of what the plat tells you to do. And so I am going to give you what I'll call one of the secret decoder rings of the public land system, this is like one ring controls them all sort of thing, you know like from the Lord of the Rings.

Why does all this matter?

- "Protect the plat" is a concept BLM holds
- It comes from U.S. Supreme Court direction in *Cragin vs. Powell* (128 U.S. 691, 1888)
- Means to uphold the factors given on the plat, including topography, intent, ratios and equities
- Our slogan will be:
- ***"Always let the PLAT tell you what to do"***

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This should be our slogan or motto, always let the plat tell you what to do. Don't assume you know how to subdivide a section or how to set a lost corner or how something works. You don't want to say well this is how we did it last time we did a section 6 or this is how we did it some other time. No, understand there are millions of sections in the public land system and everyone of them is unique. Every one of them. The data on the plat is different on every one of them.

So whether we are talking about lost corners, how to subdivide the section, how to deal with certain situations whatever they are in the retracement of public lands properties and described parcels of land, you must understand that you will always let the plat tell you what to do.

I am going to digress for a moment, because that is not just a secret decoder ring, you know I kid about that, but it really is one of those keys to solving just about anything. Obviously, you will use the field notes, the field notes are part of the plat. The plat was constructed form the field notes.

But I have been very frustrated over the years, and I bet many of you have too, where you go out and you are doing a survey and you find that some other surveyor has been in there and obviously did not know what the plat said, didn't know what the field notes did, just went out there and did something, came up with some solution that doesn't protect the plat, doesn't protect the patents in the area, doesn't protect the people's land rights at all, just some measurements that they charged the guy for.

Those don't cut it and they're not going to cut it for you as a CFedS, and I hope that you have always known that anyway that it doesn't cut it as a professional surveyor that they are going to slop something in like that.

But I am amazed that how many surveyors go out and do boundary surveys in the public lands, Indian country or not, and don't get the plat, don't get the field notes, don't have a clue what it is they really should be using because you know the intent of the parties is in their deed, but in the public land system their deed is by default automatically calling for the plat.

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If you have somebody's deed and it says northwest of the northwest of section 10, that section 10 only exists because of the plat. You have to have the plat and the notes to understand what that means. So I am giving you a pep talk if you will, about **researching the record**. Boy you've heard that a bunch already in this course and in the CFedS program and you are going to hear it from now on because it is the key to what is going on out there, is researching the record.

That is why we are paying close attention here in this class in this lesson looking very closely how the original surveys were done because it helps us understand why we see things that are different in some sections than they are in others and what goals and principles were actually motivating them to make it happen. Now this leads us to another discussion. In the public land system, I know Dominica when she gave you her session about a little bit the background of the public land system; she mentioned that originally they were setting corners every two miles.

Now let's understand that the reason for that was that the minimum homestead at the time was 320 acres so they felt that you don't need all of those other corners in there because 320 acres is half a section so you know we will just set corners every two miles.

Well after a few years it was obvious that the average potential homesteader, citizen, was having a hard time coming up with the money, even at $1.00 or $1.25 per acre, to come up with 320 acres so they changed it to 160 acres.

And when they did that, then they decided that we need a lot more control and if you will in our terminology today, to densify the control, so that is when they went to setting all the section corners and all the quarter corners and of course, that is what we just looked at how that was done and how the majority of them are at midpoint but then the closing sections are not, and there are a few oddities here and there.

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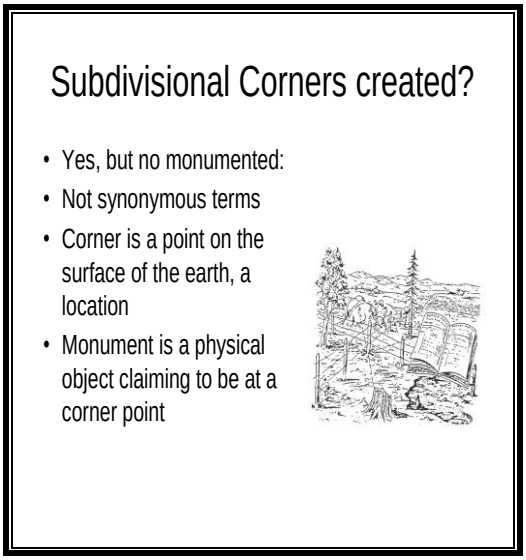
All Subdivisional Corners Created

We need to understand that in the original survey, outside of Ohio, all of the section corners were established and all of the quarter corners were established with perhaps some exceptions for special circumstances, but those corners were all set and the setting of those corners were not only the creation of that corner you know because when they actually set it they monumented it.



But what we want to understand is that even the **subdivisional corners**, and I know Dominica mentioned some of this, even the subdivisional corners of the section were all created at the time of the plat even though all they set were the quarter corners and section corners for instance the center section, center east 16 "the center west 16", Dominica showed you that diagram and I have it here too in a couple of minutes, but you know those corners were all established and let's understand, the corners were created but they were not monumented, those corners inside a section were created, not monumented.

Let's understand these are not synonymous terms and this is a very important principle for us, a corner is a point, or a place or a location on the surface of the earth, a monument is a physical object set to or claiming to be at that corner point.

That is a really important differentiation and in fact if you look in the 2009 Manual it actually gives you that discussion in more detail than I have at 6-11 in the 2009 Manual because we need to understand what is going on.

The corners are created; all of the subdivisional corners for all the aliquot part possibilities and lotting possibilities in a section are created when that original plat is approved by the survey general. You see take the center section for instance with few exceptions, the center section is a bearing-bearing intersection and the fact that they set the four quarter corners out there, you can compute where that is and that is what the plat has done. They haven't been monumented yet; you may be the first person to monument that center section or other subdivisional corner.

It is important to understand the difference between a corner one

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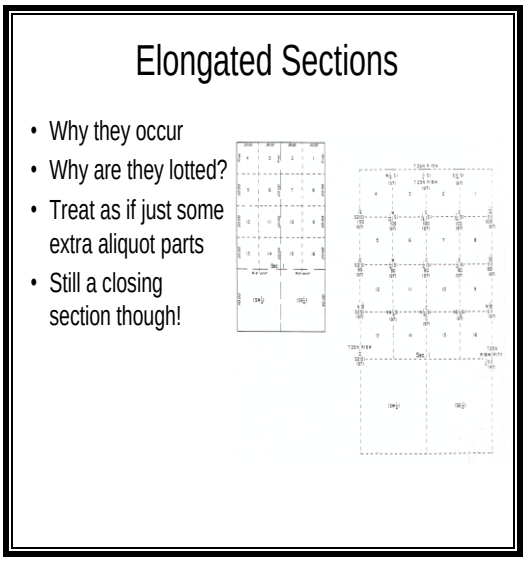
that one was created and approved in the legal sense versus when a monument might have been set on the ground in the physical sense, to actually mark that place.

Now with that, let's take a look at a slight oddity that is what we call **elongated sections**. I have copied a couple of things from the Manual here for you, and what is an elongated section and why do they occur. Why are they lotted and all that stuff.



Let's understand, it is pretty simple, let's recognize that there were times when the public land system was being done, and it would have been nice if they would have subdivided, if they did the whole state, or territory or whole area where you've got the public land system coming in. It would have been cool if they did it real logically and follow some pattern but they didn't. The townships were done in a patchwork manner.

Now what do you suppose was the driving factor of which township would get surveyed and which would not. Hopefully, you are thinking about what this was all about, is it something we can sell, i.e., is it arable, can we have some type of agricultural function on this. If not, don't mess with surveying.

In fact, Congress even forbade them from surveying land that was total waste or useless from an agricultural point of view. Don't spend tax money surveying it. We are only going to survey what can be farmed or ranched or is suitable for agricultural purposes. So this patchwork occurs.

So you can well imagine if you did some townships down here and then you skipped 24 miles and then you did some townships up here, some point in time you are going to connect these, and I'll guarantee it is either going to be short or it is going to be long. And if it is short, we will just end when we hit it and we will lot against it and that's it.

But if its long, we had two options we could create a half township or half range which you will see in some of the western states that we have those or just they would simply elongate a section and that means that sections 1 – 6 will just be extra long, and it could be an east west one, so the sections down the western side would

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be elongated and they would keep going.

They would continue creating parcels that are actually aliquot parts but because there is no name for them, we would have to lot them to give them a name. But that is how it works and if you look at that section 1 diagram there its simple showing how that works.

You treat all of these extra parcels, you see you have an aliquot part here at the southwest quarter of the section and the southeast quarter of the section and then from there on up we've got this extra long section, normally the township would have been here, but it's not, so we have extra parcels in there so they create 40 acre parcels all the way up when you look at it. But up here we have some extra ones. But up here we don't have 40 acres, we have lotting.

The regular lotting that we would have at closing. But it is still a closing section. So don't forget that, these are not going to be 20 chains. However, these are. And when we get to subdivision of sections we'll give you more details of how to subdivide elongated sections. I am just talking about how it was they got created.

Now let me show you an old example of an elongated section this is actually a section 6 in a township in Missouri and as you can see, a normal section 6 would be about this size, but it is elongated in both directions, and what we end up with is, let's count it, two miles east and west and north and south it is a little over 3 miles. You know this is a typical example of an elongation.

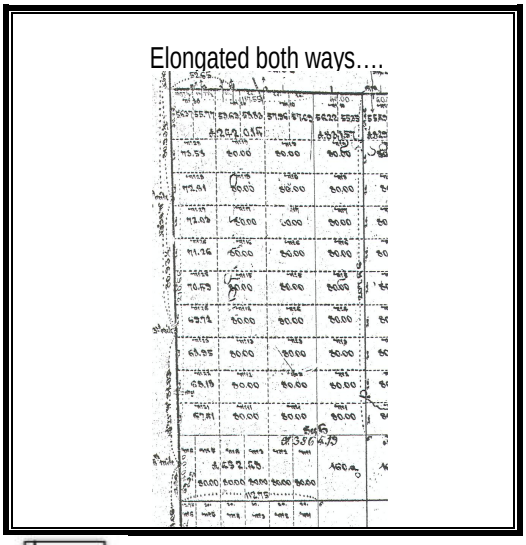

DIAGRAM **A full size version can be found in the diagram section at the end of this study guide.**

Why did they elongate here. The township would have normally ended here which is the range line but they chose to end it over which is the state line. I think that this is Oklahoma. Maybe Kansas, no I think its Oklahoma. They chose to do that there and for whatever reasons we have extra we've got extra length north and south but this is a standard parallel. And they decided not to create some which would have been in here somewhere, a township, something and a half.

They decided not to do that so this township ended up all the northern sections, 1 –6 are elongated north and south and then we have elongations along the west, sections 6, 7, 18, 19, 30 and 31

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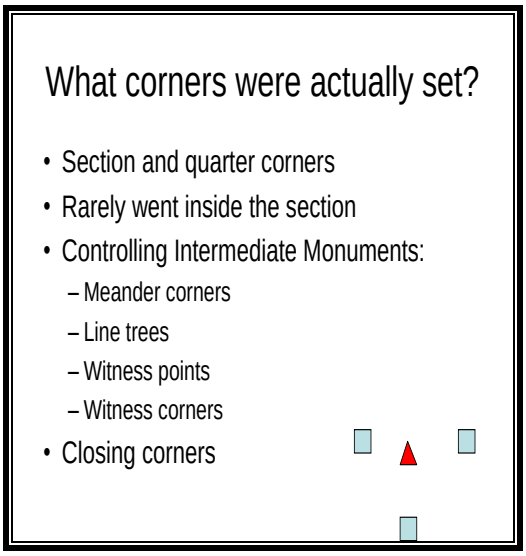
and that is just how it worked out. And as I was explaining sometimes the patchwork, well in this case we are hitting a parallel but we are also hitting a state line, which is a senior line. I guess we need to make a choice and what they decided to do was just elongate the section. So that shows you, but it is probably the worse one I've ever seen and it is also a good example to show you that you can have a section elongated, section 6 anyway, sections elongated in both directions or a township that has elongated sections. So that is what we have there.

Now we are still talking about this original survey process and how things went on and I wanted to address a question that is what corners were actually set in the original survey?

Now you will recall from previous lectures that in the original survey, original system in Ohio, they were setting corners every two miles that changed very quickly. So really here is the list Section and quarter corners and the GLO rarely went inside a section and in fact you really don't see that at all until many, many years later in the system.



But we just didn't have section corners and quarter corners, we had what we call controlling intermediate monuments and I have got some of them listed there and now there is more lengthy discussion in how to use **controlling intermediate monuments** in a later session in the CFedS program, but as you can see **meander corners**, those are some of the most common ones, wherever rivers and lakes were meandered and I will comment on that here in a little bit, **line trees**, which are specific trees called for in the field notes, **witness points** which are in our language, modern surveying language, like monumented stations on line or POLs or POTs they don't witness a particular corner, they are simply a point on line. But then you have witness corners, which we will discuss later as to how to use them.

Sometimes witness corners are on line sometimes they are off line. And we have closing corners, which technically are also controlling intermediate monuments and I will be discussing closing corners separately here in this course. What corners did they actually monument? We already talked about the fact that the subdivisional corners are all created when the plat is approved and it protracts out how that section is to be subdivided. That is

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when all the center sections, all the 16th, all those corners were established but even though the GLO didn't actually physically traverse or survey inside the section, all of the subdivisional corners of the sections were created at the time the plat was approved.

What I have offered or added to this list, is to make sure we understand that there were other corners set in the original survey, the controlling intermediate monuments, there were others, but I have picked the four most common and closing corners. So those were the types of corners that were set.

Riparian Issues

I'll come back to closing corners in a minute but I want to address water boundaries for a moment. You know originally in the public land system, water boundaries were basically ignored.

The GLO just didn't worry about them. But there were some real problems; the settlers started complaining about having to pay for useless land, they had to pay $1.00 or $1.25 an acre and say they bought 320 acres and they were going to their congressman complaining that the GLO charged me $1.00 or $1.25 an acre for 320 acres and when I actually got out there ready to farm it, 12 of those acres that you sold me were actually under the lake or under a river or something, and I can't farm that and Congress didn't want to cross the bridge, pardon the pun, they didn't want to address who owned what, well they just said, we'll make it so that you don't have to pay for it, regardless of who owns it, you just won't have to pay for it because it won't produce in an agrarian manner, so Congress ordered that the lands that were under the water and wastelands and some other categories, were to be omitted from the surveys and what that mean is that they were not included in the original surveys here.

We'll see that on a plat here in a minute that they were not included in the original acreage that was being used. So we had meander lines introduced. So the whole concept of a **meander line** has been around for a long, long time.

About water boundaries

- Originally ignored
- Settlers complained of paying for useless land
- Congress orders lands underwater to be omitted from the surveys
- Meander lines are introduced
- Lakes 50 acres or more
- Rivers 3 chains wide at right angles
- Meander NOT a boundary

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Meander Lines NOT Boundaries

According to Robillard, the word meander comes from a river name I think in Eastern Russia, that it is actually the Meander River and sometimes that got around to calling it meanders and that is where the term meander comes from, I don't know if that is totally accurate, but he talks about that in one of his books. But the GLO introduced meander lines and there is a reason for that and we are going to look at what they are.

Now understand that these rules changed over time. There were different rules. You know if you told the surveyors in the field now every time you come across a creek, a river, or a lake or a pond or a swamp, you have to meander it. A meander is a traverse around it. Well just think what would happen when you got to Minnesota. Well they would still be up there surveying because of there are so many lakes, and so many little creeks and so many little things.

It is almost difficult for me, someone who was basically raised in Arizona to even comprehend that much water. There is water everywhere. In fact there is an old joke about the GLO surveys in Wisconsin when you read the field notes, the first page says, enter swamp and then you go back 100 pages to the last page and it says leave the swamp. Because a lot of those townships were pretty wet. It is hard for me to comprehend, but a meander line is a meander line.

It was a traverse, it was an informational traverse to go around the exterior of this water body and the surveyors estimate of the ordinary high water line, that was the mean high water line, that is basically the federal rule and federal law. So the GLO introduced the meander lines in order to compute areas of upland.

Now with so all these lakes and things, what were the surveyors supposed to do, so the GLO very quickly especially went they got up to the Great Lakes states, they had to very quickly had to come up with some rules. So here are the current ones. They have changed over the years.

You will have to read the Manual or the instructions of the time but right now the 2009 Manual says that lakes of 50 acres or more

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also rivers or streams 3 chains wide at right angles or more are meandered. If there is something that they came upon that was navigable, well then they had to meander that regardless of their size.

But one of the things to learn here is that a meander line is not a boundary, It was never intended to be a boundary, and one of the greatest misunderstandings that I find in our current surveying profession here in the United States is the misunderstanding of what meander lines were supposed to be and what they were supposed to do.

Now you need to get your sample plat out again out of the inside back cover of the BLM Manual and I am going to slide over to the elmo. Here we have Lins Lake on our sample plat and notice that section 17, now section 17 would normally be a 640 acre all aliquot section, wouldn't it? But its not. It has less than 640 acres, now why is that? Now we see our rule that we spoke about an hour or two ago in these lectures that is creating as many aliquot parts as possible.

We have 160 there, 80, 40, 80, 40 and then we have some numbered lots and odd acreage in here. Now what's the deal? Well, here is how Congress and the General Land Office subsequently handled this problem, what they said was this parcel here would have been an aliquot part, it would have been the southwest of the northwest but the surveyor was not allowed to include this area that was non-arable in the survey so this line here is a meander line around that lake. And when they ran the meander line and what they were doing was running a traverse such that they could compute how much area was upland because the surveyor was running this on his best estimate of the ordinary high water line or his guess or best estimate, so we have a different acreage.

So the farmer who buys this lot 1 or gets it in a patent, he doesn't have to pay for 40 acres and almost half of it can't be farmed, he is only going to pay for 24.84 so once again following that rule too that we give a name and an official acreage to every parcel.

Now the reason we are talking about meander lines is that we want to understand that remember in the previous slide we talked about

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controlling intermediate monuments, you see here is a survey where they actually came down and stubbed the section line and set a meander corner, same thing here and same thing here.

Here is a survey on the range line that actually crossed the lake and the line keeps going. We have a distance or a return here but we have a meander corner on either side. But we will talk more about meander corners, auxiliary meander corners and special meander corners later.

But let's go over here to the other portion of the plat, the Yellowstone River, and let's see the same thing is happening with this river. Here comes a section line going north between sections 25 and 26. They set a meander corner then we get a distance across the river and they set another meander corner, came on up set the section corner and then did the random and true, like we spoke about earlier.

So you see these are examples of those controlling intermediate monuments and what the meander corner is in particular is simply the intersection of a section line or a township line or one of the base lines or a standard parallels those kinds of lines, the major lines, where they cross a meandered body of water, we set a meander corner. And understand what the General Land Office literally did in this survey, I will zoom in on section 26, they ran a traverse from there and they didn't usually monument these points, but they ran a traverse down here until they hit this meander corner and then used that locational information to compute the acreage of this lot thereby that guy being charge for that.

Now you noticed also, let me zoom in and here is Cherry Creek, they didn't meander it because it wasn't navigable and it was not more than 3 chains wide at least at the time of this survey. And as you look at the sample plat you will see all sorts of examples of creeks and things that they meandered or didn't meander. Here again, in section 33, well there is Clear Lake.

They meandered Clear Lake because it was over 50 acres, so they meandered that. Then we have a dry lake up in section 16 or at least it looks like an intermittent lake and they didn't meander it. So you can see that they are following the rules as we discussed them.

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But what are the most important things at this point in our discussion, they are water boundaries if they were considered, under the current rules the 50 acres and 3 chains, those areas were omitted from the survey, they were not included in the official acreages, people didn't have to pay for it.

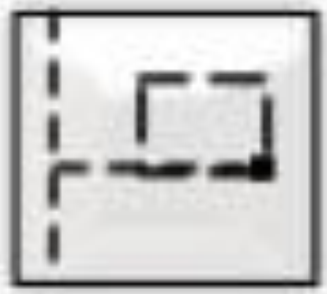
Now think about this, you have a water boundary's course later in the CFedS program, think about it if you know anything about it, you know that on a non-navigable stream in most cases, the upland owners own out onto the center line or somewhere else, depending on your state law, they own out in there. But notice that they may still own out into the riverbed, but they only had to pay for what was upland. That was what a meander line was for.

So the second thing to remember is that meander lines and meander corners, simply being the evidence that we leave of where a section lines or major lines intersect those, that meander lines were never intended to be boundary.

It is only in a rare circumstances that they even become that way. So get that out of your mind and at the end of this course, I will actually show you a US Supreme Court case that will answer that question for us. That's pretty significant for us to understand. That was answered back almost 100 years ago so we don't want to be bogged down in that sort of thing.

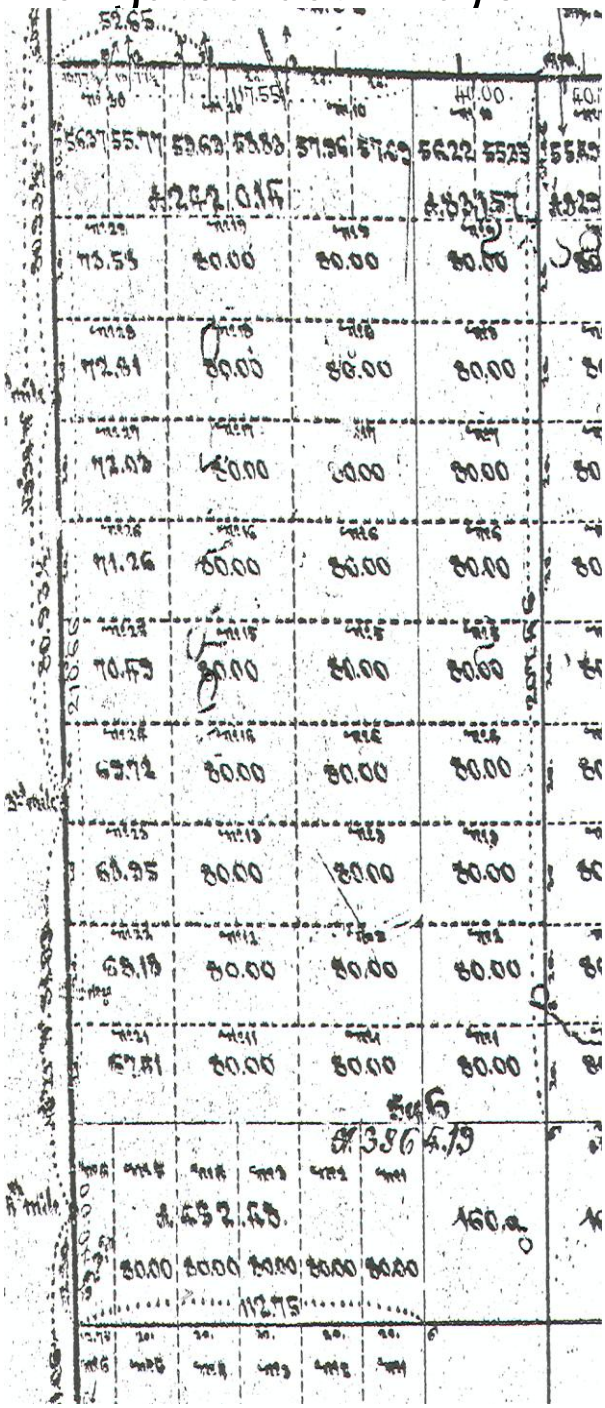
A meander line is not a boundary and we will discuss later in the course how to adjust meander lines for misclosure and then what to do under certain circumstances. And if we don't remember anything else from this discussion, meander lines were never intended to be fixed and limiting the boundaries so don't get caught in that misunderstanding.

Well, this is a good time for us to take a break at the end of this video lecture and I will catch you on the next one where we will continue this discussion of federal boundary laws. So I will see you on the next tape.



DIAGRAM

Elongated both ways….



Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

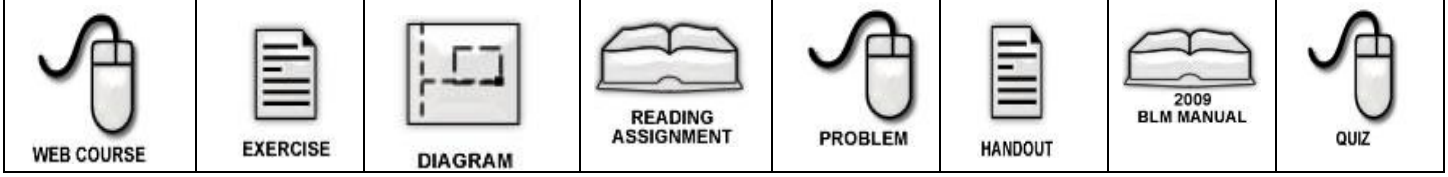
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Federal Boundary Law – Part 3 (51 minutes)

ICON LEGEND



FEDERAL BOUNDARY LAW – PART 3

Introduction

Well, welcome back to the next video lecture, we are still in Course 2 and Module 3 of the Certified Federal Surveyor Program. I'm still here talking about the federal boundary law and in particular how the public land system works and some of the basics about it.

In the previous lecture we looked at a lot about the original survey process and how they went through I am still kind of talking about which corners they actually set, when I say set, they monumented.

We also talked the fact that all the **subdivisional corners** were actually created at the time that plat is approved and that has been ruled on by the courts and that is a very solid principle. Then we closed the previous lecture by talking about water boundaries a little bit to make sure that we understood the nature of meander lines.

Closing Corners

One of the things that I mentioned in the previous lecture that I promised that I would talk more about is **closing corners**. And I want to define them for a moment and we'll take a look at what was going on.

There are a lot of different places in the public land system where well, let me step back from that, we discussed in an earlier lecture is that you can't put a rectangular grid on a round earth. So you have to have places where it slips.

So that you can maintain rectangularity by its definitions and still have this rectangular grid that is relatively cardinal. So you have to have places where that can happen.

That generally occurs on **standard parallels** and **guide meridians** and it can also occur on some township lines. And depending on the order that the surveys were done and a number of other circumstances, there are a lot of places you will find this affect.

Now what I am speaking about in particular is where a township line was run and monumented with every 40 chains, there's a

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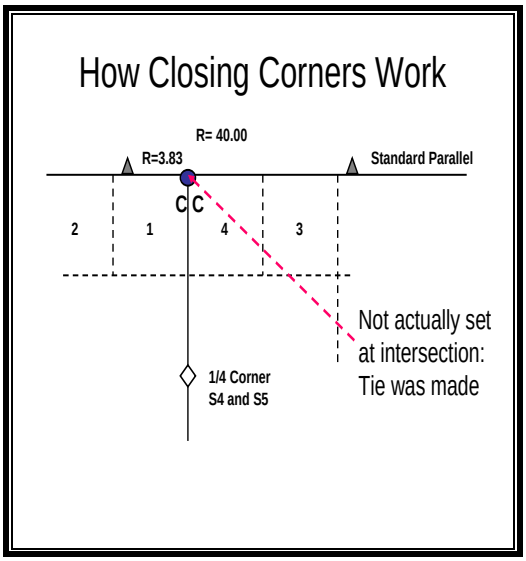
section corner, quarter corner, like the north boundary of a township. Then maybe months, or years or decades later, they came in to the township to the south of that and subdivided it into sections and when they came up they could not make the corners common, if they bent the section line over to make it common to the corners that were already there it would violate the **21 minute rule** or some other circumstances and so they invented closing corners.

Now closing corners originally did not exist in the system, they just purposely put things on line even if it was offset, they put that intersection on line, but the General Land Office was looking for ways to save money and speed up the survey process.

They decided basically to invent closing corners and so if you look on the screen there, I will show you an example of this.

Here we have a standard parallel this line up here. And it already exists, there are monuments that already exist on that line and maybe that has been there for months, or years or decades and then later the General Land Office comes in and they are down here and it says quarter corner between sections 4 and 5 so they are coming up here 40 chains and put this in and they see what distance they get the rest of the way up here.



Now in the old days, this corner was set on the line, the surveyor had to retrace from here over to this other one see where that line was and then put that closing corner on the line, that took time and that took money and the GLO was having to pay at whatever the going rate was started out at $1.00 a mile and then up to $6 or $7 or $8 a mile later in the system.

But they were having to pay a surveyor to retrace that line. So they decided they were going to save money, so they said we are going to set a closing corner, and what that meant was the definition of a closing corner is it does not mark the true point of intersection it only marks the direction of the junior line. And this of course is the junior line because the township line already existed.

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So what did they end up doing then? They would set this quarter corner here and then they would come on up going this way, going north, you can see why I am a surveyor and not a AutoCAD guy, but I am using my right hand, that's probably half the reason, so they would come north and the surveyor would make his best guess as to where this closing corner should go.

He would be looking over here, and maybe he could see that corner and line himself up with a roughly 90 degrees, or maybe he could see down to the next corner, that is possible, but in most cases, they couldn't and so he made a guess, so the odds are extremely high that the closing corner is not set on the senior line. And the government just said, we'll take care of that later so as you can see what it says right here, it wasn't actually set the point of intersection and a tie was made.

That is what this 3.83 is, the surveyor was required to connect this closing corner to the nearest standard corner in this case. So that is what the 3.83 is.

So we have a relationship between the two surveys but we do not know if the closing corner itself is on the line and of course if you can just imagine the odds are pretty great that it never is. So that is what closing corners did. That was the process the original surveyor used.

So now you are thinking hopefully if you are not familiar with closing corners you know you're probably thinking that so now we have a monument that is not really at the true position. That's right. That's unfortunate, but that's right.

Now in your BLM Manual at 7-41, which is a strange place because Chapter 5 is about lost or obliterated corners yet it has the discussion on existent found closing corners.

And I am just going to read you a paragraph or two, it starts out on 7-41 of the Manual talking about lost closing corners but the third paragraph, a recovered lost closing corner not actually located on the line it was closed upon will determine the direction of the closing line (my words were junior line) but not its **legal terminus**, the correct position is at the true point of intersection of the two lines.

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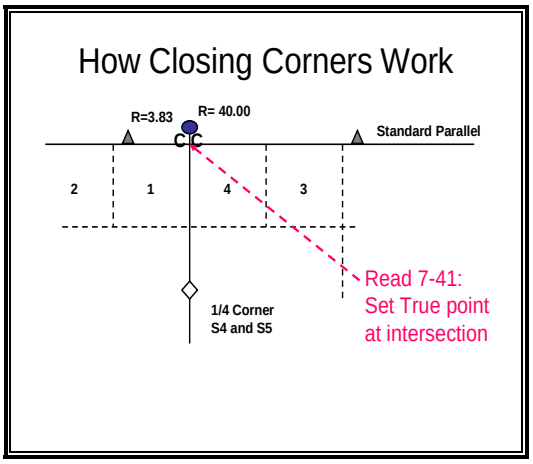
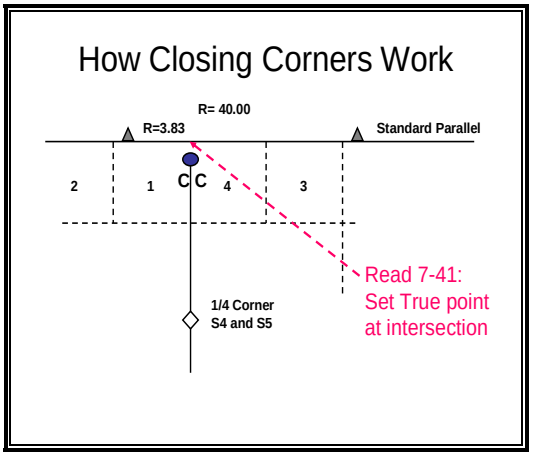
Now 7-41 goes on and has a discussion as to what the process is and you need to read that and know that as to what to do when you find one of these and how you mark it and all that kind of stuff. But let's go to a different slide and show you the two possibilities.



Here is one possibility the closing corner that you found is actually north of the line, but this could occur on an east west line, so maybe we ought to say that the closing corner is found to be long. It is across the line and that would probably be the better way to say it.

So what do we do, well as surveyors we know about bearing bearings and intersections, that is what we have to do, we have to get this bearing and obviously you've tied in these corners all the controlling corners that would control the situation and then you run the standard parallel and then you monument the actual point of intersection and that is what we have to do and that is what the GLO intended, not that it was very smart or wise, but the closing corners were either be long or short. And I will show you a short here in a minute.

But if I want to know where the north west corner, this is sections 4 and 5, so this is section 4 down here, if I want to know where the north west corner of section 4 is and that might be a property corner for an Indian allotment or some other boundary survey, I have to compute that point of intersection based on this data that I have here.



Now if I were to go to the next slide, which is the short closing corner, in other words, this closing corner is south of or short of the line that it was intended to close upon, nothing changes so what we read in 7-41 still applies and that is now we have to do a **bearing-bearing intersection** and we are gong to project this line through that, and remember, that is what it said, if it does it is not on the true line it not mark the legal terminus or the end of the line, it only marks a direction on the closing line, this being the closing line, the junior line.

So we have to do the same thing we have to find all four monuments, do a bearing-bearing intersection now and compute

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that position. So as you see whether its short or long the true point of intersection on the standard parallel in this example is what has to be monumented. That is the true section corner, but you are going to find 99 percent of the time if you are in a township where closing corners were set, they are either going to be short or they are going to be long.

It is very rare, in fact just think about it, even the best guess by eye you are going to have a hard time getting that monument on the senior line and they didn't put a whole lot of effort into that, the whole idea was to short cut and save money. So that is what is going on.

So closing corners are, and this is my opinion there, an unfortunate addition to the system that was made in the early 1800s and they started showing up on standard parallels or correction lines and a few other places, but by the time you got to the western states, closing corners started to be used almost everywhere.

I would say that in the majority of townships that I ever worked in both the north and west side are all closing corners and there are places where you will find closing corners in many other situations such as if you remember the townships we looked at back in Chapter 3 of the Manual in a previous lecture, we looked at where the line was found to be out of alignment or maybe the south or east boundary of the township was messed up for measurement so they put lotting over on the other side and all that, usually when you see lotting up against the other township lines the odds are that there are going to be closing corners there too, not always, but how do you know if you have a closing corner or not? Read the notes.

You'll know for sure on the notes although most of the time on the plats you get the little cc like on the examples that we looked at. That's how it works. So closing corners, it is actually easier to deal with a closing corner when its lost and we'll cover that when we get to the restoration of lost corners, but when they are found, you need to identify it and when Ron Scherler gives you some stuff on section subdivision, he will be talking about the closing corner, how to adjust it and how to compute things there because you still need to use the original position for things so you don't want to just pull that out of the ground or something.

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You want to preserve that and the distance between the old one and the new one are very important pieces of information but we will cover that later.

Monument Markings

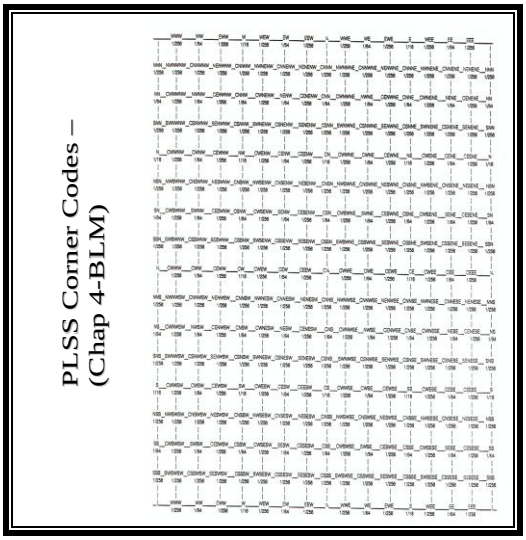
Now, in your reading assignment for this particular module, you were asked to look at Chapter 4 of the 2009 BLM Manual and Chapter 4 is about Monumentation. It is how to mark accessories, it is about how to set monuments, how to build them, how to mark the brass caps or aluminum caps or whatever it is we are using.

Chapter 4

As a CFedS you will be required to not necessarily set the great big giant monuments, although that might be a good idea depending on your soil conditions or potential for something to be moved or damaged. But you may be using some of the drive monuments or some of the other options that we have, but you will be setting caps and you will be marking them according to Chapter 4 of the Manual.

And we do have an exercise that is coming up here real soon in this course in this module, about the marking of caps so you want to get to know Chapter 4 well.

So the drawing that I have on the screen here, you will not be able to read it very well and that's okay, you have this in your handout.



This is not just a blow up but a remake of a portion of what you are finding in Chapter 4 and I am going to direct you to page 113 in the Manual and Section 4-42, Figure 4-2 shows you the official names of the 16th corners and the center section and that is also in the drawing that you have here or that you have in your handout, but if you go to Section 4-42, Figure 4-3, it shows you one I think it is a 40 acre parcel of one section and shows you the corner names all the way down.

So what you've got in the Manual is it just shows the 16th for an entire section and then it shows you to the 256th corners, I think it is, in just one 40 acre. The diagram we were just referring it shows you all of the corner names down to the 256th in an entire

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section. That is one section that you are looking at.

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Now I am going to give you a couple of bits of information if you've read that in chapter 4, which is what you were supposed to before you watched this, then if you really pay attention to this for a few minutes, it really makes total sense.

It is a great system and it has been used for well over 100 years in the public land system and everything we do in this course and everything we do at BLM uses these corner names and whether you are use to them or not, you need to get used to them, you need to get to know them and you need to understand them.

You might want to make a copy of that and carry it with you or have all your crews have it, for one reason so you will mark caps correctly or another reason when you find a cap that somebody else set that has the mark CNS1/64 well where are you in the section? So there are reasons for us knowing this and understanding this and it is a very logical system. And I want to give you a very brief tour that will help you understand it and kind of unlock it, first of all if something starts with a C it is on the centerline of something, if you notice every corner on the center line of the section starts with a C.

Every corner on the center lines of quarter sections starts with a C. So there is a pattern there. Every corner that is in the northwest quarter of the section ends with an NW that is inside of that. Everything in the southeast quarter inside of that ends with an SE, so if you have a corner that is inside the northeast of the southeast, it's going to have an NESE, it is a very logical pattern.

Frankly, if you get to know this a little bit, you won't have to carry this around, you've got it all memorized. So looking at the corner codes, the center of the section is literally called the center quarter the C1/4, the 16^{th} corner to the north of that is the center north 16^{th}, the one to the west of it is the center so you remember my code is that if it starts with a C it is on the center line of something, center west 16^{th}, center east 16^{th}, center south 16^{th}. All right, so the 16^{th} corners.

Here is the other that I mentioned earlier, the 16^{th} corner that is out

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in the middle if you will of the northwest quarter of the section is the NW 16th, northeast quarter would be the NE 16th, southeast 16th, SE 16th and southwest 16th SW 16TH. So there is only one name for each of these in any given section.

Now let's understand then that the north quarter corner is up here somewhere, the center quarter is here, here is the east quarter corner over here. This is so that we are all referenced there. So we have already talked about the center north 16th, right? Let's understand that the 64th corner that is to the north of that right there is the center north north 1/64th and the one that is here is the center south north. Now think about it that is the center of the section, that is the center north 1/16th then we are more north center north north see or we're south of that. There is an extremely logical pattern here.

Now one of the questions that I have been asked often, is and you can't really see it well on the slide, but if you look at the paper copy you have in your hand, you will notice for example, there is north 16th here and there is another one over here on the east boundary of the section. There is actually two. People say oh no, what are we going to do? And I am amazed at how many times people ask me about this and think they have caught us in a mistake. No, let's understand that the north 16th here is the north 16th between sections, I'm going to make up something, between 3 and 4, okay. Which means that this north 16th is the one between sections 2 and 3.

So you see every one of these corners have a unique name and there is no duplication. So the system works quite well. Another question is why do you call them what you call them?

Well, here is a simple way to think about it. If you connect all the quarter corners in a section okay so that is four in a normal section and a center section. If you connect all of those together with cardinal lines, how many pieces do you have? What have you divided the section into? Into quarters. Then if you take all of the all of those 16th corners in the section, including around the exterior of it and you connect all of those with cardinal lines, you will have 16 parts.

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So it goes on down to 64th, 256th, 1024th and I have even seen 4096th corners and I will let you figure out how big that parcel would be or how far that would be from the next corner. But that is technically how far the system goes. Usually when it gets that small we start looking at other options of how to describe the land, but that is how that code works.

It is a great system and as I mentioned earlier that is something that we really need to make sure we understand and learn because we use that non-stop in the Bureau and you will be expected to always use those codes with everything that you do as a CFedS.

Special Circumstances in the PLSS

Now I want to talk about a few exceptions to things that are kind of special circumstances then and you know a famous quote here from Curt Brown, I don't know if you remember him, "to which the contrary may be shown."

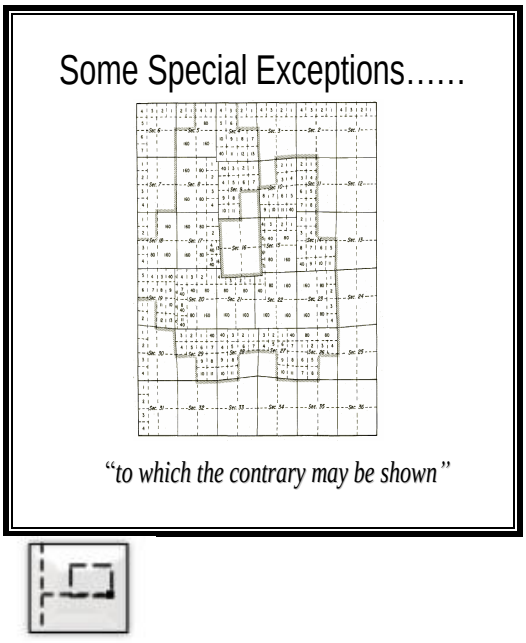

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

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You know that was his original dedication or opening line in the first boundary legal principles book. His point being; well I am going to write this book and its got all the rules and here is how the courts see it, but you can always prove it otherwise. Well, we have a few exceptions. And this diagram here on the slide is actually from page 94, Figure 3-38 of your 2009 Manual, and it is showing us one of these exceptions that I am going to talk about, it is a discussion about what we call **completion and/or extension surveys**.

And they are one of our oddities and we have already looked at the fact that a normal township is run from the south east corner of it and the closings are on the north and west and then we looked at some of the exceptions in the Manual about where townships might have been run backwards or there is lotting on all four sides, intersectional correction lines and guide meridians. We talked about that earlier.

But there are situations where entire townships were not surveyed at one time. Now you might ask, why would that be? And those of you in the Midwest that was very rare, I mean they just went in and did a township at a time. But as you move further west, there was more and more inclination to not survey a township.

Especially half the township was in such rugged country, nobody would farm or anything up there, so they would leave that land as **unsurveyed**. And it goes back to that discussion that we had earlier that there being certain conditions that Congress set that hey we're not going to waste time or money, especially, surveying waste**land, or swamp or overflowed land**, that kind of stuff, so don't do it.

So you will find places where GLO went in and surveyed just a small portion of a township and approved it on the plat and years later, before they came in or added on to that or completed that township, and of course what happens is that this creates a **junior senior relationship** between surveys inside the townships normally we are used that as we have been talking earlier and even about closing corners, you know about junior/senior relationship on the township lines depending on which way they closed against

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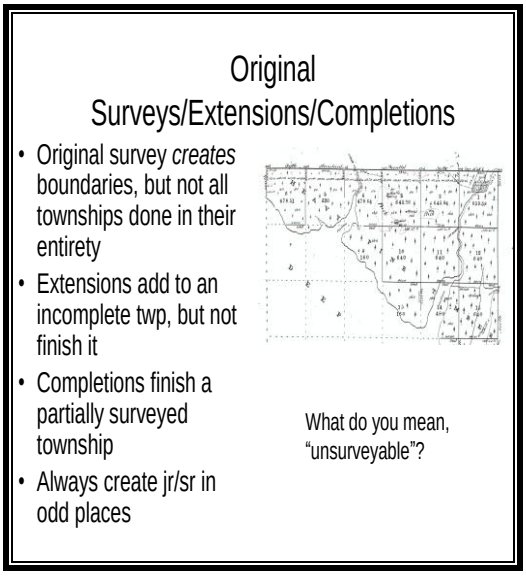
it. Normally the north and west.

But now we have some other situations here, we have here is a plat, I know that you can't read the numbers, but don't worry about it. I want you to see that it is an approved plat, but it says deep here, and if you had the rest of the plat there is nothing on it except the word canyons, deep canyons, you know so the GLO looked at that and said well who would ever want to homestead that?

You see this up here is up on the Mogollon Rim here in Arizona so its 7000 ft elevation, pine trees all over the place, very cool, flat, very flat, good place to raise cattle and that sort of thing. All right?

Now let's understand something, an original survey creates boundaries, but not all townships were done in their entirety and I've already explained why that is and **extension surveys**, when we add to an incomplete township but we don't finish it.

A **completion survey** is when we actually finish a partially surveyed township. I hope that makes sense. They are both essentially creating the same kinds of situations that I am talking about. These will almost always, I can't use always because to which the contrary may be shown, almost always create junior/senior situations in places where you would not expect that.



FEDERAL BOUNDARY LAW – PART 3

Now although this plat that we are looking at didn't show it you will often see in these places where they didn't survey, it will say **unsurveyable**. So let's ask that question, what do you mean unsurveyable?

Here is what I have heard a number of surveyors guess at, you'll see a township surveyed, this portion is surveyed up here up that way, but down here is not surveyed, and they see the words on the plat in rather large letters often, unsurveyable. Now does that mean that the GLO deputy surveyor got to the edge of the canyon in this case and looked down there and said, oh that is too steep or something.

No, that is not what happened. It was unsurveyable based on Congress' guidelines and actually some of the language in the 1805 Act that we looked at earlier. Unsurveyable meant that legally they could not spend money on it. They couldn't survey it.

Here we have an extension survey in that same township. Notice that the stuff that was on the original plat is still shown here okay?

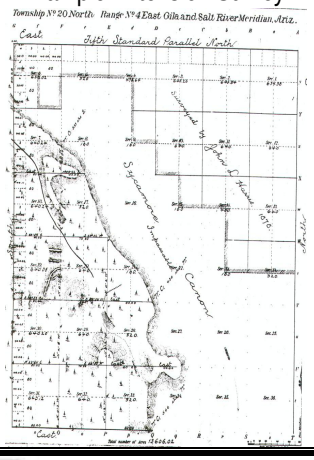
There is a **cross hatch** in here and we'll talk about that in a minute. But now they went across this canyon and it has the name Sycamore Canyon and they went across this canyon and it also says that it is impassable. That must be some tough, nasty land down there but they went over and created sections in this over in this part of the township, so we have what we call an extension survey.

Now in reality no real junior/senior relationship has occurred here yet because the surveys haven't really touched each other except for right here at this spot. And its probably meaningless but we would have to look at it closely and that is not our subject today. So what we see is that the original survey was done and that says 1876 right there and then this one if I remember right was 1890 or so saying Sycamore Canyon impassable.

What do you mean, Unsurveyed?

- Lands not yet surveyed. Fractional section surveys for example, leave unsurveyed land within a section. The land is known to exist but the survey has either not yet been authorized or has not yet been completed.
- Congress did not authorize surveying of waste land that could not support agriculture

Example Extension Survey



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Here we have a third plat in the same township, which is now a completion survey, and what they did was now fill in the gap in between those two surveys. They now have a complete township but in reality it was done at three different times. So what does that do? That creates a junior/senior relationship.

We have survey number 1, which will be the most senior, if you will, survey number 2 which is junior to number l and survey number 3 which is junior to both of them. So what does that do? Look at the and I know that you can't see detail there that is not a problem, but you have this in your handout, you can look more closely, but notice we have lotting in places that you wouldn't normally expect lotting right?

This whole section is **lotted**, why is that? Because junior/senior relationships are occurring and there are oddities and they could not create aliquot parts there, so they lotted up against it. Okay, so as it says there cross-hatching that indicates where the junior senior is taking place. That is one of the ways to read those maps and Mr. Scherler will be discussing with you what to do with these situations here where portions of the section were surveyed in the first survey but not in the second, or in the third in this case.

So over the span of about 25 years before this township was taken care of and yet and here is the interesting thing about this particular township, this is right on the outskirts of Sedona, Arizona, which happens to be some of the most expensive real estate in the country.

So you know what was once the GLO deputy surveyor looking over the cliff and saying nobody would ever want to homestead down there or whoever would want to be there and then they jumped across the canyon and did some surveying on the other side a few years later, and they still said no one would ever want to be there, now one of the most exclusive resorts and golf courses and that sort of thing is down in that hole in some of that beautiful red rock country. So you never know hey, you never know.

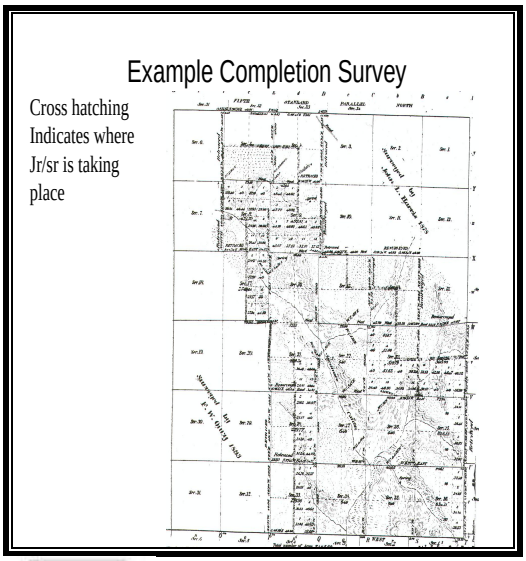

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

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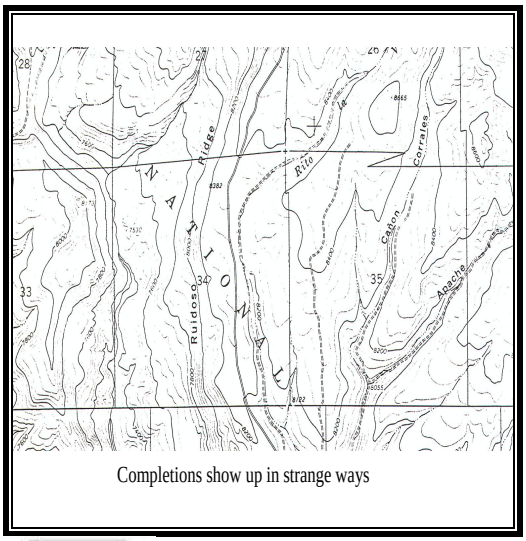
Now I want to show you one more quick story here, real life story, a project that I worked on in New Mexico take a look at this USGS quad or this portion of a USGS quad, do you see anything odd? You don't see section lines do this too often, do you? Yet there it is and perhaps the original surveyor was Zorro. I don't know.

You will notice that we have another corresponding little zig there, and then there is that big one there, and there is actually a zig zag in that section line, and if you look closely there is one right there too. My point is there is something going on and I don't necessarily use a quad sheet as my source of this sort of thing, because you would find this in the record, but this is an amazing situation. You see it on the quad and what is going on there? What's going on there?

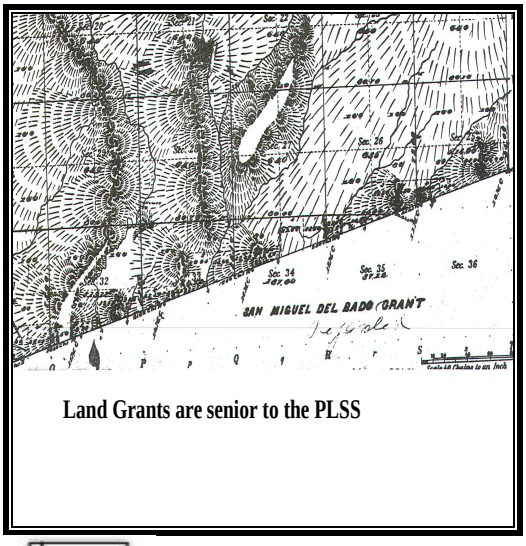


Completions show up in strange ways

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

I did my research and here is what I started finding. Let's remember something you heard in an earlier module, and that is that the **Spanish Land Grants** are senior to the public land system. Why are they senior? Not just because they were surveyed first, because sometimes they weren't.

They are senior because they reflect title, private title, that existed prior to the United States possession so we honored that. This is the San Miguel del Bado Grant and this is over in the Pecos, New Mexico area and the San Miguel del Bado was a grant that was surveyed and if you know the history of the grants, you know I'm not going to go into a lot of detail on that, but when the when the United States took possession after the **Treaty of Guadalupe Hidalgo**, we said we will honor all valid existing private land ownership and of course everybody and his neighbor and his dog showed up with a fresh deed, you know the ink was still wet, and yeah, me and the King of Spain you know we're buddies, you know and he gave me a million acres and they had to set up the court of private land claims and they eventually threw out an awful lot of those but there were quite a few grants hundreds of them that were confirmed.



Land Grants are senior to the PLSS

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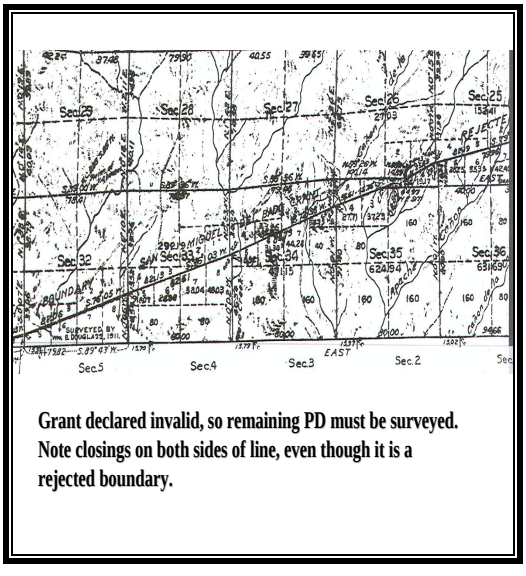
So when the GLO came in to do this survey, the San Miguel del Bado Grant had been surveyed, mile corners had been set along it and as you can see if you look back on there again there is a lot of heavy topography shown on this but, there is actually lotting all in here. Why is that?

Because the Public Land System came south here and intersected this senior line and so they set closing corners along it and there is lotting all across it. Just as we have discovered in previous discussions.

So the San Miguel del Bado was this big piece of land that was outside of the public land system, so we surveyed the boundary and we closed against it. So that is what created the records so far. However, interestingly someone wrote here in pencil, but it says rejected.

If you do your research of this township you will discover that the San Miguel del Bado Grant, even though we surveyed that great big monster, turned out to be bogus.
The court of private land claims said that he doesn't own it. Nobody owns it so what does that make this piece of land?

The grant is declared invalid so now it is its remaining **public domain land and it is unsurveyed**. So what did they have to do? Well, there is that grant boundary which has been rejected, yet it is still a senior line from a surveyor's point of view. So when they came in they did a completion survey.



Grant declared invalid, so remaining PD must be surveyed. Note closings on both sides of line, even though it is a rejected boundary.

Now notice up here they did a dependent resurvey on the north part of the township at the same time but they did completions down there on the south part and just like we have talked about throughout this course create as many aliquot parts as possible, maintain rectangularity, so here they are doing it. But in order to meet those rules, they could not make the corners common. So what do we end up with?

There is a section line, there is the grant line and there is the rest of that section line. We have a zig zag. And although smaller in magnitude we have exactly the same situation wherever these section lines crossed because if they did they would violate the 21-

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minute rule that would create lotting down here instead of aliquot parts. All right?

We have double closing corners, you have this senior line, you have a closing corner there, you have a closing corner on the other section line where it comes up. Think about what that means folks, if you do your research. And what I am showing you here is not all that uncommon.

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Military Reservations

I have seen similar situations where like a **military reservation** existed and then they captured Geronimo and didn't need the military out there anymore. This is one of our towns north of here. So they declared that excess land public domain and you have this right in the middle of a downtown area now with these double corners and all this stuff just like we are seeing here.

Now what does this mean that we have actually got? Notice that we have a section 34 from the original survey that sits there roughly and we have a section 34 that sits down here. Although there is one section 34 on the plat technically, or plats, but when it comes to you and I surveying this, there are two completely separate section 34s there independent of each other.

And the method by which we would subdivide these will be covered in a later course when we talk about fractional sections. But you can see the big mistake though and it happened in this section, that the surveyor found the quarter corner up here and found this one down here and he just ran a straight line here.

Well no in reality there is going to be two different mid section lines coming up and they don't have anything to do with each other, to protect the bona fide rights in that area. I am using this example here to help us really understand how important, of course you've heard this a hundred times already and we're only half way through the program, research the record. Research the record. And take the look, why? What's going on there? What all has happened there?

Because if you didn't research the record, how would you know if something this odd was there and it is not that unusual to find

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misfit corners inside a township and that is what we have been looking at these completion surveys and extension surveys and see how they line up or don't line up. And that is all part of our research of the record. So real life story there.

Types of Resurveys

So what I want to do now is change gears. We have been talking in this course about the public land system and how it works. I want to introduce you to the two different types of resurveys that we generally conduct.

The most common is the **dependent resurvey**. Now if you go in your Manual to Chapter 5, of course Chapter 5 is about resurvey, that's its title, the 2009 Manual.

When I go to Chapter 5, I'm going to read for you here, 5-10. And this will require my glasses, 5-10. Section 5-10 says a dependent resurvey is a retracement and a reestablishment of the lines of the original survey in their true original positions according to the best available evidence of the positions of the original corners. That doesn't mean that we are in there changing anything.

The section lines and lines of legal subdivision that dependent resurvey in themselves represent the best possible identification of the true legal boundaries of lands, patented or not patented for that matter, on trust lands, on the basis of the plat of the original survey. Now that is our definition if you will of a dependent resurvey.

Let's understand what that said then, it is not our job to go fix something that was wrong before, we're not going to move anything, we're not going to adjust or shift anything, even though those accusations are made all the time, it is a reconstruction of what had been before and it is such a fundamental part of boundary law and hopefully we all know that, we know that original corners are permanently fixed and it talks about that 5-29 and elsewhere in the Manual.

And Congress actually put it in statute 2 or 3 times, one of them the 1805 Act where they said the original GLO corners are the true corners and the distances on the plat are the true lengths of the

Dependent Resurveys

- Read 5-10 of the 1973 BLM Manual
- Not fixing
- Not moving
- Not shifting
- A reconstruction of what had been done before.
- Original GLO corners are the true corners, and the true lengths of lines (1805 Act)

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lines. And those two statements, I'm recognizing that no measurements is perfect, but those two statements in law are the foundation for an awful lot of we do in surveying and in resurveys, especially and in particular with the restoration of lost corners, it is very fundamental as to what that means that the links are the true links.

You might think well wait a minute, there is no perfect measurement, no that is a legal issue that those links are the true lengths and it is the foundation of our proportioning that we do which you will hear about in a later class.

Now on the elmo, I just want to move over there for a moment and show you a plat that is the original survey of a township and if you notice this township is kind of typical, this is an Arizona township and these strange ameba looking things are actually just mountain ranges that's how they marked them or lakes and things. But it just a normal township. I want you to note how square everything is. Everything is cardinal. And everything is just wonderful. That's how most original surveys are. Everything is just wonderful.

But when we go to the power point, we will see the plat of the dependent resurvey of this same township. Now again you have these in your handout so you can see them more closely and I will just use this to guide you. But I want you to notice that we have a number of things that are different.

First of all, if you look closely every line has a different bearing on it. Every line does. Because this is a dependent resurvey. We went out and found the corners and connected the dots if you will. That is how I always put it. So a dependent resurvey finds the evidence and it connects the dots.

Now one of the things that this plat shows you notice that on the original plat, we just had the normal lots 1, 2, 3 and 4 across these sections up here, but now all of a sudden we have entire sections that are **lotted**. What's that about?

Well and what is happening is it says there if there are federal lands and they are found to be out of limits, and that goes back to our rectangular limits that we talked about, and the current ones

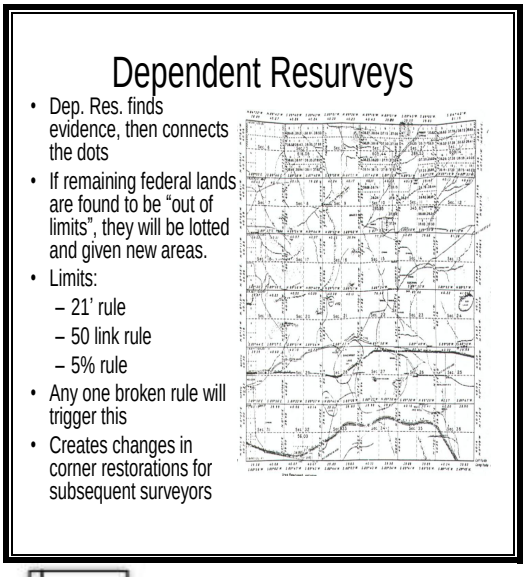

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

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being, the 21 minute, the 50 link rule and the 5 percent rule. Then if that happens then they are going to give new areas which means they'll assign new numbers to it so remember our **rectangular limits** that we talked about earlier. And all they have to do is break one of those rules, okay, violate one of those limits and it would trigger this.

So that would create changes in certain situations for you and I going in here. For instance, the section line was straight in the original survey and they found all three corners including the quarter corner and there is a one degree bearing break and they found it that way, now that quarter corner has become lost, that is going to change how you restore that quarter corner which again will be discovered in our lost corners discussion.

But the point is dependent resurvey, thousands of dependent resurveys have been done and in reality folks that is what you as a CFedS are doing.

Private surveyors that is really what we do whether it is public lands or just about anything else, we are doing dependent resurveys it depends completely on what was been done before, it does not create new things, it does not fix things. It depends exactly on what was before.

So going back to the screen, I have blown up that township for you a little bit just so you can see a little bit more and then we are going to go to just 2 sections off of that dependably resurveyed township, sections 3 and 10.

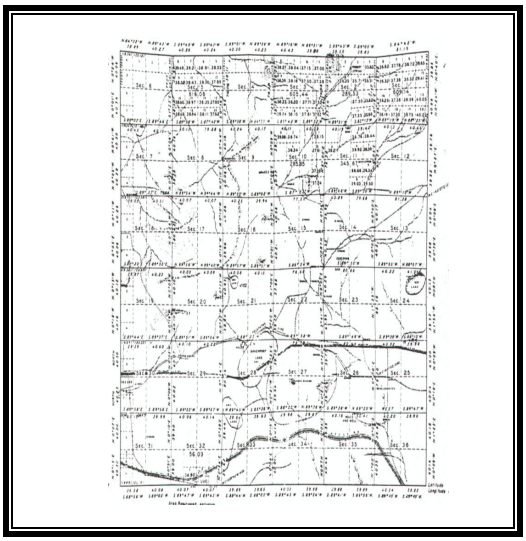

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DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

And you can see a real close up detailed now of the new lotting that was done. You know the original section 3 was all aliquot parts from this line south. This was all just normal aliquot parts in here and all we had was lots 1, 2, 3 and 4. Now we have lots 5, 6, 7, 8 and all the way down to 20. So in other words we have lotted the entire section.

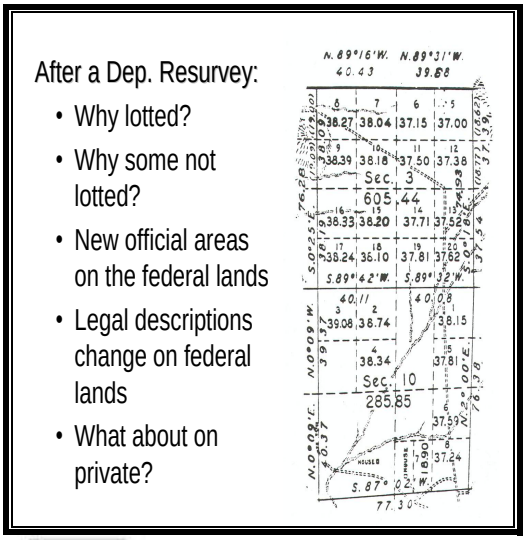

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Now this is going to create some new opportunities to make mistakes, if we don't pay close attention and a lot of that will be covered in the section subdivision discussion but you have to pay attention to what had happened before and research that records closely, keep that in mind and then you will be all right when you are trying to figure out what is going on. Again the section subdivision itself will be discussed later and even lost corner will be discussed later but what we are talking about now is what did the dependent resurvey do?

So then also look back there at section 10. What is going on there? I mean we've got, it was all aliquot the whole section was aliquot parts before, and now we have lotting in some places but we have other areas where there is no lotting at all. What do you suppose is going on there?

Now most of the time when you have these places that are not lotted at the time of the dependent resurvey is because it was already private land, the federal government was not going to, there was no reason, the feds had no interest in those lands. Those had already left ownership, described as aliquot parts. We can't change where they are. Can't disturb those positions.

And so we don't have any interest in that so we are not going to give it a new lot number or something unless there was a federal interest there.

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Lotting the sub-surface

Now I am aware that this hasn't been done in a lot of parts of the country but I know that there have been some dependent resurveys by the BLM up in Wyoming, primarily up in the Powder River Basin, where the feds don't own any surface rights at all in the whole township yet a dependent resurvey was done on it because the feds own all the oil and gas or mineral rights, so there are places where the BLM has lotted on private land but it is because there was a partial interest of some kind that the feds had in this case, a mineral right. So there are exceptions to the exceptions. So that is what I am talking about.

Most of the time the federal government will not lot private land. So if there is no federal interest there what do we care? It has already left ownership interest described as what is was off of the original plat. So, after a dependent resurvey has been done? What happens? Why is it lotted? We already talked about that. Because it is out of limits.

Why were some not lotted? Because it is probably private land at the time of the resurvey and it was. In fact this section 10 was the very first section I every subdivided after being licensed as a private, professional land surveyor. And I didn't have a clue what to do with that.

Notice that on the federal lands, new official areas are given and when we give a new official area, even though there was a lot 1 up here, and it had the acreage of 39 something if I remember right I don't have it where I can see it at the moment, but it doesn't matter if we give it a new acreage it gets a new lot number. That is almost always how it is done.

So new official areas, and therefore new official names or legal descriptions of the parcel. So the legal descriptions changed on those federal lands as well but what about on private land? Did we change their legal descriptions? No we did not. Now again, how this is subdivided that 's the real complexities to these and that will be covered later but hopefully, we understand what a dependent resurvey does. It goes in and connects the dots. It restores the original survey in its original position.

But on the federal lands, the feds find hey this is out of limit and

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this is different than how we thought, then we can give it a new name or a legal description and a new official area any time.

Remember though and this is part of the secret of understanding how to subdivide these, that it is like in that section 10, that land that was already patented that went out as aliquot parts and it has the right to be preserved in its original aliquot part descriptions and that kind of gives you the key on how to subdivide those things. Again that will be covered later.

Now when you read in the Manual, Chapter 5, once again which is about resurveys in general, it covers both dependent and independent. But there is a discussion there about subject of bona fide rights.

Now bona fide is a Latin term that means good faith and they let us use it. Bona fide rights.

It is discussed in some detail 5-24 – 5-29 in the 2009 Manual, which was part of your reading assignment, and I am going to say that it is always an issue when you are doing a retracement or resurvey of any kind. People's bona fide rights.

Understanding "bona fide rights"

- 5-24 thru 5-29 in the 2009 BLM Manual
- *ALWAYS* an issue when retracing surveys
- If control existed, they should conform to it
- If not, a reasonable attempt to conform is required before we can consider their efforts to be in "good faith"

Now I know that even within BLM there is some argument and discussion as to what bona fide rights are and where they apply. I take a much broader look at it. I am not just looking at situations that they couldn't find their corners, I am talking about anything that somebody did, what bona fide rights, what good faith rights does a landholder have if they have a parcel of land that is described by the public land system.

You and I as land surveyors, we need to think about bona fide rights, the good faith that people, when they buy a piece of land, let's make up the southwest quarter of the southwest quarter, so they have bought this, well by default that legal description is referring to the public land survey system.

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You know some surveyor or title insurance company or anybody can't just go out there, even the land owner, can't just go out there and go okay let's see, I want this land, and we will bend it over here so I can get that tree and the well, no, we don't do that and no one is supposed to because the good faith rights is that it is based on the public land survey system.

Now I am going to digress for just a moment, and remind you of something we discussed at least in the sequence of these videos. Don't forget that virtually every piece of private land in the public domain started with a federal patent and that federal patent said you know such and such quarter of this section, township, range, meridian, state, right? That is a unique parcel.

When you have a legal description even between two private parties and it is the southwest quarter of the southwest quarter. That by default is bringing the plat in as not as a second or junior document, remember the US Supreme Court case, as if the second document is printed on the face of the first. It is all part of the legal description.

So when you have a parcel that uses the public land survey system as the basis of its legal description, you have by default have brought in this entire set of rules that the Manual refers to and law that the Manual is built on and all of that is brought into there and it is not up to us to say well you know he has been occupying that land long enough and I am going to make some kind of judgment on adverse possession. You've got to be kidding. That is not our job at all. Our job is to go out and find the facts. We do dependent resurveys. We go out and see where's the evidence and wherever it is that's where it is and that's the line.

So every piece of private land in the public domain state started as a government patent that called for or inferred to the plat. And when you go to the plat, the newer plats say, this plat is in strict conformance with the field notes, down on the lower right corner. Hey whether it says that or not, how could the plat be created without the notes.

So you see every piece of private land that uses the public land system as a description calls for the plat, which calls for the notes.

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When you go to the notes, what do you find? You know, it doesn't say hey we ran a bunch of squares. No, it says, set a stone, took two bearing trees, crossed a creek here, found a line tree and marked it here, did this, did that, all this evidence, information. So you see when you have a parcel that is described by the public land survey system, it automatically infers and brings into the face of the document the plat, the field notes and all of the evidence that goes with it.

Let's not forget that because that's what bona fide rights are about. That's you and I making sure that we don't go out and reinvent the wheel or do some other crazy hair brain thing, but rather we protect that parcel in its position that it was always supposed to be in.

And if you remember we spoke about an hour or so ago in the lectures, a couple of lecture ago, that when the plat was approved all of the subdivisional corners of that section were created, they weren't monumented, but they were created at that time because they are defined by the law.

So bona fide rights is more than just when you can't find a lot of corners, to me it is all the time it is always an issue that you must not impair people's bona fide rights. So back to the slide then it says then if control existed, then they should conform to it. The Manual talks about that in 5-29 and 5-28 as well.

If there was not much control, then they had to have a reason, now when I say control if you can't find a lot of the corners from the original survey, then a reasonable attempt needed to be made to conform to what had been. This is what they talk about good faith and this is where I am saying that some of the people from the Bureau limit the discussion of bona fide rights to when there is not much control, but I think it is an issue all the time.

We impair people's bona fide rights when we don't research the records, when we don't go out and look for the corner evidence or we don't dig long enough, or we don't open that tree up or whatever it is we need to do to pass/fail some potential evidence, we just go out and measure.

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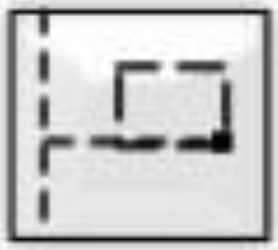
The odds are that we are impairing people's bona fide rights whether there is a lot of corner evidence there or not. It is an issue that we have got to keep in mind.

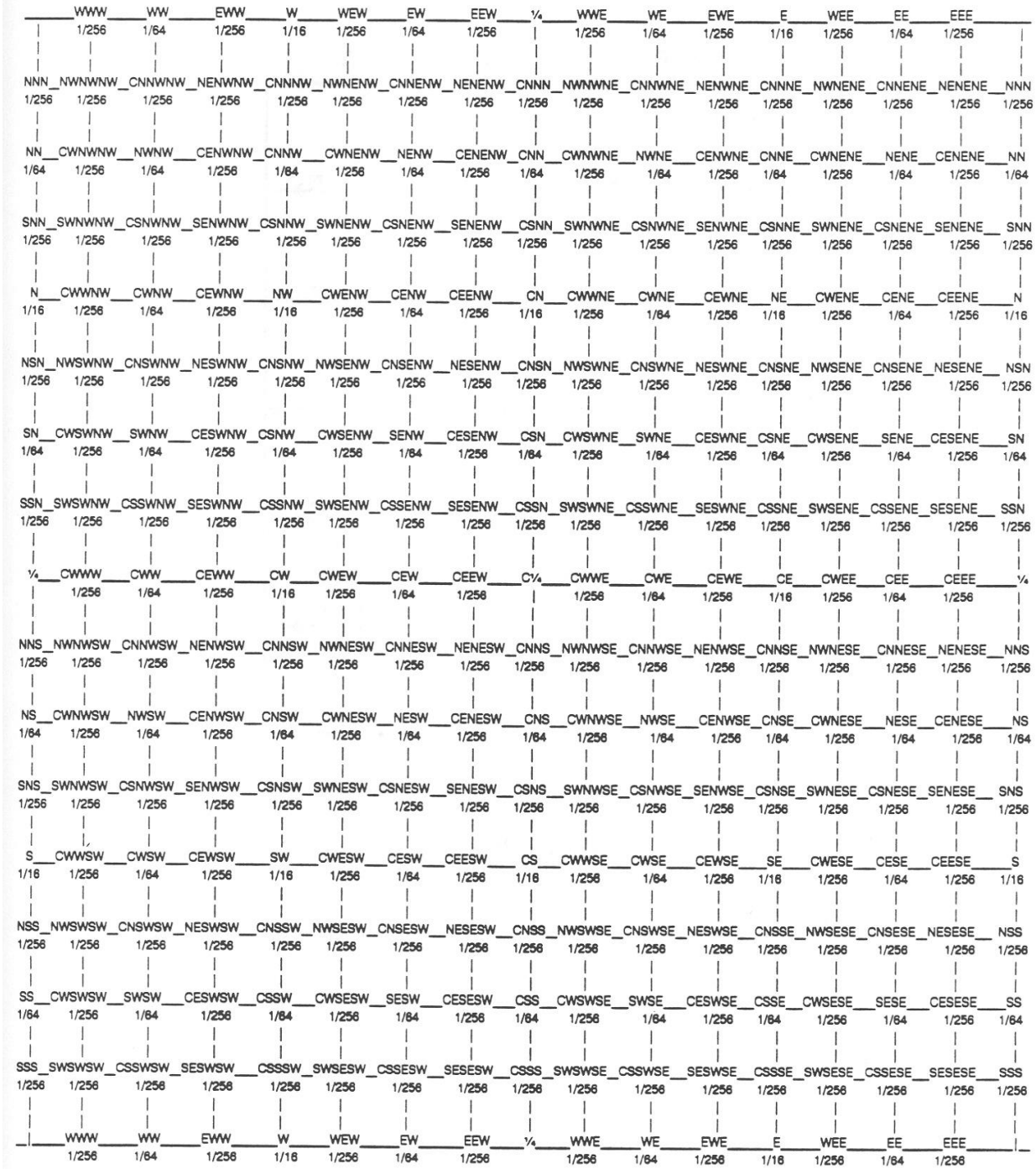
So bona fide rights there is quite an interesting discussion there in Chapter 5 of the Manual. So I encourage you to read that again perhaps now that I have spoken a little bit about these two different ways to look at it and to recognize that the Manual is written in such that it addresses both of those possibilities in 5-24 thru 5-29. So that is good stuff. So I am going to bring this video lecture to an end here.

We will pick it up on the next one and discuss independent resurveys, a couple of other little odds and ends and then look at those US Supreme Court cases that I have promised you. I will see you on the next video lecture.

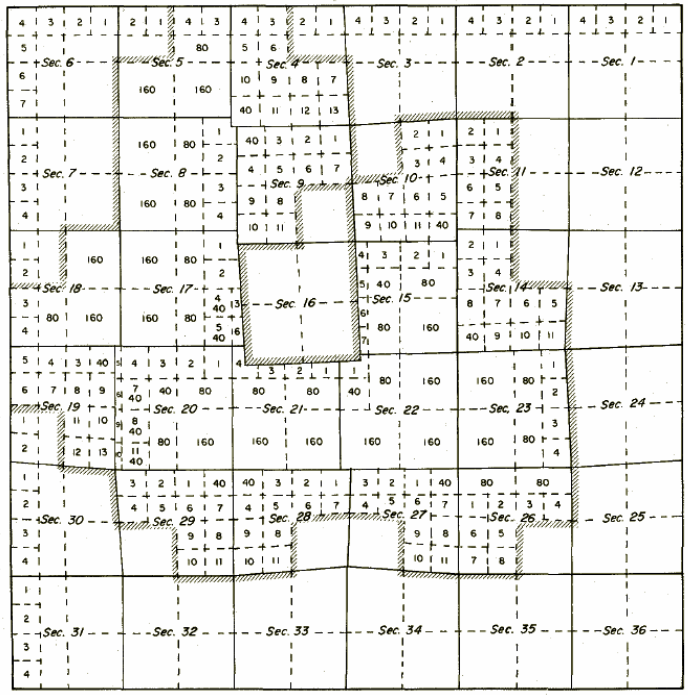


DIAGRAM

PLSS CORNER CODES

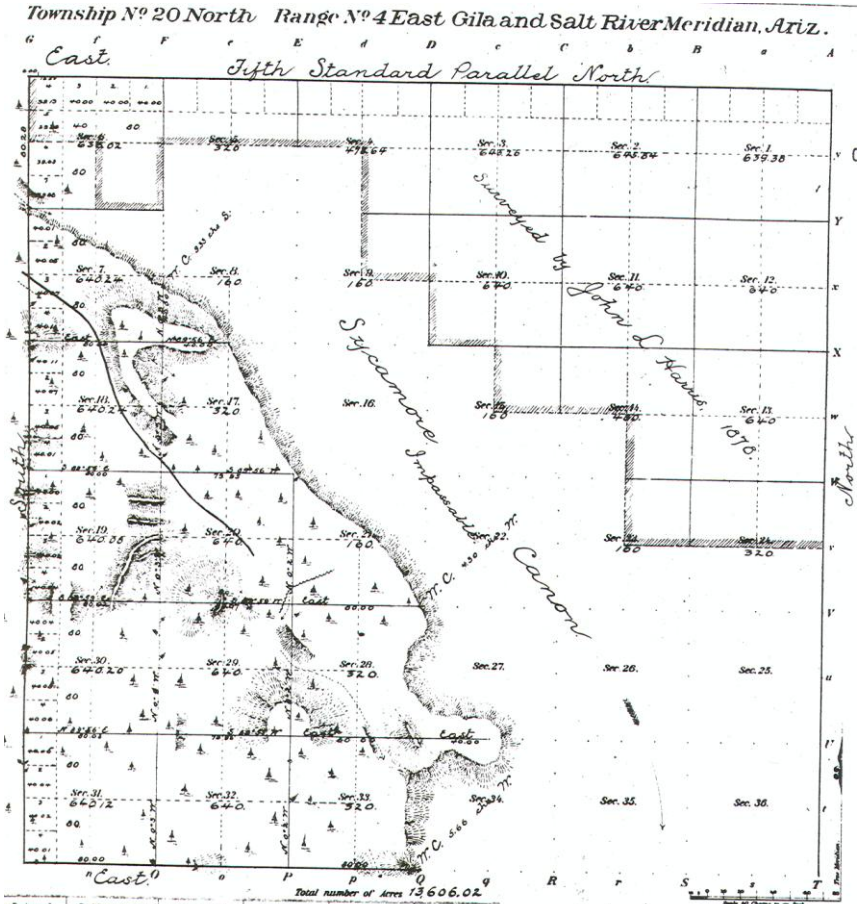


Some Special Exceptions……



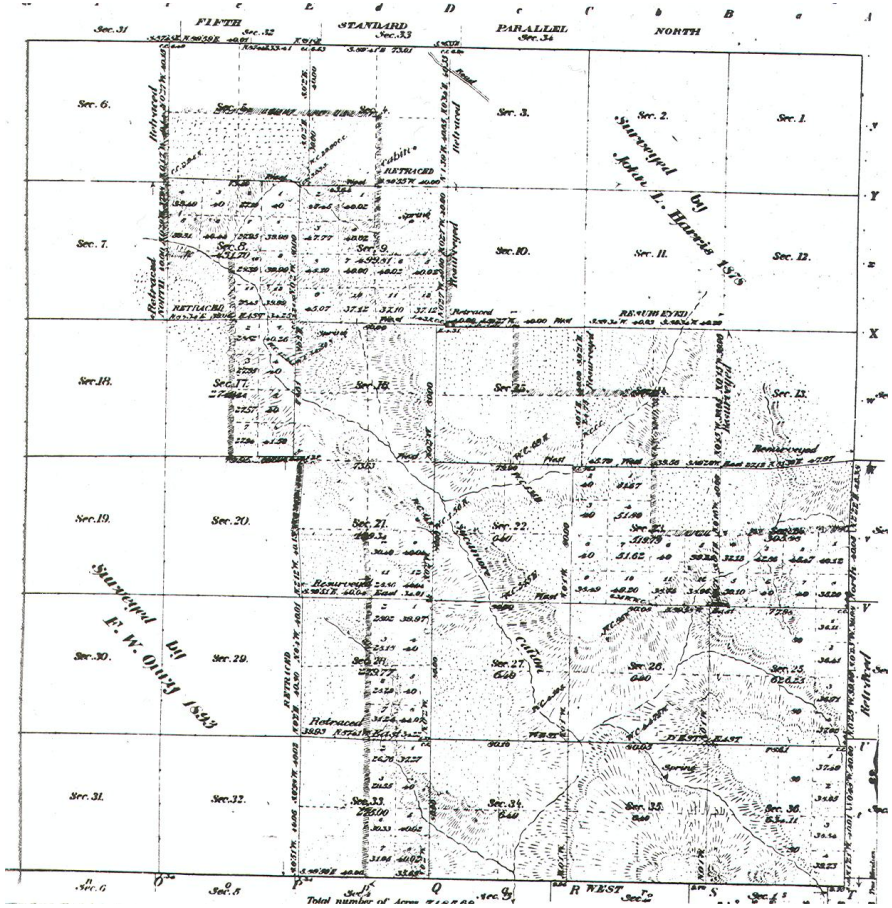
"to which the contrary may be shown"

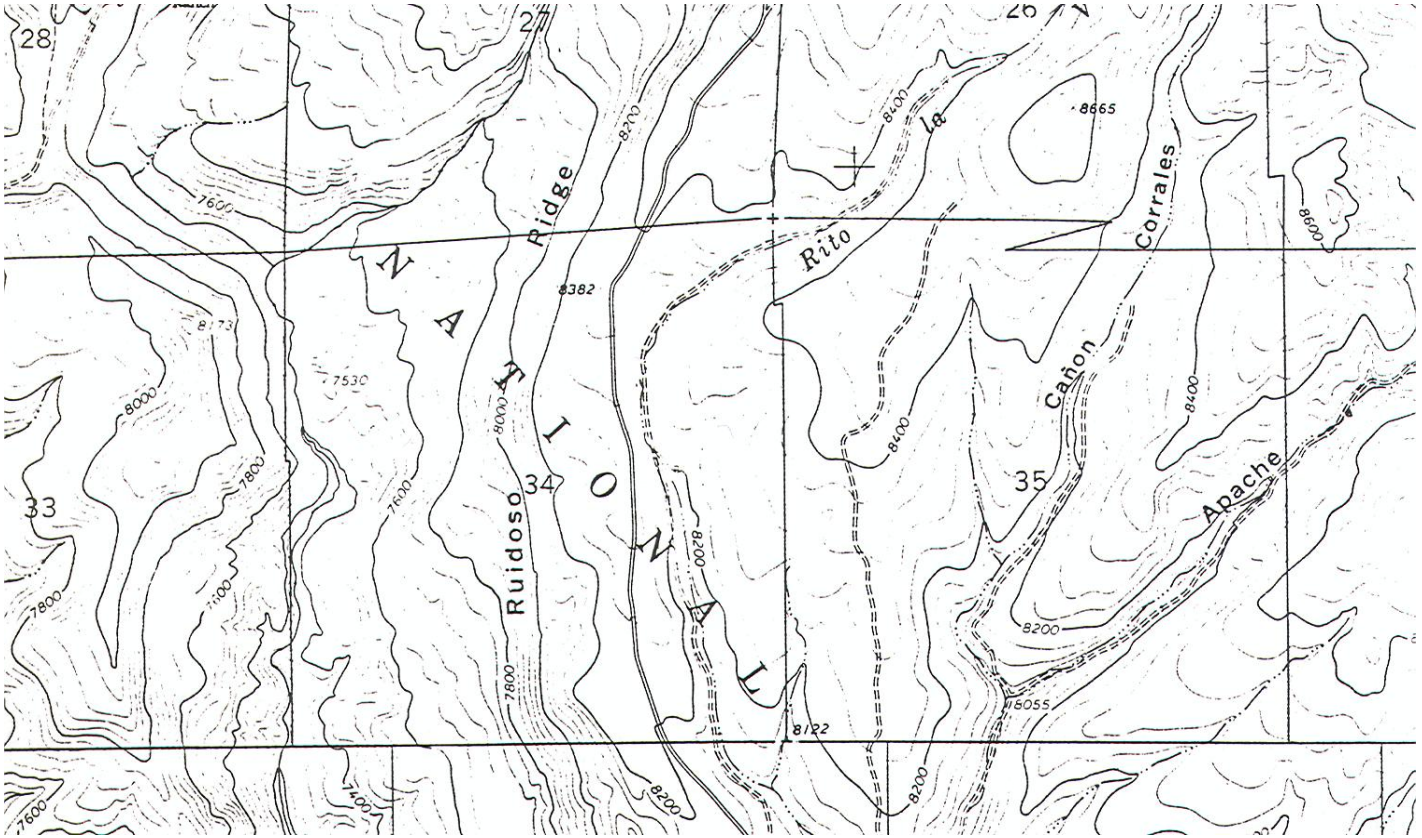
Example Extension Survey



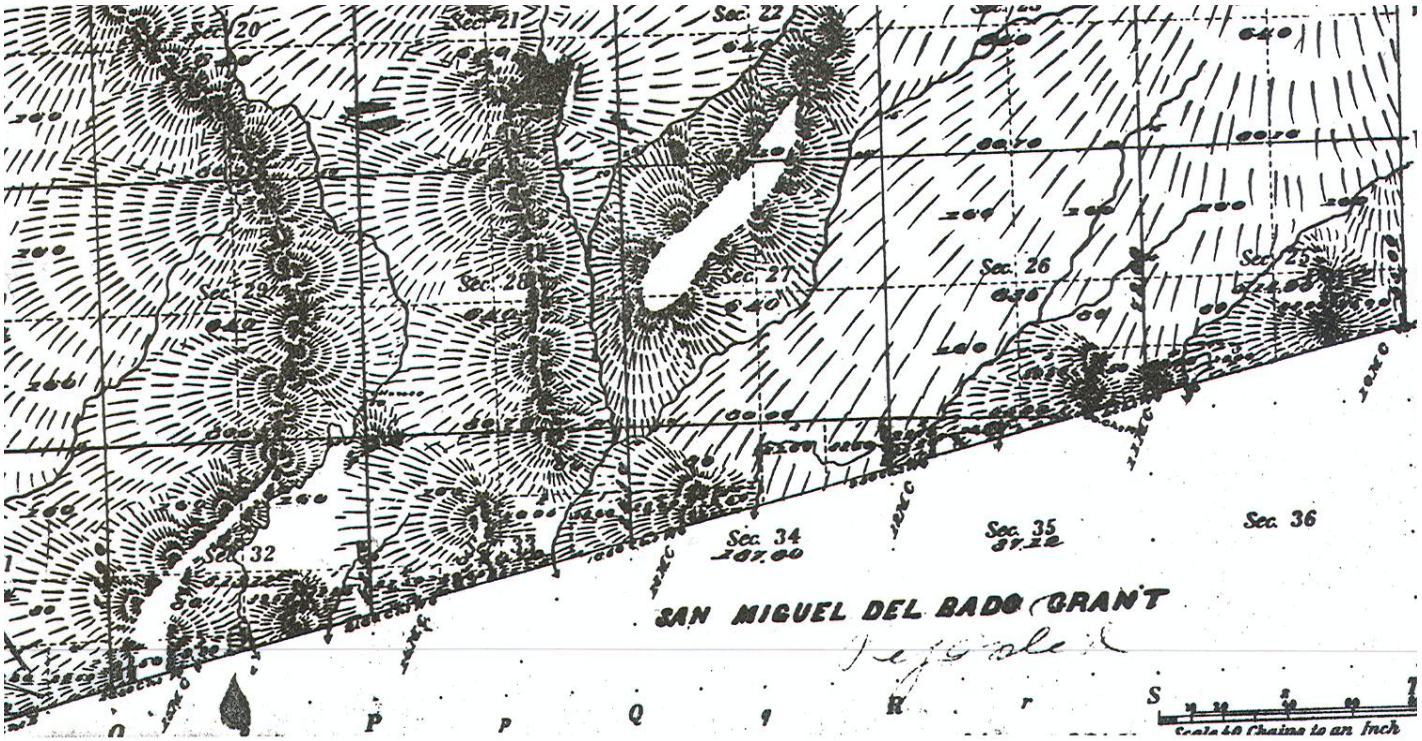
Example Completion Survey

Cross hatching Indicates where Jr/sr is taking place

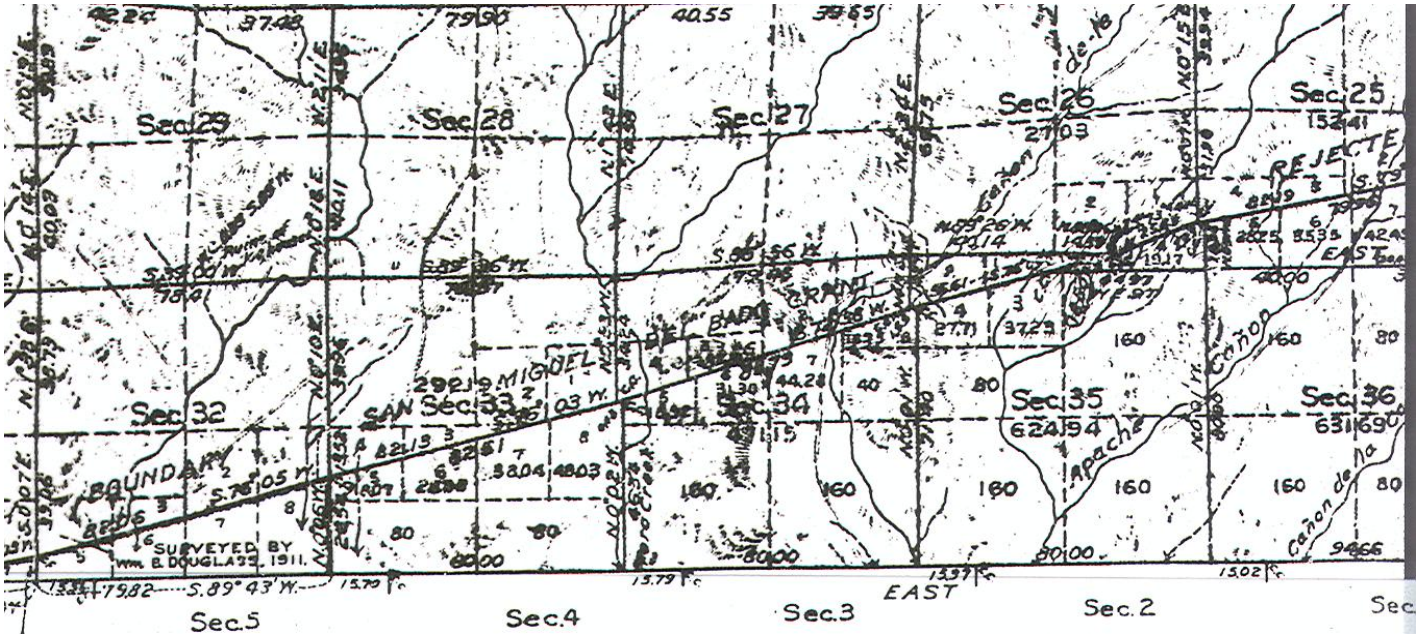




Completions show up in strange ways



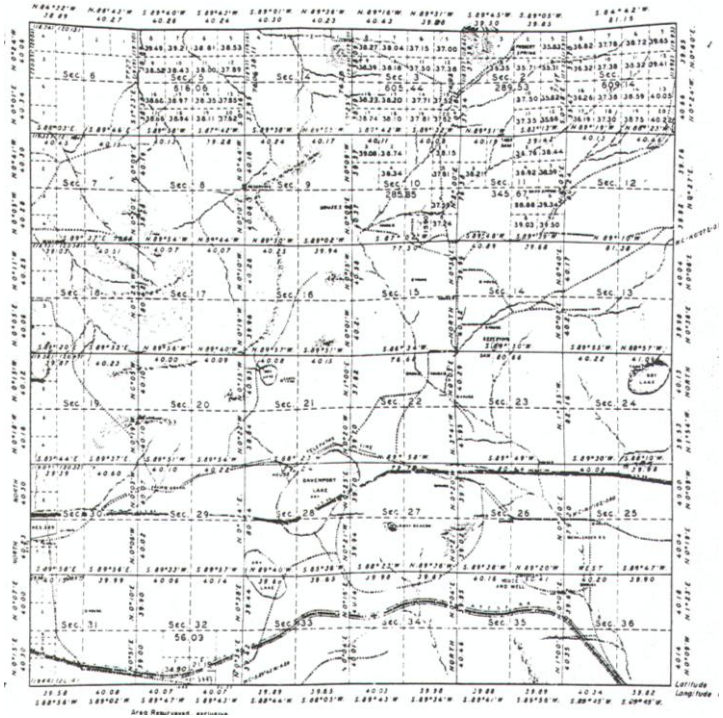
Land Grants are senior to the PLSS

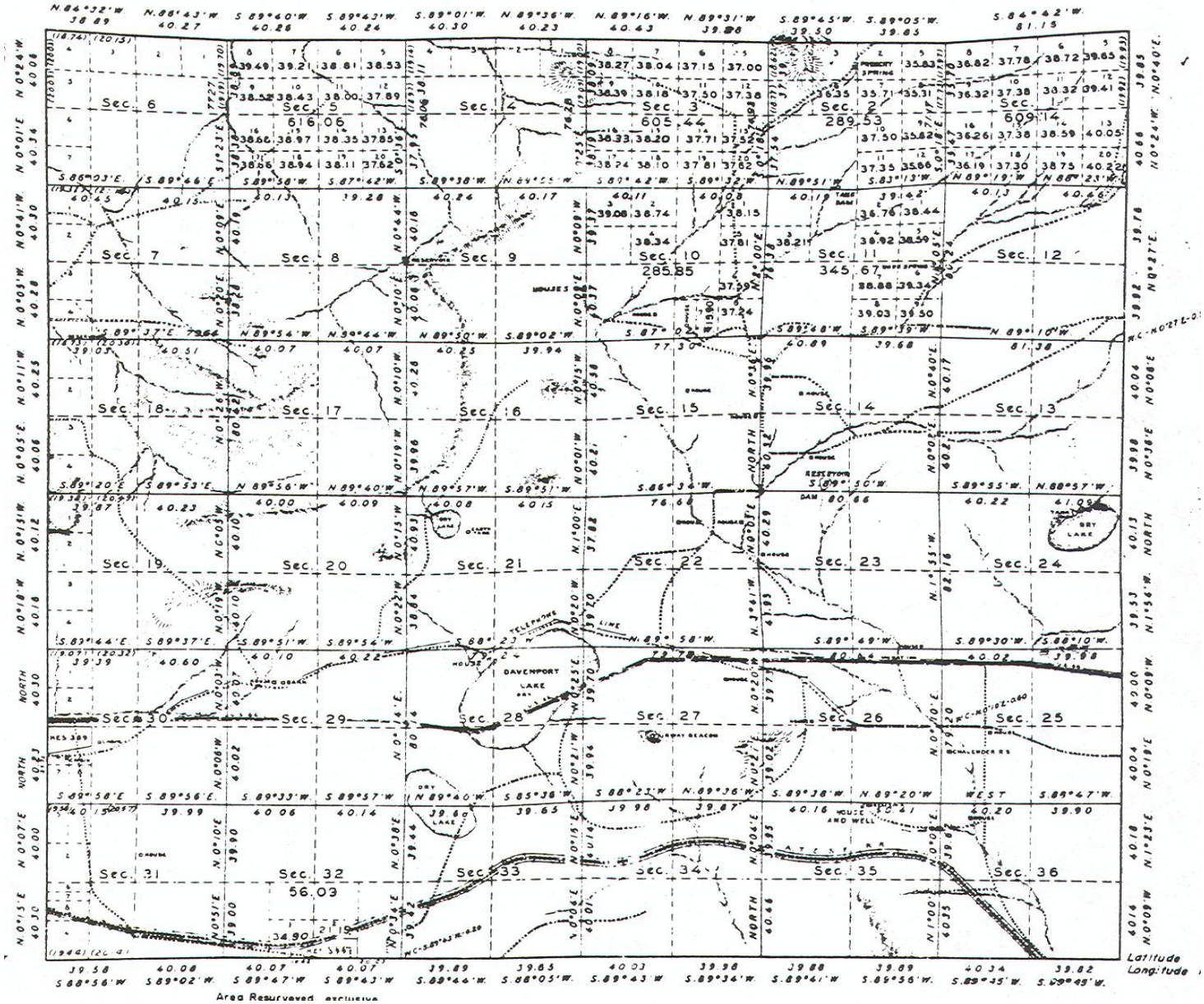


Grant declared invalid, so remaining PD must be surveyed. Note closings on both sides of line, even though it is a rejected boundary.

Dependent Resurveys

- Dep. Res. finds evidence, then connects the dots
- If remaining federal lands are found to be “out of limits”, they will be lotted and given new areas.
- Limits:
  - 21’ rule
  - 50 link rule
  - 5% rule
- Any one broken rule will trigger this
- Creates changes in corner restorations for subsequent surveyors

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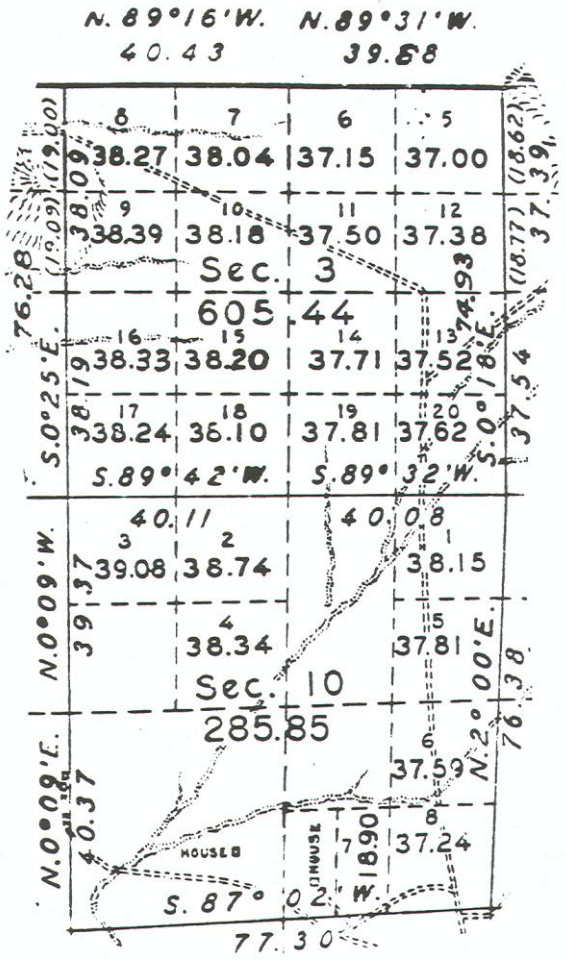
Sec. 33
Sec. 34
Sec. 35
Sec. 36
DAVENPORT
LAKE
DRY LAKE
Latitude
Longitude

After a Dep. Resurvey:

- Why lotted?
- Why some not lotted?
- New official areas on the federal lands
- Legal descriptions change on federal lands
- What about on private?



Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

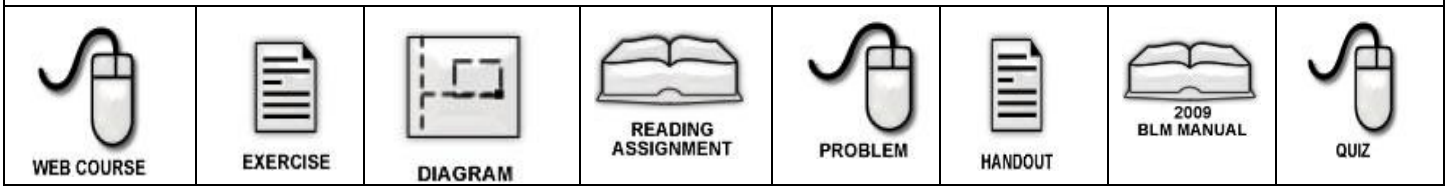
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Federal Boundary Law – Part 4 (71 minutes)

ICON LEGEND



FEDERAL BOUNDARY LAW – PART 4

Introduction

Welcome back for another video lecture on the subject of federal boundary law talking about the Pubic Land Survey System.

We have covered a number of things already. I was kind of kidding with Ron Scherler, who you have also met in these videos. You know its kind of tough to sit down and think that in a few hours you are going to cover everything there is about the Public Land System.

And every time I stop I think of something that needs to be added or should have been said something differently or whatever, so we are doing the best we can, but it is an interesting process trying to summarize this system that has evolved for 200 years and then try to explain it in a few hours. But we are doing the best we can and we appreciate your patience and look forward to your questions and your participation in this CFedS program.

Independent Resurveys

With all of that in mind I am going to pick it up on the second kind of resurvey, you may recall we covered dependent resurveys in the previous lecture and talked about **bona fide rights** and that sort of thing. And now we are going to talk about **independent resurveys**.

Independent Resurveys

- Read 5-12 in the 2009 BLM Manual
- A cancellation of the first survey
- But must protect private rights in their original locations
- Feds can survey their land any way they wish, and usually do the entire township over again.
- But non-federal interests are not moved!

An independent resurvey; I'm going to read 5-12 in the Manual to you before we go any further. Section 5-12 says, an independent resurvey is an establishment of new section lines and in reality what it is we are starting all over again. And often new township lines independent of and without reference to the original survey.

FEDERAL BOUNDARY LAW – PART 4

In an independent resurvey it is necessary to preserve the boundaries of those lands patented by legal subdivisions of the sections of the original survey, which are not identical with the corresponding legal subdivisions of the sections of the independent resurvey. Now what are they talking about?

Let's understand that when you have a, and we are going to look at a plat here in a minute, an independent resurvey occurred when the government, usually GLO, BLM has done some but we don't do very many of these in modern times. But we go into a township and realize that there is very little evidence remaining of the original survey or perhaps there is plenty of evidence and it is all messed up.

The sections are all running in weird shapes and the original surveyor was not quite as faithful with how and what he produced on the ground as compared to what the record says and so the government says we are going to just start all over again.

We will **cancel that survey** and we are going to start all over again and we're going to cancel that survey and make nice clean square sections. And the government can do that on their land.

The government can do whatever it wants. It can survey its land any way it wants. We actually have a Supreme Court case that said that that the government can survey their land any way they choose. But the government can do that but there is one problem, if within that township or townships if it is a multi township project.

If there are any private lands and for that matter, other private interests that exists prior to this cancellation of the survey, then the federal government cannot change the location of that private land or that private interest. So if you see what is happening maybe the township, obviously the more the private land there is in a township, the more complicated this gets, there is kind of a general rule, if it is 25% private or more, don't do an independent resurvey.

But the idea is that if you have a piece of land there and the whole township is federal except say one quarter section and its all goofed up and we want to straighten it out, we can go straighten it

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out, the only thing that the feds cannot do is move that original parcel. It is forever fixed just as the law has been saying and we have been talking about.

You know that parcel of land is forever fixed in its original position even although it is not going to corresponded with the new survey. It still has to remain in its original position. And if you think about it is this not just another application of **bona fide rights**?

These people are occupying their land based on the best they could, based on the original survey and the government says we are going to go in and clean everything up and straighten it out well we don't have the right to move those people. We cannot move their land and make it more of what they wanted. We can't move it to fit our new survey scheme. It has to remain in its original position.

So that is really what an independent resurvey is and the way that we do that is that in most cases we have to do a metes and bounds survey around the parcel from the original position and protect it in its original position and then move all the stuff around it to wherever it is we want. We'll see that here in a minute. So that is what 5-12 is explaining.

So an independent resurvey we just read 5-12 here in the Manual. It is the cancellation of the first survey but you have to protect private rights in their original location in their original locations.

The feds can survey their land any way they wish and usually we will do the entire township over again, although there are places where that is not true. But non-federal interests are not moved. The private land has to stay in its original position. Now let's take a look at a plat here.

FEDERAL BOUNDARY LAW – PART 4

What we have on the screen here is an old original township survey and again you don't have to read the numbers, I just wanted you to see the general scheme of things here.

It is elongated first of all I notice and the sections up here are about a mile and a half north and south but that is why the township looks taller north and south than it does east and west.

But that is the original survey, now I want you to notice that the township sections are all square, everything is just like you would expect other than the elongations up here on the north, right and we have lotting down this side which is what you would expect, so it is pretty much a normal township other than the elongated sections.

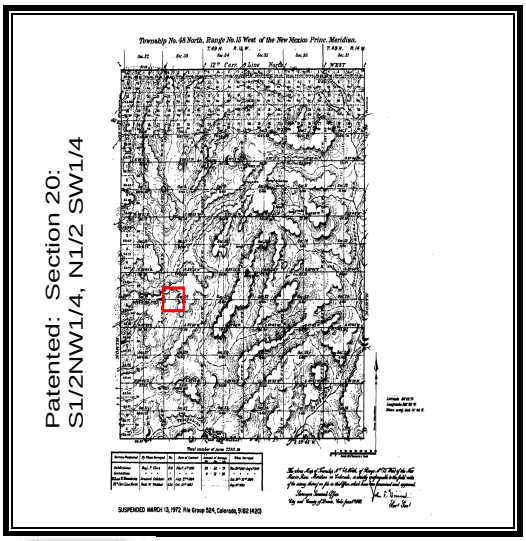

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Now I have put this red square around a piece of land that patented in there and as you see on the side of the screen what was patented was in section 20, it was the south half of the northwest quarter that 80 acres and the north half of the southwest quarter so that was another 80 acres so this guy, the patentee had 160 acres here straddling the mid section line, 160 acres and that is what I have drawn for you with the red square. That is where his land is.

And if you understand then what we are talking about here, even if the government wants to move all the section lines out here somewhere else, we can do it. We can do whatever we want but we cannot move that red square from where it is. So that is the original survey.

Now along comes the independent resurvey which in this case they cancelled the township and a good part of the township had no private land and nothing going on in federal.

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So if you take a look at that you will see that a big chunk of the township they left unsurveyed out here they just didn't even mess with it. Because no need to, apparently nothing going on, it might have been wilderness I don't remember. This was in Colorado but I don't remember the particular project.

But anyway, you'll notice that of the portion of the township that we did resurvey, and this is an independent resurvey and you will notice some differences here of the portion that we did, nice clean sections, all that and that is the only part that we really needed to worry about, you'll notice that there are some things different, the sections to the west are longer and I am going to go back to this one.

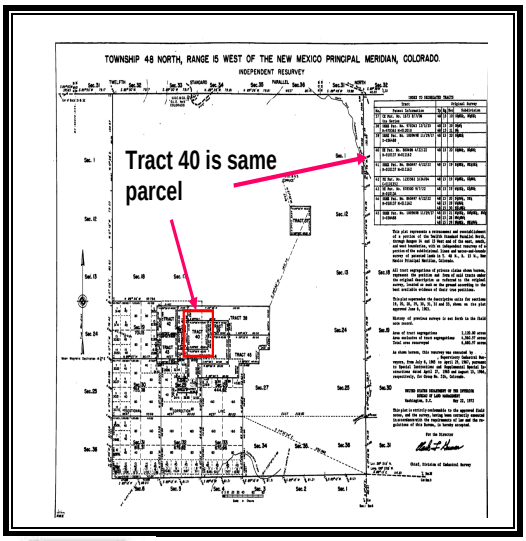

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

In the original survey the sections here we just went 40 and about another 40, right? Section corner, quarter corner 40 chains, and closing corner probably at another 40. Real close to 40. So we just had **lotting**, one set of lots down the west side, but when you look at this, the same sections on the west side of the township are long.

We've got a section corner here and a quarter corner but then we've got about 20 chains extra it looks like in there. So obviously, if we assume that the range line has been left in its original position, which may not be the case, but for our discussion, let's say that it is. Something has changed inside. So the township looks to be a lot more square too, and this is probably on of those places where they did more than one township.

But what I want you to notice is there is a **tract** 40 is what they call it, you may not be able to read it there, that's okay, but there is a tract 40 that was created there and that is that old 160 acres that we looked at a while ago in the previous plat. That is in the exact same position on the ground but it is not in the same relationship

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to the sections around it because these are all new sections.

In other words, this township has been cancelled, but we have to protect this 160 acres in its original position and so in order to be able to do that we do a metes and bounds survey. We called it tract 40 and normally they start tract numbers with 37 because there are 36 sections that way you do not have any duplications in the numbering systems, so this one happens to be tract 40.

Now what is interesting on an independent resurvey is that there will be this box or a table of some kind on an independent resurvey plat and it will be called the index to tract segregations or something like that and what it is; a table that is going to tell you each of the parcels that have been tracted in the township to preserve something from the original survey. That is what their purpose is.

And we are going to see, it is going to tell us that tract 40 on this plat is the same parcel that we saw on the previous plat.

But it was described by **legal subdivisions** which is another word for aliquot parts. All right? Aliquot parts so. Here we go. I have blown up this table. What do they call it? **Index to Segregated Tracts**.

So what we are doing and the reason it is called segregated, is that we segregate the original patent from the new survey, so it is not part of the new survey, it is segregated and that way it can be preserved in it original position, but again you may not be able to read it, but I just want you to understand the kind of information that is given to us on an independent resurvey plat, we actually get a connection here with this table of this index to tract segregation that tells us that tract 40, that is where the tract numbers are on that left side and then it will tell you the patent number and the date of the original patent and all that stuff and you know which a lot of times isn't of direct interest to us but what they are doing is saying hey we preserved that patent that left federal ownership back in I think 1922. We've preserved that.

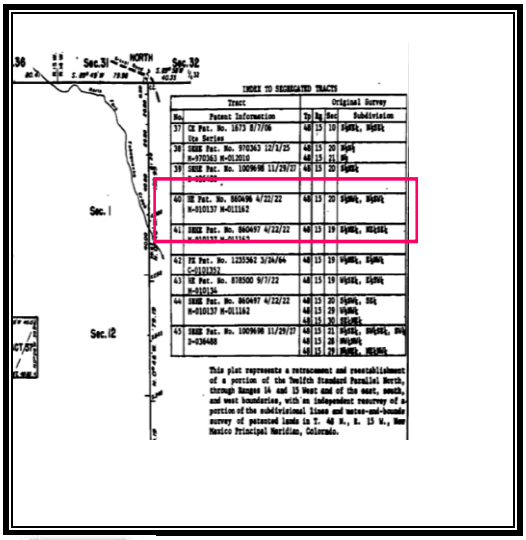

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

FEDERAL BOUNDARY LAW – PART 4

Now what they are doing though is that they say over here, okay, what was the south half of the northwest and the north half of the south west, remember that was our legal description of that land.

This is where the connection is made between that legal description and tract 40 as a legal description. Does that make sense? That is where we make that connection, now the federal government does not send a bill, not a bill, a notice to these people to tell them what is going on.

Confusion with Title

But you, if you are thinking at all, you're probably realizing that well this could cause some confusion and it does. Now there are some complications for the private chain of title at least to the person who really doesn't understand what is going on with an independent resurvey.

Complications for the private chain of title?

- BLM assigns a new legal description to the tracted parcel
- This differs from the legal in the patent for that parcel of land
- Proper way to "fix": Use the entire legal, referring to dates of plats….
  "according to the plat dated May 7, 1887, also known as….. on the plat….."

GLO or BLM will assign a new legal description for our use and purpose to that tracted parcel as you saw, that was 160 acres described by aliquot parts legal subdivisions but now it is given a new name on our second plat the independent resurvey tract of tract 40. This differs from the legal in the patent. Right? As we just talked about. Now what is the confusion?

As you can imagine there is some confusion. I am going to tell you a story here. As I always tell my wife hey I'm over 50 so I can tell all the stories I want now. But this is a true story, they are all true. I was doing some work on a right of way survey for the Forest Service up in at the head waters of the Pecos River just outside of the wilderness boundary up there.

We had a camp ground up there and we were crossing private land without having a right of way on it for years and years, decades. So it was one of our projects to go acquire that. So I went out to do a survey and was in a township that had been independently resurveyed.

And so we could use this plat, it wasn't this plat, but we could use this plat as our example that the guy that originally got the patent and he sold the land to several people you know but the people that own the land, it is still being described as south half of the

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north west and the north half of the south west of that section 20 and as you saw on the plats that we were just looking at the parcel isn't even in the new section 20 it's not even in that, section 20 was completely moved, but that parcel of private land had to remain. So that is what happens.

So I did my survey and we cut across the corner of this private land with the road and so I wrote a legal description and I said that the legal description that the caption of the legal for the right of way that it was going across tract 40, using this again as an example, and the federal government buys **title insurance** on just about everything that it buys anymore on an acquired land and this is an acquired interest, a right of way, so we went to the title company had smoke coming out of their ears they, tract 40, we don't know what that is, that is an aliquot part description and that's the way its got to be and I am thinking that well the problem is that if you call it those aliquot part descriptions of section 20 then that is in a totally different place than where this guy's private land is.

That is why we tracted it, to give it a unique name and preserve it in its original position but there is a difference, south half of the north west quarter, you know a mile away or so in that township. So that is the complication that occurs for the private chain of title.

But what I ended up doing there in that case was I rewrote the legal and in reality it helped me learn the right way to think about independent resurveys and the right way to solve the title problem. It isn't truly a problem because the government hasn't clouded their title in any way, but because a lot of people, a lot of landowners, a lot of surveyors and a whole lot of title insurance people do not comprehend independent resurveys we need to do something.

What I ended up doing was that I said that I went across the south half of the north west, and you know the original aliquot description according to the GLO plat dated 1880 okay, I referred to the original survey and its approval date and then put also known as tract 40 according to the survey dated 1940 or whenever the independent resurvey date was. And the title insurance company looked at that and they still didn't understand it, they didn't care to understand it you know they just say okay we'll let it

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go by this time, and it went by.

But the beauty of it was that I actually got into the **grantor grantee** record system a document now that actually links those two legal descriptions together so that should help people in the future so when you think about it on the slide, the last thing that I had there was the proper way to fix this and not that there is anything broken, but it is to use the entire legal description, refer to the dates of the plats, so it is this parcel of land according to the plat dated May 7, 1887, but it is also known as tract 40 on this plat dated this date. And in reality that is the true legal description of the property. And that way you make this connection.

You see again GLO or BLM they don't send a notice to the landowner and say hey you used to be called the south half of North West and whatever, but we are going to call you tract 40 now on. Well that wouldn't go over very well in the title world to begin with.

So the government tracts it so they will have a unique name for the parcel because it no longer exists as part of that township scheme. So that is why the government does it. It works pretty good, I think. But you know again people outside of government don't understand that and so occasionally you are going to come across townships that have been independently resurveyed and by the way there are some places where you will find townships that were partially independently resurveyed and the other part dependent resurveyed.

There are some real complicated situations out there where that was the best solution to what was going on. So be aware of that. I have seen some pretty strange independent resurveys. I know of some up north of Prescott here in Arizona that where every other section was private land. That is 50 percent and they went ahead and independent resurveyed it so you've got these tracts that are square miles all over the place and it just screwed up the whole township even with the new survey.

I am not quite sure why they did that there, there may have been some reasons, but hey whatever it is, it really is not our place to say, well I wonder why they did this, they shouldn't have done that. It doesn't matter, what they should have done or what they

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shouldn't have done, that is what they did, that is what the record shows so go in there and take care of it.

So that is a brief look at independent resurveys there is more about that but we wanted to give you a heads up that those exist and that they are a little different and not to get caught up in the confusion that a lot of attorneys, land owners, title insurance people get caught up in.

Now what we have been doing, I've talked about how the public land system works, and we've talked about what it is producing, you know monuments on the ground, records, we talked about those records that were produced and then we talked about okay now the dependent resurvey can come along and it creates more records and here is what it does. Now we just finished talking about independent resurveys. It will create a plat and a set of notes and that table off on the side, which we looked at so more record information if you are working in one of those kinds of townships.

There is another kind of project that I wanted to mention and that is what the BLM calls a remonumentation project.

Remonumentation Projects

Remonumentation projects are actually something that was done quite a bit in the 1960, 70 and a little bit in the 80s but very little done since then.

Now it actually is a pretty good kind of a project and it would be good if the BLM did some more but what it entails is that you don't do a survey, you just go out on the ground you look for survey evidence, and when you find it you remonument it in other words, you put a better monument in.

Now there are places I mean let's face it folks, the average citizen does not recognize a wood post or a stone section corner as being a survey monument, they use the wood post as fence stays all the time, or they burn them in a campfire, they pull the stones out because they think it is going to be a good weight for where the barbed wire fence goes across on a royal and they weight it down. I have used them used as steps in the chicken coup, I've seen them

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used in the fire places, I have seen section corners and quarter corner stones used all over the place. So people don't recognize those as real obvious.

Whereas they do recognize the brass cap, either in concrete, or on an iron post or an aluminum monument. They recognize them as being something important, a survey monument.

So as much it would be cool for us to leave the stone and the wood post or whatever there, let's face it the wood posts are rotting away if they have not totally rotted away already and the stones are deteriorating and are mistaken for not being anything important, so what is important is that we continue to perpetuate that position on the ground, that location in other words a corner point.

That location needs to be perpetuated and one of the better ways to do that is to replace the monument with something, you know, the old original monument with something more modern something that people would recognize and then at the same time, generally we would take additional accessories.

Now you understood from our earlier discussions, accessories we are really talking about bearing trees and other reference monuments that sort of thing because you see it is that corner position is what is all important, the corner position. And so we just didn't stick a wood post in there we also marked bearing trees we did, we had topo calls coming in, we had other cultural features if there is a fence or a cabin or something near by, we tied that stuff in, at least traditionally they did and we still try to do some of that now.

And so what that did was create all sorts of additional information in order to get the corner point back in other words the wood post could have taken out and used as a fence stay, but we still have the two of the four bearing trees, so we can come in and measure from those and get back to the place, right the corner, the position on the ground.

That is what a remonumentation project is really doing it is not surveying bearing and distances between the corners, it is simply going in and rehabilitating an existing corner that may not be in

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the greatest shape. Now we still try to, that is what I started to say, we still try to establish new **accessories** and replace the old ones, the trees are dying, getting older, rotting, maybe they have already fallen over.

We take some new bearing trees or bearing objects on rocks whatever. You know the general rule in the public land system you had an accessory in each section, so if you had a section corner then you had four bearing trees if you are in the forest, you took four bearing tree. If you had a quarter corner, you took two, right, one per section. That was the idea and you marked the trees according what the section number you were in so that if somebody came out to a corner that had four trees and you find only one of the trees remaining, you don't have to guess what tree it is, it will tell you it is ascribed in the tree which section number that tree is sitting in.

There was a lot of thought that went into this, tremendous amount of evidence out there and we will talk about that later in the evidence evaluation course but what I am trying to make us understand is that dependent resurvey did this and the independent resurvey did it and now we have another kind of thing called a remonumentation project which is not a survey it is simply a rehabilitation of the evidence that we find on the ground.

So let's review a few things there about remonumentation projects, they are done without an actual survey, we find evidence and we replace it with a better monument, we take new accessories. Why do we do this? Well, it saves money. It preserves evidence and that's really important. But there are some disadvantages, without a survey sometimes we are not sure if we have searched the right area, you know, you start finding indexing errors, you start finding that all the corners you found between them he is short or long from what he said and that would help in searching for these.

So there are disadvantages but understand, because there is no survey, there will be no plat, so the only thing you will get are field notes of the remonumentation, but no plat. Okay? So remonumentation, that is the other type of project which does produce records and it is part of the public land surveys, it is a process that we went through quite a bit as I mentioned in the 60s and 70s for the most part.

Remonumentation Projects

- Projects done without actual survey
- Find evidence, replace it with a better monument, take new accessories
- Saves money, preserves evidence, but….
- Without survey, sometimes we are unsure whether we had really searched the right area, could not find indexing errors, etc.
- Creates notes, but no plat

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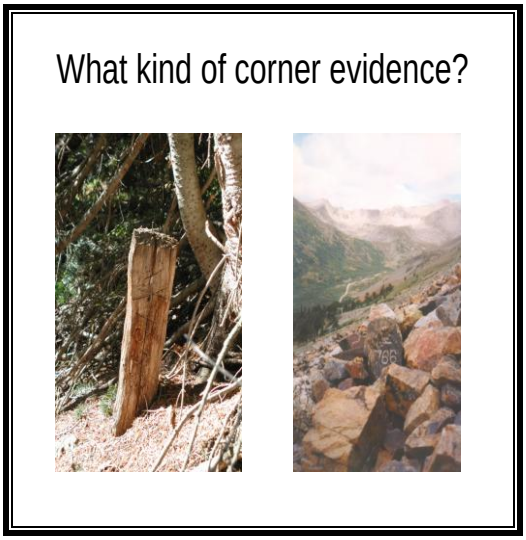
Some of the Evidence

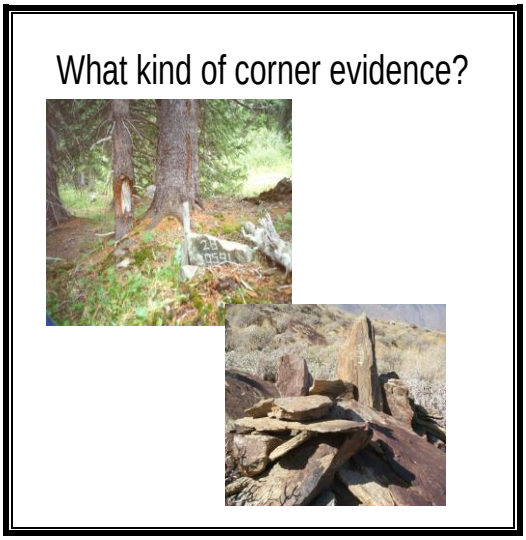
Now I want to ask, you know we have been talking all through this lecture about the corners and that sort of thing and what kind of evidence they left and I've talked about stones and wood posts and bearing trees and that sort of thing.

I thought that I would just show a few pictures here of some of those things, here on the left of the screen is a wood post still standing, still remaining, I know it is on your TV or computer screen, but if you look carefully, there are some scribes in here and I don't know exactly what they say but you know there it is information, you could read the notes and it would tell you what he marked on it.



Over here is a stone corner, this had a number on it, which tells me that it is not a section or quarter corner, it is some other type of corner. It might be a mining claim corner or for other special non rectangular survey but it is just a picture to give you an idea what a stone corner would look like.

Here is a couple more. Here we have a stone corner with some more numbers on it and then here is a bearing tree.



The scribe is still open so it must not be that old of a survey or maybe it is here in Arizona where the scribes stay open for many, many decades. But and you know the way bearing trees are done, if you are not aware of that, you open up, you cut into the bark down to what we call the cambium layer and that makes a good place on most types of trees to scribe information in there and so as I said earlier, there is information scribed in there that tells you which tree it is, but you will still have to have the notes, you see, but it is going to tell you which tree it is.

And in the notes it will tell you how far, what bearing and distance that is between those two. So even if this stone was destroyed and so now it's gone, it's disappeared. We have not lost the corner point, we can measure from the bearing tree over back to that record bearing and distance, obviously your basis of bearings will be an issue there. But that is how we will set it.

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And then the picture in the lower right there is just of another stone and stone mound and this is typical out in the desert, they will build this pile of stones down here but it is that main stone that is sticking up there, that is the one that will have scratch marks on it that will indicate how many miles you are from wherever in the township and we will cover a little bit of that later. So you know that is just some ideas of some of this kind of evidence that is left. But the bottom line is that the public land system went out and did exactly what it was supposed to do.

Background of Case Law

Now I am going to switch gears now and go to the last objective that we had in this course and that was to discuss some federal case law.

Now maybe we ought to ask well why do we have any interest in that and one of the things that I am hoping and I know all of us are hoping with the CFedS program, we are going to introduce you to some of this stuff like this and you will realize that wow there is a lot of information that I could get from federal case law and on a snowy day in the winter maybe you could sit back for a half an hour, get on the Internet, look up some case and just read it and learn all kinds of amazing things. So let's ask the question, why would you want to study case law?

And it is because it is filled with information about how to do federal boundary surveys as well as some other, well lots of other things, we are looking at boundary surveys for the most part, but I want you to understand, where do we want to go for precedence setting cases, you want to be very very careful of local decisions which hold no precedent and in fact I find most local decisions will violate the law and sometimes will actually violate reality.

Federal Case Law

- Why study?
- Understand where to go for precedent setting cases…..
- Beware of local decisions which hold no precedent, may even violate the law and reality
- Only cases on appeal are considered for guidance

Now I am not going to go into stories to tell you examples of that but what I do want to do is make sure we understand the majority, well let's back up, all of the boundary disputes that are heard between private citizens okay are heard in the state court, in your **state court system**, and they are heard at some district court or local superior court it depends on what your state calls them, but it is your local court system, and boundary disputes are of course are going to be civil cases with very few exceptions, I have testified in

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a criminal case that had boundary elements in it but that was because the guy had done so much damage to federal land, knowingly, but you know normally boundary disputes are going to be in civil court and so let's understand, you have a court case between two citizens arguing over their boundary for two feet you know and the judge or jury, if it is a jury trial, they don't know much about boundaries, they probably think they do, but they don't know much about it.

Just think about it you have this one day or two day trial usually at the most and the one side says the line should be here and they bring in an expert witness, a licensed surveyor up and he says that should be here and the other side testifies, they bring in another expert, another licensed surveyor, and he says no it should be here. So what is the judge supposed to do with that?

I have a friend that is a judge up in Colorado and he hears these types of cases all the time and he said, he advises everybody that if you are coming to court with a boundary dispute, you are going to lose land. That is his advice. You are guaranteed you are going to lose land. And you might say, what does that mean?

Well that is his way of saying look unless the balance goes clunk, one way or the other as to someone is cheating the other or whatever really, he is usually going to say split the difference or leave things where it is or use the fence or he is going to go with some easy solution and his point is that he hears expert witnesses on both sides and unless something is glaringly wrong or if he really doesn't like the attorney on that one side, he is going to come up with some equitable solution and we need to understand that virtually every boundary dispute in this country in the state court system is heard in what we call and what actually used to be called the **courts of equity**.

Now you may think, well what is the difference, the court is supposed to be fair, no, equity is different than a court that is purely looking at the law. Equity is saying let's be fair, the courts of equity are looking to how can we settle the dispute, how can we stop the argument, how can we quiet the neighborhood.

Now I am going to give you a classic example of a court of equity, Judge Judy or Judge Brown or whatever the others one, there are 4

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or 5 other on TV, right? It used to be in the old days, all we had was divorce court, and I think it is still on too. But that is not always a court of equity, but I digress, so what happens on Judge Judy? He screwed me out of my rent. No I didn't and Judge Judy listens to all of this and what does she do, does she stop and say well all right I've heard enough here and I am going to take six months and study the case law on this and come back with a decision that will be in accordance with the law. No, she doesn't do that at all, other than take a commercial, what does she do?

Well, here is how I see, you said this and you said this, and I don't know who to believe. You pay half of it and you pay the other half of whatever and that's it. Case closed. That is the court of equity. That is Solomon cutting the baby in half. I don't know who the mother is so cut the baby in half. Now of course he was using that as a ploy in that story. But you know it is the court of equity.

We are not going to sit here and investigate it and do DNA, no we are going to hear both sides' facts, and we are going to make a decision. Understand that is where every boundary dispute is heard and folks you don't want to listen to that. You do not want to listen to those cases because those cases are not based on the law. Those cases are based on what is fair. And most of the time, probably 95% of the time those cases are not appealed. That is just what is heard.

Now I have seen and I have been involved in cases in court where the decision by the judge, usually a judge, but sometimes a jury, depending on what is going on, that is different, different jurisdictions, I am not going to go into that, let's just say a judge trial. You know if the judge is listening and he can't figure out what to do, he is going to come up with a simple decision.

But I have been amazed that in some of the cases I have been involved in where the decision that the judge came up with was impossible to do, from a surveying point of view, it was impossible to do because he would address one corner one way and the other corner another way or not even address the other corner and you have these weird things going on and I have seen many places, and I would say in the majority of the cases where whatever the judge came up with violated the law. Well, you

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might say, well how could that be?

You know folks, trust me, that is how it works, and if you have ever been in court and hopefully not as a defendant, but if you have ever been in court you have realized the reality of being in court that a lot of times the judge and/or jury are influenced more by the attitude of the lawyers, they like one lawyer more than the other, one lawyer plays the jury and the other doesn't so much or talks down to them and they notice that and that affects the answer. I am sorry that is not according to the law, it is not even equity at that point. It is just the way it turns out.

So I have seen a lot of cases that just violated the law like junior/senior rights totally backwards, or where it violated reality, that you couldn't even make that solution that the judge came up with work. Now with all of that in mind, what do we do? Where do we go to find case law, state or federal for that matter that is going to help us.

Well understand the attorneys themselves don't bother to study those cases, they know those cases are all over the map, pardon the pun in surveying, they know those cases are all over the place and it could be anything. You have cases in your state or territory wherever you are watching this, you have cases in your state where the judge, I don't know let's just split the difference or well let's just do this and make it work.

You've got cases like that and you don't want to base the rest of your career or your liability or since we are in the CFedS program, you don't want to place the federal boundary of any Indian trust lands or other federal interest lands or even private lands you are working in the public lands or wherever, you don't want to put that and your liability and all that in the hands of Judge Judy. The lawyers don't look at those cases either. All of those books that the lawyers look up in and then you can use all these web services especially like Lexus Nexus and things like that, West Law.

All those look at, all that is in those books, are cases that went on appeal. Why? Because Judge Judy says, let's split the difference, I don't know where the boundary is, so just split the difference.

Well one of those guys says that is not right and I am going to

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appeal this.

Now it is out of the local court system and it is on appeal. And when you go on appeal, with very few exceptions, when you appeal a case, you cannot introduce any new evidence all you can do is talk about the law and maybe how the judge conducted himself or herself or the jury or something, you know, you can address things like that but you don't on appeal take in a bunch of new evidence, now the judge in the lower case may have refused to allow some evidence and you can appeal on that basis and then the appellate court will say they have to allow that evidence, and they push it back down to the court and then you have to have another trial where that evidence is allowed.

But that is not really what we are talking about here, we are talking about when you go on appeal and you say, your honor, or to the appeals court, you say but it is very clear based on this other case and this other case and name off a whole bunch of other cases where the senior parcel always got the rights. And the judge didn't do that and the appellate court can overturn what the district court or superior court or whatever your lower court system is called, they can overturn that.

Those are the cases we go to for precedence setting because you see at the appellate level and above, because in most jurisdictions you have another appellate level, your Supreme Court of the state or of the federal government, you have another level of appeal right? So they are in the same boat, you don't bring in new evidence, you don't do this, its got to be based on issues of the law or issues of how the trial was conducted itself. And so that is where we go to look and you would be amazed, absolutely amazed at how consistent boundary law is once you get to the appellate level and above.

So it is only cases that are on appeal is where you really want to look at for guidance. We need to realize that, well that is what has happened to me in all the years I have done these seminars at state conferences, you know I will be talking about some US Supreme Court case that is 100 years old and it has just settled this question of surveying and there will be somebody in there that raises their hand and they say, well that may be true in the US Supreme Court but you know here in Podunk County in some state you know

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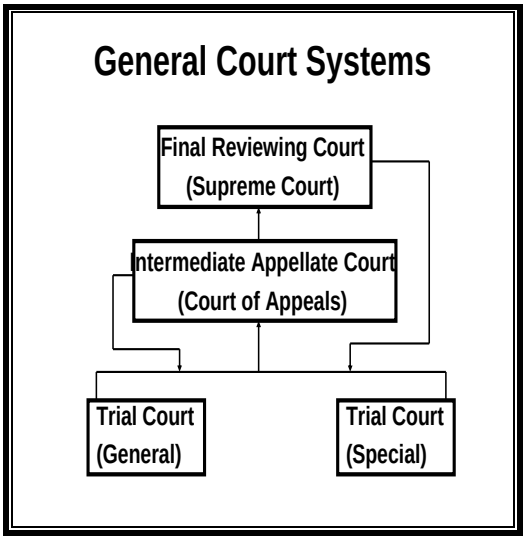
that's not how it is.

You see Judge Smith just a few years ago said the exact opposite. You need to wake up when you hear that sort of thing and realize, we don't really care what Judge Smith said, unless we are working on the land that Judge Smith ruled on, then we have to obey there but that is not a precedent setting case, that is not appearing in some book, some lawyer book or on Lexus where you are going to look it up and wow that is the precedent.

No, the **precedent setting cases**, I mean there are new precedents being set once in a while, but in boundary surveying not much has changed, frankly in about 2 or 3,000 years on this planet and not much has changed since the United States began.

So you want to go in there and look at it and find very consistent case law. Now whether it is state or federal government, this is basically what we have been talking about, this is the pattern of how the court system works.



We have the trial courts, okay, and you have general trial courts, so you have special ones, and some states have special ones called the courts of equity and that sort of thing. And that is where all the trials are heard. And then if somebody wants to appeal, which is less than 5% of the time, it goes to a court of appeals or to just some intermediate appellate court and then if you want to appeal one more time, you can try to go to your Supreme Court.

So we have lots of great state Supreme Court cases and we have lots of great federal Supreme Court cases. So that is how that works, that is that level system that I was talking about here and that is how it works.

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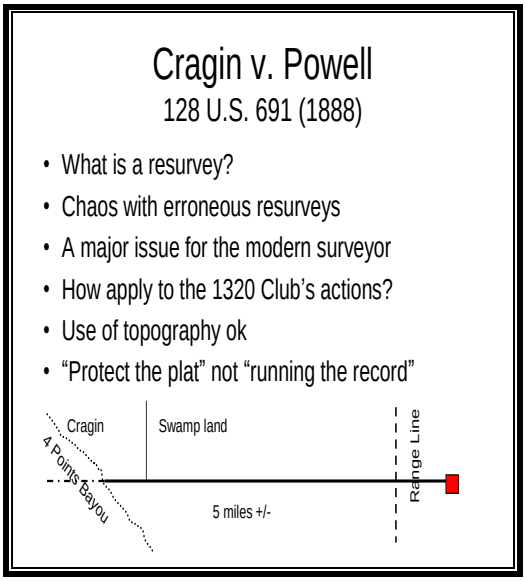
Federal Case Law

Now what I want to do for the remainder of this lecture in this course, is talk to you about, I promised you three US Supreme Court cases and we are going to look at three and then I have one other case that I want to throw in just as an extra to make a very important point to you.

I want to talk about Cragin v. Powell now this is an important case and it is very briefly cited in your Manual, let me just look real quick and I will give you that citation, it's is in Chapter 5 and Section 5-12. There is a brief reading and in fact, you ought to read that if you haven't, as we talk about this but I just want to show you, I am going to simply the case quite a bit, but to show you what **Cragin v. Powell** was about.



Now on your screen, you can see a drawing I made down at the bottom, and I am going to have some bullets come in there, but at the bottom, here is Mr. Cragin's land over here all right, now believe it or not Powell was a surveyor, and this is actually a landowner suing his surveyor, and this in Louisiana and it started out in 1881 I think it was and it took it 7 years before it got appealed all the way to the US Supreme Court but it started out in the local bayou, well probably not in the bayou, but in the local parish court.

And Mr. Cragin's land was there and over here was some useless swamp land and then as you can see on the far left is the Four Points Bayou, and still called that today, all right, so what happened was Mr. Cragin hired a surveyor and wanted to know where his land was and the surveyor, Powell, came out and could not find any corners of Mr. Cragin's land all right and so what he did, and you might think about it but we are not here to really discuss his procedure per se, what he did was he just kept going east on this section line until he could find a corner, now he actually went a mile across a range line which is not supposed to happen, you don't proportion across township boundaries, except in extreme situations, well he went over there and this is about 5 miles and he finally found some corner over here so what he did then was run back record bearing and distance now that is not a really good solution for 5 miles and a lot of error could get built up there, but he ran back 5 miles all the way to here okay, well when he did that here is what actually happened.

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It put Cragin's land out in the bayou. Now according to the court records, Cragin's land, the courts called it some of the best sugar beet growing land in the world, so it was producing great sugar beets and income for Mr. Cragin so that is what was going on. Well because this survey simply used measurements you see, it only used measurements only it did not use evidence other than this section corner, and it just used measurement and so it because of errors in measurement, threw Mr. Cragin's land out here. All right?

So what does surveyor Powell do, well he wasn't very ethical apparently, and he went to a business associate of his and had the business associate buy this swamp land from the state thinking that it was this land. Because his own survey shoved all this stuff west. So now the swampland, the guy that bought it which was Powell's friend, is now claiming well we actually own this land with this great sugar beet growing on it and it is ours and Cragin's is actually out in the bayou. Well it gets more complicated but I'll just leave it at that for the moment. Well, what do we want to learn here?

Well what does Cragin versus Powell; you see the federal court ultimately looked at this. First of all, they told us in this case what is a resurvey and that is what is quoted in 5-12 in the Manual and that is the portion that is quoted out of this case and it talks about that a resurvey is simply a retracement of what had been done before. So what does that mean?

That means that this is a dependent resurvey we are talking about and we now have a definition of a dependent resurvey from the US Supreme Court, and it doesn't get any better than that.

It is simply a **retracement** and they also noted that there is chaos created in an area when they have erroneous resurveys or as what they called in the case, they said resurveys so called, and they said when people don't follow the rules of resurvey and retracement, then they go in and they create chaos and they create new lines that shouldn't be there and so they addressed this case and frankly things that you and I deal with a lot. Now that is a major issue isn't it, for us.

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It really is. Cragin v. Powell is just a powerful of a message and decision and we really ought to think about it. Think about you know what we sometimes what we call the 20 13 club, isn't that exactly what they do? They just go in and find on or two corners, and they just measure record distance, they don't go the proper proportion. They don't look at the evidence; they just do all kinds of chaotic things.

We still have that to this day, what we call the 20 13 club. Now what was interesting in this case was that the US Supreme Court said and both parties agreed that Cragin was against the Four Points Bayou and they agreed that the Bayou had never moved, which usually a bayou doesn't move unless it is drains or something, okay, that the bayou was in its original location and the Supreme Court said you know what, in looking at the plat, we say that if Cragin was upland, which is what the plat said, if Cragin is upland on the plat, then he will remain upland. That is interesting.

They went to the plat and they said the plat says more than just so far from that corner, the plat says he is upland. That he stops at the edge of the water and all of the parties agreed that the water had not moved. So what did that mean? Well it meant that first of all that the use of the topography call was acceptable.

Don't let people tell you, now, there are lots of things and we will discuss this in a later course, but you want to be careful of when you are restoring corners and doing resurveys, you want to be very careful about using **topography** but you know what, its ok because the Supreme Court was telling those people and the surveyors from then on that that topo call for the edge of the bayou there should be used and so at this point you can proportion to here, and that will give you different answers along the way but the bottom line is that Mr. Cragin's land will remain upland and not out in the bayou.

So the Supreme Court authorized the use of topography in that case and this is where we basically get, protect the plat, a statement of saying or slogan that the BLM has, **protect the plat**, that doesn't mean you do exactly what the plat says, it means you look at everything that the plat tells you. And the plat said more than just distance here, distances down through there, you know 40 80. 40 80 and some distance here and here is a topo call and

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then we went on, no it says a whole lot more than that. And the Supreme Court said hey, it said that Cragin was upland and as long as that bayou hasn't moved, then he will remain upland. That is **protecting the plat** and notice how different that is then from running the record, which is what surveyor, Powell did. A lot of lessons there in that.

That is a real simplified short cut version of that case. You can find that case, you don't have to belong or pay for anything at Lexus, and you can just go to findlaw.com and look that up. Most universities, that have law schools, by the way have every Supreme Court case on their website, so you can find *Cragin v.Powell* very easily. Just use the names or the citation that was on top.

So that was an 1888 case that said here is what a resurvey is and when somebody doesn't follow the rules of resurveying then they just create chaos. Yeah don't we know that? We know that. And that you know here is a case where they encouraged, well the only way that you could determine Cragin being upland was to use the topographic call and then we get the saying, protect the plat, there which is very important concept that we need to understand, what does it mean to protect the plat, it means let the plat tell you what to do, not just the numbers, let the plat and all the information on it and that includes the notes because it is called in as a secondary document.

Look at those and see what they say to do; that is what we are talking about.

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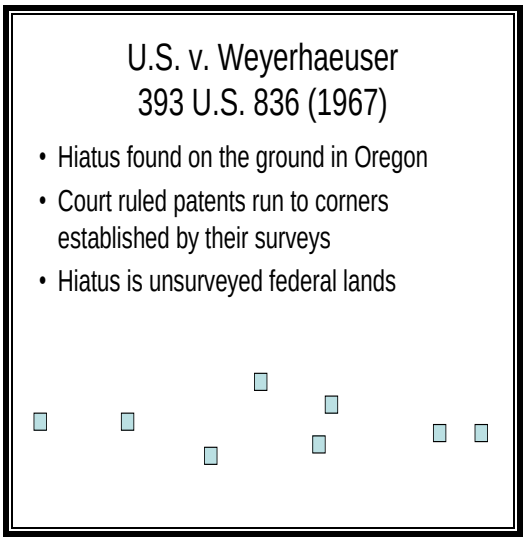
Now another case, a US Supreme Court case we want to look at, a much more recent one, a 1967 case, **US v. Weyerhaeuser**, it is about a **hiatus** that was found on the ground in Oregon that did not exist in the record.



If you look at the drawing on the bottom of this, this is a township line, okay, the north boundary of one township, south boundary of another. And the original surveyor came along here and ran this line like this. And so he ran the southerly line there.

Now many years later another surveyor came to work in this township to the north and that surveyor came along and he retraced what the other one had done. Now think about how this fits in with even Cragin v. Powell. He found that surveyor's corners, here and here, but for some reason he veered off and ran a line like this and then it was about 3 miles later that he found this corner and found the next corner over here. Well what did that do?

Well, that created a double set of corners out here. That are supposedly on the same line, those were originals and I didn't draw all of these to scale, these were the originals and those are the new ones. Yet they are supposed to be the same corners. All the maps say that these lines are coincident. So we get out on the ground in the 1960s and we find out that there is a great big hiatus in here of land. Now this was a case where Weyerhaeuser owned all three sections north of this, they owned three sections.

This is in redwoods country and this is all high value land. And when this was all discovered Weyerhaeuser said well we get to go down to the old original line, so they would be owning down to here, and the feds came in and said, no, no you don't get to own that because your patent is to the north and even though this is an error in the survey, your patents stop at these corners that were set for the survey that created your sections. And that was essentially the heart of the argument that was made.

Well it had to go all the way to the Supreme Court before we got this decision, but the court ruled that the **patents** were under the corners established by the surveys, they agreed with the BLM, so it said no, your patents will stop here, even though this was the line it was supposed to be on, these are the corners that created

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your survey, you will be left there.

So the court said so the hiatus is federal land, **unsurveyed federal land**, so this is one of those places folks where we have one of those townships 27-1/2 south or whatever one was 27 and the actually was 28, and now you have that unsurveyed land there so we'll call it 27 and one-half or whatever the numbers were. Well that is US v. Weyerhaeuser.

Well, you might think that that is very rare; you're not going to find that. Well, when I learned about this case that is what I thought too. And during my career, at least with the Forest Service, just out doing a simple survey, but whenever you use those words it kind of curses the project, but I went out to do simple surveys and three times in my career I found hiatuses.

One time between the sections and the land grant, one time in the middle of a township, half had been done then completed later, and he said he went up that line and it turns out they are almost 400 feet apart. A big strip all the way through the township. 400 feet by six miles of unsurveyed land. You find these things out there.

I am mentioning it so that you are aware of it so that if you ever do come across a true hiatus to understand that. And one of the continuing education courses for you CFedS is a course about overlaps and hiatuses and it will go into more detail on US V. Weyerhaeuser.

But you know the reason that I am showing you this case as one of my Supreme Court case examples is not just because it is about hiatuses but more important is to understand that the Supreme Court has said that <u>your patent is limited to the original corners of your survey</u>, not some other survey before or some survey after, but the survey that was done at the time that your patent was created.

That is important for us to understand as well as the aspects of a hiatus being ruled as still being federal land.

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Now another case we want to look at that is a completely different kind of subject is **Oklahoma v. Texas**.

Oklahoma vs. Texas
258 U.S. 574 (1922)

- Authority of GLO surveyors
- Navigability a matter of fact
- Effect on modern survey
- Purpose of meander lines
- Protect the plat still an issue whether navigable or not
- Other cases (Section 8-53)

Now understand when two states sue each other, it doesn't go to district court and it doesn't go to appellate court, they only get one shot. When two states are suing each other, they get one shot and it is a real trial and it occurs with the US Supreme Court. So you don't find a trail of something in the lower courts and blah, blah, blah. This was the final answer. One shot.

Now this is along the Red River and the Red River is still some of the most complicated surveying going on in this country today, riparian issues down there, you have lots of oil and gas, you have Indian lands down there, you have Texas, which was an independent nation and then chose to join the United States and where does their jurisdiction go and so that is all the fights going on along the Red River and then what does the Red River do but just set there and cooperate and let everybody sue each other?

No, it has wandered all over the place, accretions and erosion and evulsions all the other things that you will learn a little bit more about in a later course. Well, its just a mess.

To this day, BLM still has crews working on just about nothing but the Red River issues for the Indians over there. So be aware of that, Oklahoma is big Indian country obviously and there will be a lot of CFedS working down in there and we will give you some information about how nervous you should be if you are working with riparian boundaries but this is a case that emphasizes something we said earlier in this course.

So Oklahoma v. Texas, that's on the Red River and what it addressed was this, one of the things that Oklahoma wanted to do was to prove that the Red River was navigable. And so their claim that the river was navigable one of their proofs was that the GLO, the General Land Office, had meandered it.

They ran a **meander line** along it therefore, it is navigable. You will recall in about two hours of lecture ago, that we very specifically said and boy this is one of those things that you want to remember a meander line is not a fixed boundary and a meander line does not indicate navigability.

FEDERAL BOUNDARY LAW – PART 4

When did they run a meander line, they ran it when the river was 3 chains or more wide or when the lake was 50 acres or more now those rules changed over time, but the point is this, it was a numerical rule, it wasn't whether the river was navigable or not, hey its more that 3 miles wide, so they were required to meander it. So they meandered it. And you will remember the reason for meandering was what? So that you could exclude the acreage so that the person patenting that land and homesteading and farming it didn't have to pay for land he couldn't farm because it is out under water in the river.

So it had nothing to do with ownership, it was simply the surveyor's best guess as to where the ordinary high water line was. So keeping that in mind, these two states are arguing this and one is saying hey it is a **navigable river** so they are going to try to use the argument that it is navigable and therefore the state owns it and so we own at least half of that river and their proof was that the GLO meandered it therefore it is navigable.

Well the Supreme Court here among other things addressed what was the authority that the General Land Office surveyors had, and I love what they said, when they talked about whether it was navigable or not, the way the Supreme Court said it, the GLO, those *officers are not clothed with that authority*.

The Supreme Court said navigability is a matter of fact not whether the surveyor meandered it or not, it is whether it was actually was navigable. Think about the effect that has on your modern survey. Don't fall for that argument which many surveyors do that is automatically navigable, or the other side of the coin, well the GLO didn't meander it therefore, it is not navigable, well that is just a foolish decision.

Let's remember as I just mentioned what the purpose of a meander line was, let's understand that protecting a plat is still an issue whether the water is navigable or not, we are not going to fix the boundary on the meandered line, what did they say in Cragin v. Powell, if they are upland, they will be upland unless it is moved.

And there are a lot of other interesting cases by the way in Chapter 8 of the 2009 BLM Manual about this kind of stuff, so I encourage

FEDERAL BOUNDARY LAW – PART 4

you to look there to see that. There are three US Supreme Court cases.

They are all totally different subjects, the first one about resurvey and the second one about hiatus, and this one about meander lines or navigation ability in reality. But I just wanted to give you a little sampling of the types of things that are available.

Study Case Law

And again any of these three you can look up at any time and get the case law out of it and read it and see where these cases may refer to some other case and the citation and go and look that up and it will be a precedent setting case and again they are citing it in here they are citing it because they are precedent.

And then they use it to help built more precedent. And that is how this works. And that is what surveying is built on. And you may say to yourself and I have never had to study case law. Oh yes you did. When you studied a book like *Boundary Control and Legal Principles* by Curt Brown originally and was taken over by Robillard and Wilson, before Curt died and they did the last 2 or 3 editions of it or *Evidence Procedures*, or *Clark on Surveying and Boundaries.*

You look in those books and notice how many footnotes are in those that are referring to case law. Those books are about case law. So you have studied case law.

Now here we have been talking federal boundary law, so I am sticking with federal boundary cases. But we have seen these three things that have gone all the way to the Supreme Court and talked about the reality of how federal boundary law works. Just to give you an idea of what assets are available, what resources you have.

Just go and look up some of these things. They are fascinating reading. Those were the three US Supreme Court cases that I promised you.

FEDERAL BOUNDARY LAW – PART 4

I have another case that didn't go to the Supreme Court, although it kind of did, and I will explain that here in a minute.

It is called the **Puget Mill Company v. North Seattle Improvement Company** and it was obviously in Seattle, and it is not far from the Space Needle now stands. But this was back in 1922.

This was a case that was heard in the local federal court and went up to the appellate court and was heard there and then they appealed to the Supreme Court and the Supreme Court said no, we're not going to hear it, leave it as it stands. So it is kind of a Supreme Court decision. They looked at it and said no we are not going to hear anything on it. And they do that all the time.

Even today, hundreds of cases are sent to the Supreme Court and they will pick maybe 70 or 80 that they actually hear. And some of them they say no, we're not going to hear and others they'll say we looked briefly at it and the appellate court did a find job, so just leave it. And some of them, they actually allow the attorney to come in and argue for a half hour or an hour as to why it should be overturned.

So this is one that went to the appellate level and the Supreme Court looked at it and they said no, just leave it as it stands. It is an interesting case that involved a meander corner.

A **meander corner** where it was up against the Puget Sound and the surveyor that found it, found the original monument, and it was in its original position, it had not been disturbed, but it was not at the record distance, so the surveyor said I think we should move it. Well you might think that that is pretty stupid, but you know what, we have that going on all the time now, especially since the GPS is here, everybody wants to go move the original corners or adjust it.

Well, the old 1815 record said it was 2,640 feet, a half mile, well I found that those two stones are 2 feet apart, so we need to adjust this. No, you don't adjust it. What is the basis of federal boundary law and state boundary law, an **original corner position will forever fix that parcel** or here is another way to put it, an original corner position has zero error. It is the place.

Puget Mill Co. v. North Seattle Improvement Co.
206 P. 954 (1922)

- Involved a Meander Corner found in place but not at record distance
- Court ruled original corners forever fix positions
- "Error in the location of a corner, however plainly shown, is not subject to correction in the courts"

FEDERAL BOUNDARY LAW – PART 4

Measurement is irrelevant. It is the evidence. It is the mark. It is the place. Well here was some surveyor saying well no that isn't. But we still fight that all the time.

In fact we are fighting that more and more now with our measurement capabilities because frankly we are cranking a lot of graduates out of surveying school who are nothing more than super duper measurers and they don't understand the law, they don't understand the evidence, they don't understand the record so they don't know what was going on.

And that is what was happening here in 1922, found a meander corner and I don't know what it was, I am just making up a number now, 25 chains and he found that it was 26 chains so we need to adjust and of course it was probably to his client's benefit to adjust it so he did.

And this went to court and the court ruled, just as they should and as they have always been doing, that the original corners forever fix the position of that parcel of land. That you can't move that. And that fixes that.

But this is really interesting what the appellant court said about the lower court, they said an error in the location of the corner, in other words the GLO didn't measure it right, and no matter how plainly you showed that they measure it right, if it is in its original position it is not subject to correction in the courts. Now think about the impact of that.

Here is the appellate court and the Supreme Court indirectly, chastising the lower court for trying to move a corner position. They said, look we don't care and you need keep this in mind because this is one of the more absolute black and whites that we have in boundary law, that it doesn't matter if the measurements were off, if they were off at the bearing, or it they were off on the distance, it doesn't matter, it's the mark, it's the place, it's the monument, it's the location. That is what matters.

So you go and you find that evidence and that is the corner position regardless of the measurement issues involved. Here was a surveyor and again we have so much going on today that they want to adjust things, move things, they want to adjust things just

FEDERAL BOUNDARY LAW – PART 4

because it doesn't fit and what we need to realize that that is irrelevant, that is not our job.

It is not our job to fix it, or put it where it should have been or where your client wishes it would be, you know, or in an easier place to survey. It doesn't matter. It doesn't matter how plainly they showed the corner was measured differently than what they said.

If it is its **original position**, and that is our job to check that out, then the courts don't have any jurisdiction and you've got US Supreme Court adherence to that here. And you will find that in every state. That you can't go in and fix it. So they chastised the lower court for trying to be equitable. Do you follow?

That is why we don't look at those lower court cases for precedent. We look at appellate level and Supreme Court level. That is where we want to go. So there are other cases you will find that are quite interesting. Because this Puget Mill cites several others that say the same thing older than this that said, hey no the original corner is forever fixed. Don't mess with it.

So that surveyor that wanted to move the meander corner, lost the case fortunately, because it went on appeal and got taken care of and that is one of the reasons why I like that case is because it is very obvious in one sentence, even a short sentence, which is pretty good for lawyers, a short sentence that chastised the lower court and said hey that is not your job to try to fix it. And we ought to be paying attention to that precedent. It is not our job to fix it.

FEDERAL BOUNDARY LAW – PART 4

So when it comes to case law, here is kind of a summary to that. We want to encourage you to become a student of court cases and that includes interior border land appeal decisions which we have an exercise for you that covers some of that and gets you into one and other relevant legal materials.

You will be amazed at what will be available to you on the internet or in a good law library if you are near your county courthouse or the county attorney or whatever your equivalent is has a law library or if you are near a university with a law library that would be fabulous.

And I encourage you to go to a **law library** and you know if you are in your state's capital, your state supreme court will have a perfect complete law library and that is a great place to go.

And you want to go in there and those librarians in there they are usually very happy to see you because they have been dealing with lawyers for years and just a regular human comes in and says I want to look up this can you help me with that? And they will say oh yes, please let me help you. And you will learn all kinds of things and that is a great task and if you are an owner of a business and its snowing outside and you are going to send your party chief or other people home two or three hours early you might say this is a great time for some continuing education, I want you to go down to the county attorney's office and I want you to look up this case, make a copy, read it and come back and tell me about it.

I encourage all of you and that is what we are trying to do is encourage you to become student of the law from its purest sense, not just listening to me or other speakers or books talk about it, you go look up your own cases that are of interest or are relevant to a project you are working on and you might be surprised to find out that most questions that you would have, especially about federal boundary law have already been answered in the appellate courts and you will be amazed at what has already been heard and argued and it amazes me that as surveyors we will sit here fight and argue about some subject the Supreme Court has already answered 100 years ago. So pay attention to that.

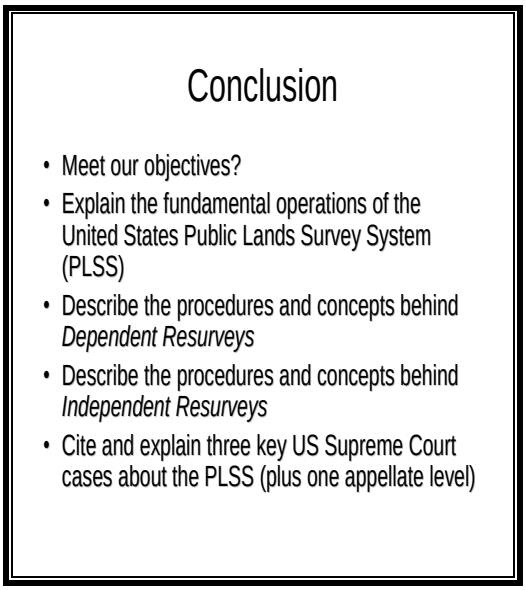
Case law…..

- We encourage you to become a student of court cases, IBLA decisions, and other relevant legal materials
- Most questions you have are already answered in the courts!!

FEDERAL BOUNDARY LAW – PART 4

That is a really great asset and one of the things in this program that we wanted you to encourage to think about. Well what I have done now is take you through everything I wanted to so let's take a look to see if we have met our objectives here.

Here is what they were; we wanted to explain the fundamental operations of the public land survey system, we did that. Wanted to describe for you the procedures and concepts behind dependent resurveys and then to do exactly the same thing for independent resurveys. And then I wanted to give you some examples that would relate to these subjects and explained three key US Supreme Court cases about the Public Land System, which we did. And plus I brought you one appellate level case that was blessed by the US Supreme Court, all of which have very important lessons and things for us to learn as modern day surveyors.



Understand that ***Cragin v.Powell***, 1888, man there are some cases that go back in the early 1800s, and let me tell you it doesn't matter how old it is, in fact it is better how old it is in boundary law.

Boundary law is very static compared to a lot of kinds of law in the United States that evolves and keeps changing of course we have all of these battles that we want a court that just looks at the precedent only or do we want it governed by the law in other words to kind of invent new laws with our decisions and that is really the issue with the 9th Circuit Court, very activist group of people who want to create new law.

A lot of times social law, and I don't know that the 9th Circuit would ever do this, but some circuits in the federal court system, the majority are relatively constitutionalists, or tied to or precedent setting cases and so they would look at a new boundary dispute and they would say what was done in Cragin v. Powell, what was done in Puget Mill and they will look at that and apply it to today.

An **activist court** might say well we don't care what they said before, this poor guy got screwed out of some of his land so let's just give him his land and that is the difference that is how these things work.

You and I should be very grateful that boundary law has remained

FEDERAL BOUNDARY LAW – PART 4

quite static. That it has not been caught up in that argument that there are pros and cons on both sides of it. It hasn't been caught up in that. It is very static and that is quite comforting to me to think that I can go and look up boundary law and with few exceptions riparian being one of those, I can find really consistent court cases that really tell me what to do.

I just need to become more of a student of that and we've have talked about the public land system itself how it works and we kind of wanted to end this in a discussion about what type of resources are available to you to understand both your state law and federal law, we were talking federal law in this course and to let you know that there is a lot of information out there and I really encourage you to look into it and study into it and so hopefully I have given you some great ideas about the public land system and how it operates and we will move on from here in the next lecture.

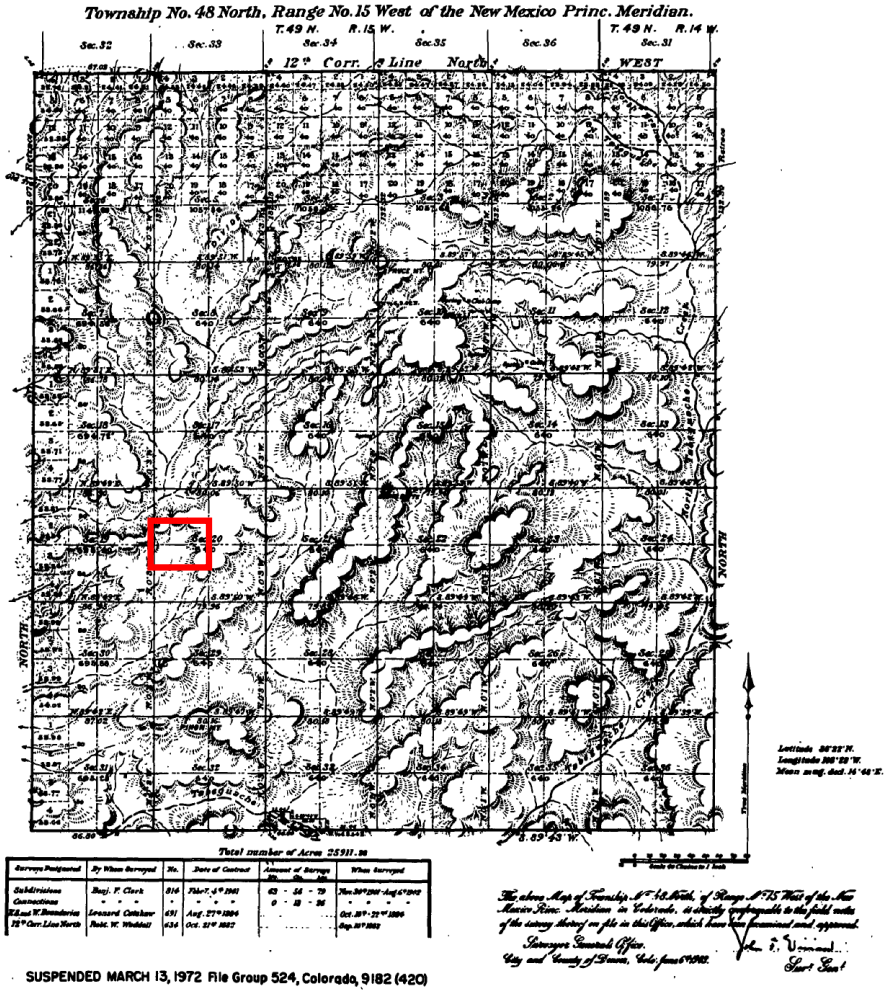
So thank you for your attention.

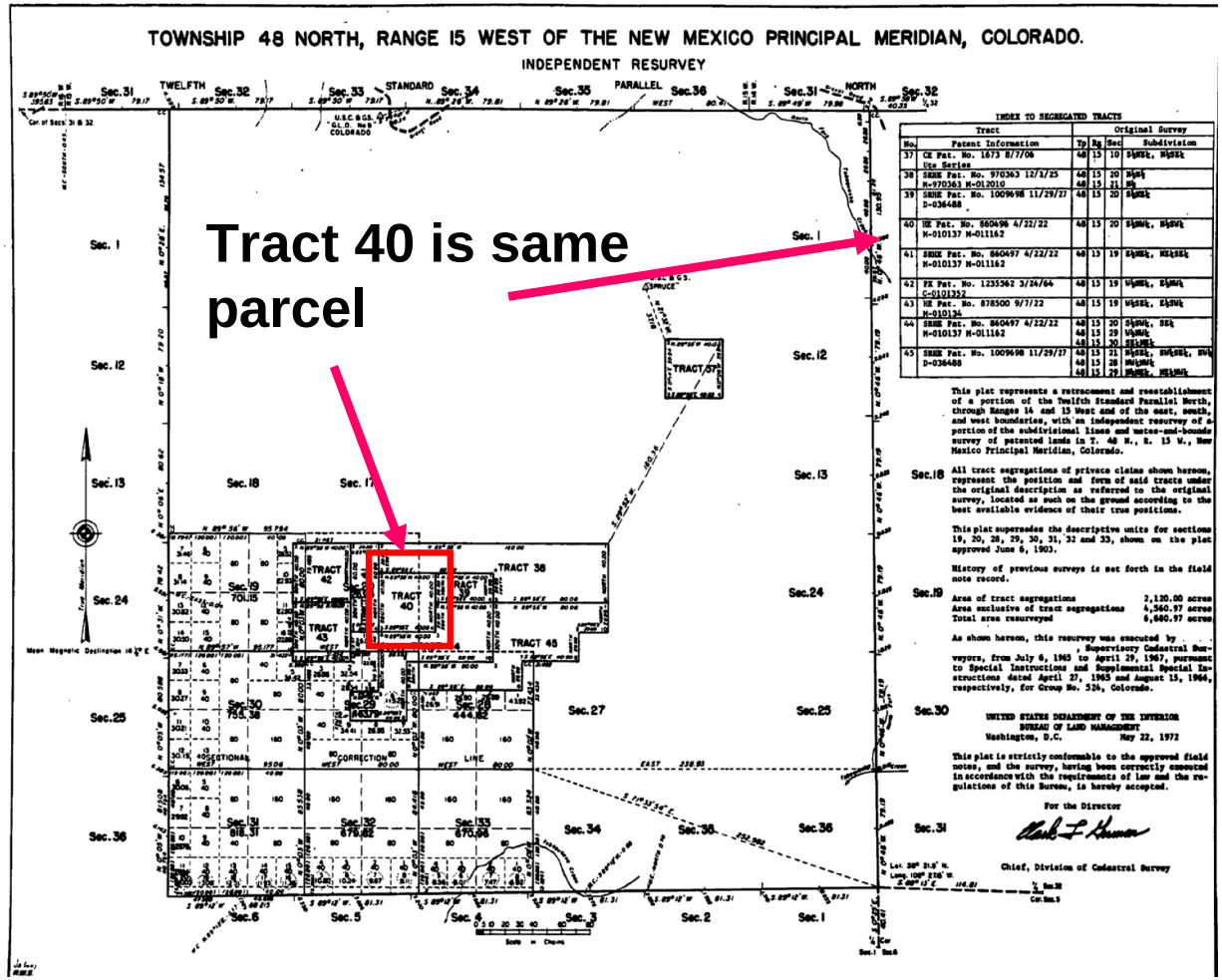
PROBLEM **Before moving on to the next topic, complete the "Interior Board Land Appeals" problem which you can access from the course description page.**

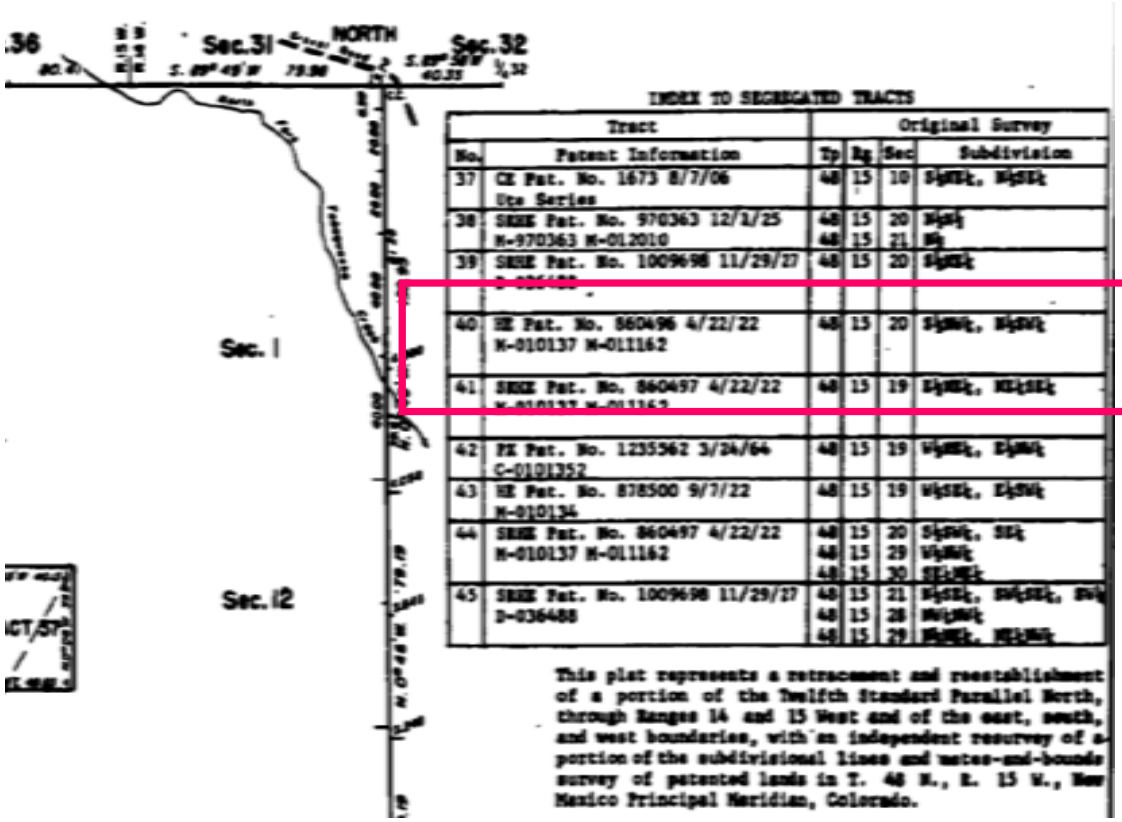
HANDOUT **There are two handouts at the end of this study that are necessary to complete the IBLA Problem.**

DIAGRAM

Patented: Section 20:
S1/2NW1/4, N1/2 SW1/4




TOWNSHIP 48 NORTH, RANGE 15 WEST OF THE NEW MEXICO PRINCIPAL MERIDIAN, COLORADO.
INDEPENDENT RESURVEY
Tract 40 is same parcel
TRACT 40
TRACT 38
TRACT 45
INDEX TO SEGREGATED TRACTS

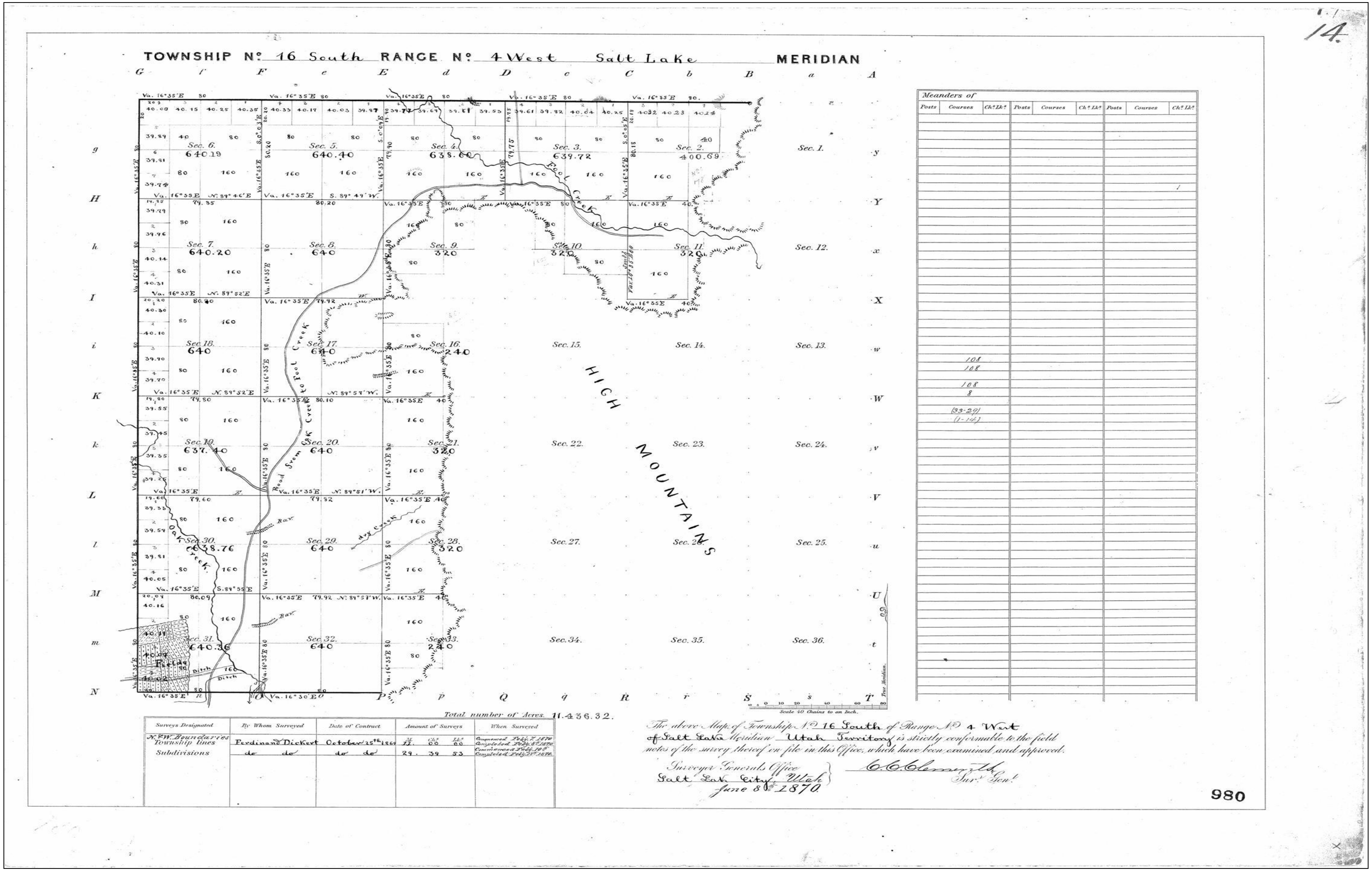


INDEX TO SEGREGATED TRACTS

Tract No.	Patent Information	Original Survey Tp	Rg	Sec	Subdivision
37	CE Pat. No. 1673 8/7/06 Ute Series	48	15	10	S½NE¼, N½SE¼
38	SENE Pat. No. 970363 12/1/25 M-970363 M-012010	48 48	15 15	20 21	N½S½ N½
39	SENE Pat. No. 1009698 11/29/27 D-036488	48	15	20	S½NE¼
40	SE Pat. No. 860496 4/22/22 M-010137 M-011162	48	15	20	S½NW¼, N½SW¼
41	SENE Pat. No. 860497 4/22/22 M-010137 M-011162	48	15	19	E½NE¼, NE¼SE¼
42	FE Pat. No. 1235562 3/24/64 C-0101252	48	15	19	W½NE¼, E½NW¼
43	SE Pat. No. 878500 9/7/22 M-010134	48	15	19	W½SE¼, E½SW¼
44	SENE Pat. No. 860497 4/22/22 M-010137 M-011162	48 48 48	15 15 15	20 29 30	S½SW¼, SE¼ W½NW¼ NE¼NE¼
45	SENE Pat. No. 1009698 11/29/27 D-036488	48 48 48	15 15 15	21 28 29	N½SE¼, SW¼SE¼, SW¼ NW¼NW¼ W½NE¼, NE¼NW¼

This plat represents a retracement and reestablishment of a portion of the Twelfth Standard Parallel North, through Ranges 14 and 15 West and of the east, south, and west boundaries, with an independent resurvey of a portion of the subdivisional lines and metes-and-bounds survey of patented lands in T. 48 N., R. 15 W., New Mexico Principal Meridian, Colorado.

Web Problem
Interior Board Land Appeals Handouts



TOWNSHIP No. 16 South RANGE No. 4 West Salt Lake MERIDIAN

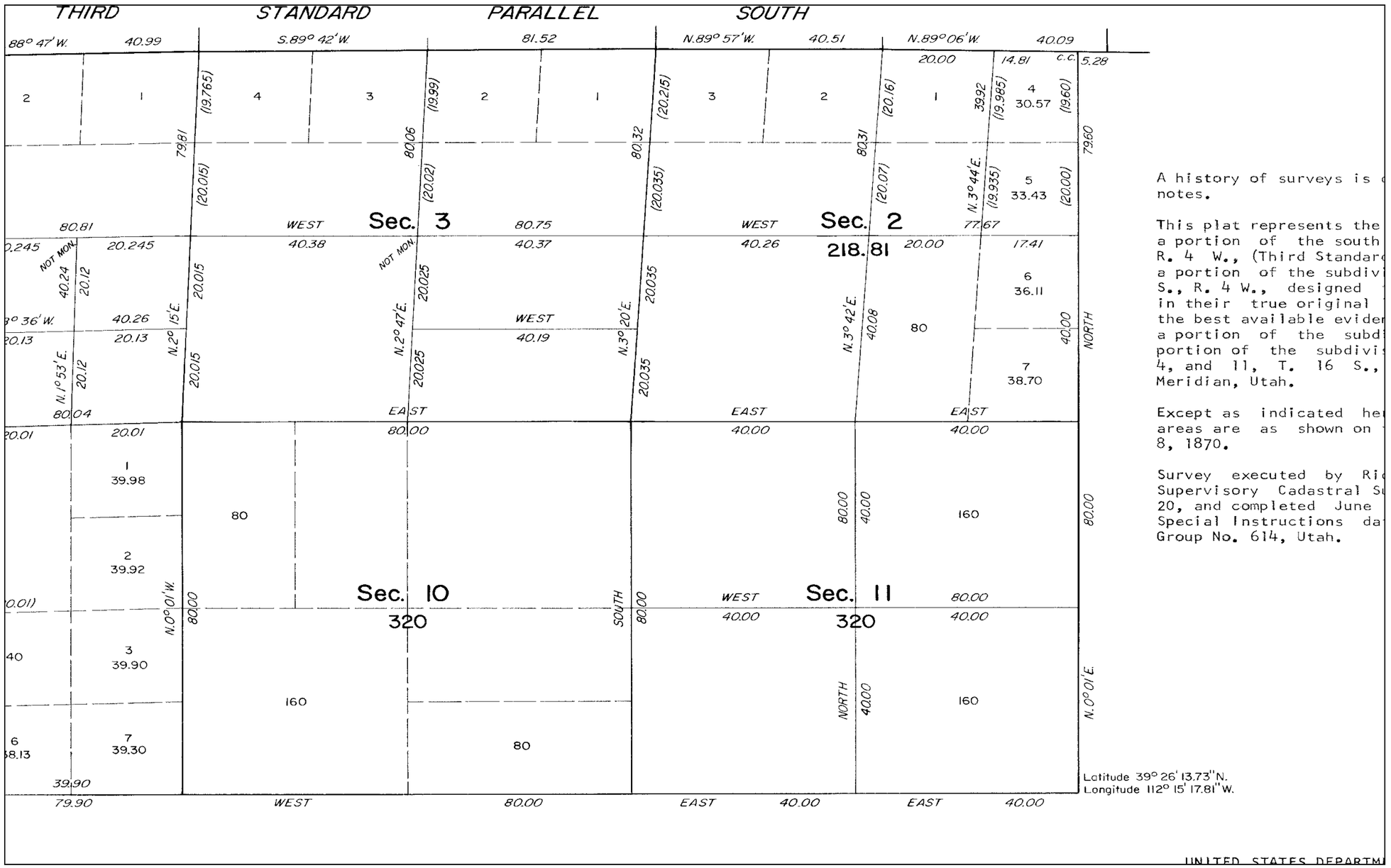
Total number of Acres. 11.436.32.

Surveys Designated	By Whom Surveyed	Date of Contract	Amount of Surveys	When Surveyed
N. & W. Boundaries Township lines	Ferdinand Dickert	October 25th 1869	M. Chs. Lks. 11. 00 00	Commenced Feby. 7. 1870 Completed Feby. 8th 1870
Subdivisions	do do	do do	29. 39 53	Commenced Feby. 10th Completed Feby. 13th 1870.

The above Map of Township No. 16 South of Range No. 4 West of Salt Lake Meridian Utah Territory is strictly conformable to the field notes of the survey thereof on file in this Office, which have been examined and approved.

Surveyor Generals Office
Salt Lake City, Utah
June 8th 1870.

C. C. Clements
Sur. Genl.



A history of surveys is
notes.

This plat represents the
a portion of the south
R. 4 W., (Third Standar
a portion of the subdivi
S., R. 4 W., designed
in their true original
the best available evide
a portion of the subd
portion of the subdivi
4, and 11, T. 16 S.,
Meridian, Utah.

Except as indicated he
areas are as shown on
8, 1870.

Survey executed by Ri
Supervisory Cadastral S
20, and completed June
Special Instructions da
Group No. 614, Utah.

UNITED STATES DEPARTM

Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

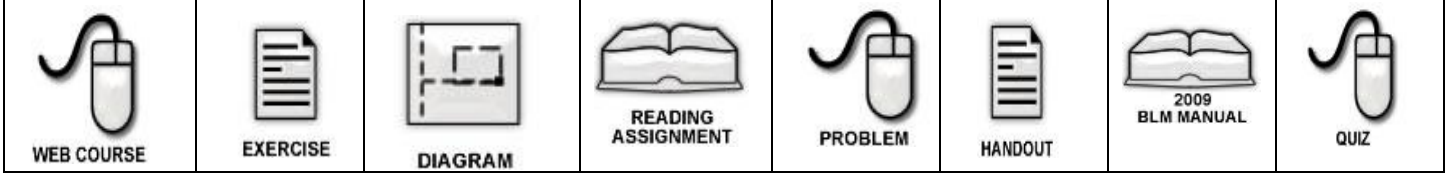
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Controlling Intermediate Monuments – Part 1 (61 minutes)

ICON LEGEND



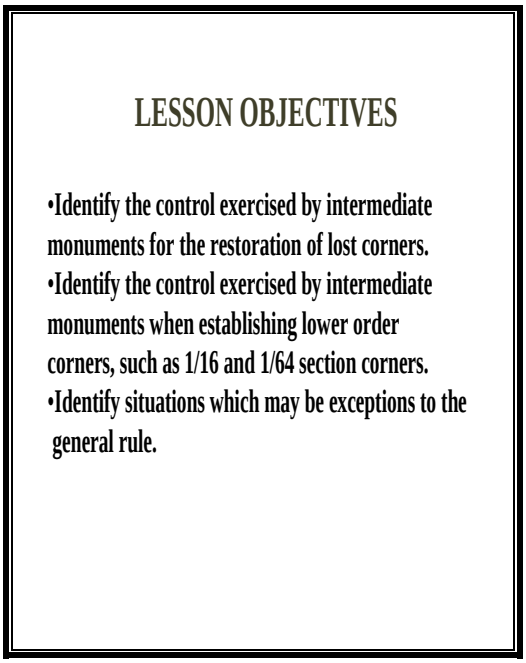
CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Introduction

Hi again, our next topic of discussion is Controlling Intermediate Monuments. This is a topic that covers really a wide range of monuments that we have kind of lumped in together and we'll see where that takes us today.

Objectives

Our lesson objectives today are to identify what control is exercised by intermediate monuments for the restoration of lost corners, number 1 and the second thing is to identify the control exercised by intermediate monuments when establishing lower order corners, such as 1/16th or 1/64th corners, and last is to identify situations which may be exceptions to the general rule.



We are going to try to cover those three topics as they relate to intermediate monuments. Let me just say a word about this, these are not all necessarily intermediate monuments, when we begin looking at these, you will see that there are all kinds of monuments all lumped in here.

Traditionally, within our BLM training, we have realized that we needed to talk about all of these different kinds of monuments that are not section corners or quarter corners and we have kind of lumped them all into this topic and we have said controlling intermediate monuments so we are going to find a lot of different types of corners and monuments discussed here which may not be really be intermediate monuments and since this a topic you may not find that term necessarily in the Manual or other places, but traditionally we have lumped them here and called them controlling intermediate monuments.

We are going to talk about those and we are going to identify them and we are going to talk about how they control, how they are to be used and hopefully a little bit about the history about them also. So what are they?

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

First of all, **line trees, witness corners, meander corners** and there we are talking about **special meander corners and auxiliary meander corners**. So we will look at those a little bit. **Witness points**, what is a witness point compared to a **witness corner**?

What kind of function might it have that might be different? **Closing corners**, and there we will be talking about **amended monuments** because a lot of times we end up have to amend a closing corner, so we have amended monuments, off line and the true point. We will discuss all of that and how those control.

What Monuments Are We Designating As Controlling Intermediate Monuments?

- **Line Trees**
- **Witness Corners**
- **Meander Corners, (SMC), (AMC)**
- **Witness Points**
- **Closing Corners, (AM), (Offline), (True Point)**
- **Crossing Closing Corners**

Crossing closing corners, something that appeared first in the 1973 Manual, we'll look at that and how there going to be used, angle points, lot corners, mile posts and here you begin to see maybe that these are or are not intermediate monuments, it is kind of a hodge-podge of things but we are going to talk about all of these here, intersection points, **corners of minimum control**, and aliquot part corners established subsequent to the original survey.

What Monuments Are We Designating As Controlling Intermediate Monuments?

- **Angle Points**
- **Lot Corners**
- **Mile Posts**
- **Intersection Points**
- **Corners of Minimum Control**
- **Aliquot part corners established subsequent to the original survey**

Evolution of the PLSS

One of the things that is happening as the rectangular system ages is that we are dealing with not just the original survey and a resurvey, we may be the 3rd, 4th, 5th or 6th re-surveyor into an area, so we are dealing with corners that were established by previous surveyors but that were not the original surveyors.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Now one of the points that I want to make up front is that the rectangular system is not static. When the system was designed over 200 years ago, we really didn't know how we were going to subdivide sections. That is something that was developed along the way.

We didn't really know how we were going to reestablish lost section corners, how we were going to deal with meander lines, how we were going to deal with many of the issues that we deal with today. And the system has developed as these issues come along. And of course you would think that after 200 years we would have developed all of the answers to all of the issues, but that is not the case.

Every day we come up with new questions and new issues that we really haven't dealt with before. And it is interesting if you look historically it takes a while to settle in on an answer to a new question. Subdividing sections, well we didn't just say one day, we need to subdivide sections lets do it this way and then everybody started subdividing the sections that way, it took 50, 60, 70 years maybe for everybody to kind of settle in on that policy.

And you will see some things today that we will talk about, like **line trees** for example where really, there has been some fluctuation in the last hundred years on how we use line trees and how they are described in the Manual, and how we do it now, what the courts have told us to do. And of course that is one of the things that influences what we do. Sometimes the courts have in their decisions and the precedents that they set, have directed us specific ways and it has changed how we have done things in the past.

So the system is not static and that is going to affect how we do things at times. Also we need to know how the procedures have changed over time. And so I am going to talk about that. The system is not static, things change so I am going talk about some of those changes as they relate to these intermediate monuments. Are there still issues that are unsettled? Yes there certainly are.

As I said earlier every day we come up with new issues. I had a call just yesterday, I had a surveyor who really brought up an issue that I had not considered, or thought about or I had never read

Intermediate Monuments

- **The rectangular survey system is not static!**
- **We need to know how procedures have changed over time.**
- **Are there still issues that are unsettled?**
- **There are always special situations that require modification of the general procedures.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

anything about it before. So yes there are new issues that come up all the time. And we have to develop policies, generally based on the procedures and principles that are already in place.

We need to develop policies that deal with these new issues. There are always special situations that require modification of the general rule, but don't be too quick to go there. I think it is important to know what the general principles are and normal procedures is for each situation if we have to go to special procedures, then we do, but we always start with the general procedure the normal approach to a situation, we don't go to a special procedure unless we have to. Don't be too quick to go there.

Exercise on "What controls?"

Now what I want to do now is an exercise and it is a fairly simple exercise.

PROBLEM 3 can be found in the Exercise section at the end of this study guide.

What I'm going to do is I am going to give you some information about original survey, resurvey and I am going to want you to tell me what controls should be used, what corners are going to control and what method should be used to establish some lost corners, now first let me say I realize that we have not covered restoration of lost corners yet, all of the lost corners on this exercise and the other two that we will do today are either single proportion or double proportion.

And I am not asking you to actually calculate it, I am asking you to identify what procedure should be used and what corners would be control in each section. First I want to show you the first one, talk through it a little bit, identify some of the things there and then let you proceed with that.

First of all you will have an answer sheet that will look similar to this and on it will show the lost corner and under that it will say method and control, what I want you to do is write the method, either single proportion or double proportion or whatever and under control I want you to give me what control corner, which corner in each direction should be used for control.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

So we'll be using this diagram and you have it in your handout, and I just want to point out a couple of things, first of all, this is the original plat showing what things were set on the original plat and we need to assume that all these section and quarter corners were set and over here on the right at 80 chains the section corner falls on a ridge, we have a creek at 60 chains, we have a line tree at 30 chains and it is indicated by the circle, and we have a ridge at 20, the section corner is in a pond and there is a WC a witness corner one chain south and we have a creek down here at 50 chains from the south coming up and we have the quarter corner at 40 chains, that is the original record.

BLM Symbology

Now let me tell you a little bit about symbols, the symbols we are going to use here if we show a diamond, that is a found corner, so we have found the original corner any place that there is a diamond on this diagram.

Right here we have a half a diamond, that is to show that we have found a witness corner. So what we have on this, we have the section corner is found, the line tree is found section corner over here. We have the witness corner found, and to the south we got the quarter corner is found and section corner.

What I want you to do is on your answer sheet, tell me which method you are going to use to reestablish the lost corners and which control corners you will use in each direction. When you have finished that, come back and we will talk about it.

Well now that you have completed your exercise, we are going to talk about some line trees and how they might be used and we are going to talk about witness corners and how they might be used as control.

First of all I want to talk about just generally, how monuments might control because sometimes we might think well here is a corner, I found it, its an original corner, therefore it is a controlling corner.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Well let's think about that a little bit first, actually monuments can control in several ways, first they can control both distance and alignment for establishing and reestablishing lost corners completely, they are going to take care of everything, they can also control both distance and alignment for reestablishing corners only, alignment only for establishing corners.

So a little different in how they might be used. And we will see some of that later. They might control for distance only for establishing or reestablishing corners, only for distance and not alignment. Or they might control for alignment only for establishing or reestablishing corners. And I could make some other combinations up too.

Just because we have recovered an original corner, does not mean that it is going to control the alignment, the distance in all kinds of situations. So we have to realize what the record is, what kind of a monument is and then how it should be used. So let's start with line trees.

The definition, what is a **line tree**? This definition comes out of the glossary, a tree intersected by a surveyed line reported in the field notes of the survey and marked with two hacks or notches cut on each side facing the line.

Originally these trees were called station trees, but since the line intersects them, the term line tree is preferred. So the line tree is a tree that was marked in the original survey, when the surveyor's line hit the tree, he measured the distance to it and reports that in the field notes and marked it.

So that is how we know it is a line tree, it is in the field notes.

What Control Can Monuments Exercise?

- Control both distance and alignment for establishing and reestablishing corner.
- Control both distance and alignment for reestablishing corners and alignment only for establishing corners.
- Control for distance only for reestablishing or establishing corners.
- Control for alignment only for reestablishing or establishing corners.

Line Trees

- A tree intersected by a surveyed line, reported in the field notes of the survey, and marked with two hacks or notches cut on each of the sides facing the line. Originally these trees were called "station trees", but since the line intersects them the term line tree is preferred.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

So what are some things about line trees, sometimes they were marked on the random line, now you cannot assume that though, the record is going to tell us normally that they were marked on the true line and you are going to have to have definite information that proves it was marked on the random line, we just can't assume that.

Line Trees

- **Sometimes marked on the random line.**
- **Pay careful attention to the accuracy of the measurement.**
- **Sec. 6-28: Under the law, a *definitely identified* line tree is a monument of the original survey.**
- **Lottings and areas are usually *not* returned to line trees.**

We are going to assume that it is on the **true line** unless we have definite information that proves that it is on the **random line**.

Second, pay careful attention to the accuracy of the measurements, in some places you will see measurements to the line tree to the nearest length as were measured to monuments. Other places you will see measurements maybe to the nearest ten links and that is similar to how topography calls were measured. And in some places you might see measurements that were made to 50 lengths.

So any time you are dealing with a line tree, always look at the field notes, and not just at the one you are dealing with, look through the field notes and try to find some other line trees in the field notes and see how accurately these were measured because that will affect how we use it later on. Next section 6-28, and that is what the 2009 Manual says, right now, under the law a definitely identified line tree is the monument of the original survey.

Two things I want to point out here, first an definitely identifiable line tree, we are not saying well you know it's the right size and the right place, it must be the original line tree, definitely identifiable, that means marks, and I would say probably the only time that we might deviate from that is when there is a line tree that is very close to an original corner and we have recovered the original corner, therefore, we have some additional evidence, but if we are talking about a line tree that is out there 15 chains, 20 chains, then we will probably have to have marks, not just that it is the right size, and it's the only big pine tree out there and it is pretty rotted, I can't find any marks, it must be the line tree.

Well that is not going to be acceptable. **Definite identifiable marks**. The second point, it is the monument of the original survey and that is what the courts have told us, they have said that it is a monument of the original survey and as such it controls in

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

reestablishing that original survey. And we will look at that a little more carefully as we go along.

Lottings in areas are usually not returned to line trees. Now some of you may be saying what do you mean lottings in area are not returned to line trees. Well let's look at that.

The plat returns areas against certain corners and does not return areas against other corners so how might that affect the establishment or reestablishment of the corners when we look at this. Let's look.

- The plat returns areas against certain corners and does not return areas against other corners. How might the establishment or reestablishment of corners be affect by what corners were used to compute the areas?

Two situations, here we have a plat, we have water and we are going to have a meander line, this water has been segregated, this is a situation where the lottings in areas have been returned based on a corner.

Let me show you what I mean, first of all let's look at lot 2. As we look at lot 2, the corners that we need to define the boundaries of this corner, and this is the southeast quarter of a section, the corners that we would need to define these are of course, down here the section corner and then down here we have two meandering corner, then we have the quarter corner up here and we have the quarter corner down here and then up here, we can't see them on our diagram we are going to have the north and west quarter corners, those are needed to define the quarter.

So once we have the quarter defined, those corners do that.

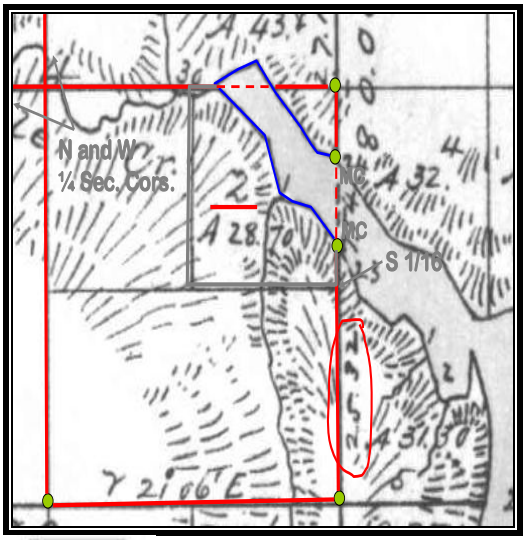


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Now let's just look at lot 2. First of all, we have a **meander line**, right? And the meander line follows the lake, is tied into the two meander corners, there is no meander corner on the east west center line because the east west center line has not been surveyed yet, so we just have those two meander corners on the section boundary and then for platting purposes, the boundaries of lot 2 were calculated.

What was used to calculate the south 16th down here? Well, it was this number 25.32 the measurement from the section corner to the south to the meander corner. That was the measurement used to calculate the south 16th.

Now let's say that the triangulation across the water, between meander corners, and you know there was a bad angle in there, he didn't have a very strong angles and he has a 3 chain bust, we don't want that 3 chain error in crossing the water to affect the position of that south 16th because what that can do, that can give an inequitable distribution of that land, so here the lottings in areas are based on the position of that meander corner.

Now let's look at another situation, here we have a line tree, 53.36, we have a fir 12 inches in diameter, that is in the field notes we know its there, its marked.

But let's look at what we see on the plat. It's not on the plat, this is on the line between sections 35 and 36, the line tree, it was at 53.36 its not there.

When we look at the plat, what do we see? We see two **normal sections**, 640 acres, two normal quarters, the northwest of section 36, the northeast to section 35, those are both regular quarters, 160 acres each.

How do we normally divide those quarters? Mid point to get that north 16th between 35 and 36, that is a mid point position between the section corner and the quarter corner, but there is a line tree, how does that affect it? We are going to look at that in a little bit.

But let me just say here the areas in lotting were not based on the line tree; it doesn't even show up on the original plat so the draftsman did not use the line tree in calculating these areas. We

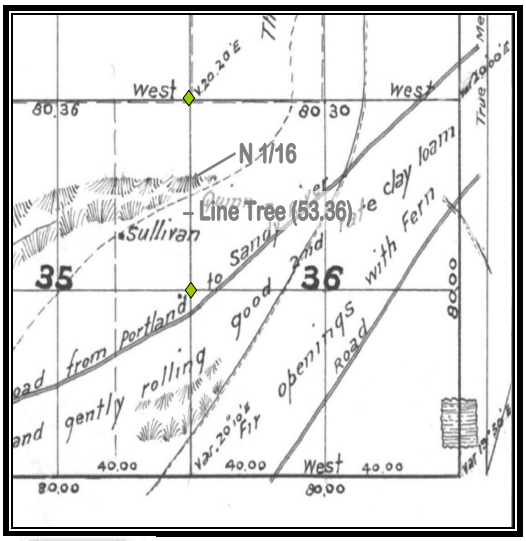


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

are going to look at how that may have affected some procedures in the past and we are going to look at how that affects how we survey today.

So we have on this plat the original corners, section corner, quarter corner and they are going to determine the position of that corner, the line tree is not, it is just there, it is in the field notes, but it does not show up on the plat at all.

So more things about line trees, just generally, when not on a straight line between corners, it will normally becomes an angle point. So the section line may not be a straight line between quarter corner and section corner anymore.

We have a line tree probably mot going to be exactly on line so it becomes an angle point. Line trees will be utilized for control for the reestablishment of lost corners and establishment of 1/16th and lower order aliquot part corners. And I am going to highlight that in red.

Line trees will be utilized for control, for reestablishment of lost corners and the establishment of 1/16 and lower order aliquot part corners. It has not always been that way. And we'll talk about that. That is a procedure. Remember I said, Cadastral survey and the public land survey system is not static. Well this is one of the things that have changed in the last 20 years.

Let's look first of all how the Manual has talked about line trees and a couple of things that have happened there.

Line Trees

- **When not on a straight line between corners, will normally become an Angle Point**
- **Line trees will be utilized for control for the reestablishment of lost corners and the establishment of 1/16 and lower order aliquot part corners.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

The 1883 Manual, here is what it says, site trees, and there it means line trees, site trees described in the field notes together with the recorded distance to same, when fully identified, and notice here they use fully identified again we can't just assume that it is the line tree, it must be fully identified, will, it hasn't been held, in other words the courts are telling us, it will govern the line itself.

If we find a line tree and it is definitely identified and we are sure that it is the line tree, then it is going to control the line. That was the 1883 Manual.

Historical Perspective
Line Trees

- **Restoration of Lost and Obliterated Corners 1883: Sight Trees described in the field notes, together with the recorded distances to same, when fully identified will, it has been held, govern the line itself"**

Line Tree Evolution

Look what happens in the 1930 and 1947 Manuals, a little different wording and it had a huge impact on what happened here, listen to this, in the absence of an original monument, a line tree or a definite connection to natural objects or improvements that can be identified, may each fix a point of the original survey for both latitude and departure.

Well that is completely different, that says in the absence of an original monument then we might find a definitely identified line tree. That was the 1930 and 1947 Manual.

Historical Perspective
Line Trees

- **Manual of Surveying Instruction 1930 and 1947: "In the absence of an original monument, a line tree, or definite connection to natural objects, or to improvements, which can be identified, may each fix a point of the original survey for both latitude and departure."**

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Let me explain how this language in the 1930 and 1947 Manual affected how we surveyed. The procedures were in place long before the 1930 Manual came out, the 1930 Manual just reflected how surveys were done probably beginning in 1910 – 1920.

So here is what would happen, say I have found the original quarter corner of 35 and 36 and I have the original section corner of 25, 26 and 35 and 36 and the record has two line trees on that line and I as a field surveyor in 1935, find those two line trees, we would expect the line to follow something like this a straight line from the original quarter corner to the recovered line tree to the next recovered original line tree to the section corner.

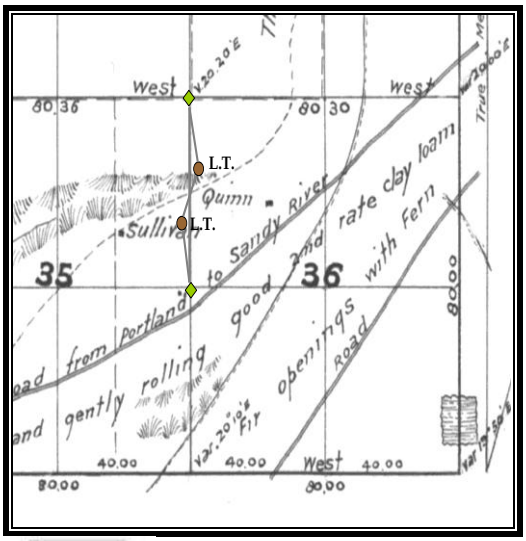


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Based on the language in the 1930 and 1947 Manual, remember it said in the absence of original corners, here is what would happen, straight line, quarter corner to section corner, and often the field notes will not even mention these two line trees, and the thought was it was a straight line between corners. We have the section corner, we have the quarter corner, we don't need the line trees, and we only use the line tree to help us to reestablish the lost corners.

Now of course, this is not in keeping with the direction the courts have given us, however, it was a policy in place within BLM for a long time I am sure that it was used by county surveyors in the private sector who would come to BLM maybe for direction in certain situations, so this is something you might run into where you find the original quarter corner, the original section corner, and you have a 1935 retracement of that line and they don't mention the line trees and you go out and there they are.

How could they miss them? They didn't miss them. It was just policy that they didn't need to report them. So you will see that often.

So what do you do? You're out there today and there is a 1930 survey that calls it a straight line from section corner to quarter corner, there are two line trees there, original, that have been there since the original survey. What are you supposed to do?

Well, they still mark the line according to the courts, so unless

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

there are some unique circumstances, what is going to happen is those line trees are going to control the line and we are not going to have a straight line between corners, we will have line from the quarter corner to the original line tree to the next original line tree and on up to section corner.

Now this meandering line sort of, this line that wobbles around here, that is the original survey and the courts have made it very clear that line trees are going to control lines, so we are going to use them. But I want to caution you, definitely identifiable line trees. We are not talking about, we don't want to put extra bends in the line just because we think we have a line tree, we want to make sure that it really is the line tree that really is where the boundary went.

Now let's read what the 2009 Manual says. It comes back and is much more in line with what the earlier Manual said. *Under the law a definitely identified line tree is a monument of the original survey. It is right there. It is a monument of the original survey. It properly is used as a control point in the reestablishment of lost corners by the appropriate method of proportionate measurement*. Right there lays it out.

It is a monument of the original survey and it is properly used as a control for the appropriate method of proportionate measurement. One of the things that it does not talk about in the Manual in 1973 is establishing lower order corners like 16th corners or 64th corners. And that became an issue and we'll more about that later.

Historical Perspective
Line Trees

- **Manual of Surveying Instructions 2009:**
  "Under the law, a definitely identified line tree is a monument of the original survey. It properly is used as a control point in the reestablishment of lost corners by the appropriate method of proportionate measurement."

Current BLM Policy

In 1988, the Bureau issued an **instruction memorandum**, and let me talk a little bit about the way policy is set in the Bureau.

Instruction memorandums are issued that give general policy. This instruction memorandum for us in the Bureau is equal to the Manual. It is instruction from our Washington office, telling us this is the way you are supposed to conduct your surveys.

The process is that if this is a policy that needs to be long term, a continuing policy, then it will be entered into our administrative handbooks, Manual, we don't have an administrative Manual for cadastral survey, we have our Manual of Surveying Instructions.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

And we don't issue a new Manual of Surveying Instructions every six months when we have a new memorandum, so these memorandum change or affect the way we survey, but they are not incorporated into the Manual until maybe every 30 years when there is a revision of the Manual.

This is an instruction memorandum that tells us in BLM how to survey. We've tried to distribute this widely to the private sector, and I am not sure how good of a job we have done of that but here is that instruction memorandum 1988 and it tells us something about line trees and how they are going to be used.

It is about a four page memorandum and but it finishes with this statement, the establishment of minor subdivision corners, that means 16^{th}, 64^{th}, 256^{th} corners, and it says, in summary and to reemphasis the above stated policy, the position of a minor subdivision corner along an existing section line in the absence of acceptable evidence at the corner is at the same proportionate ratio as all other new or missing corners between the marks of the original survey.

Historical Perspective
Line Trees

- **Instruction Memorandum No. 88-287 "Establishment of Minor Subdivision Corners"**

  "In summary and to reemphasize the above stated policy, the position of a minor subdivision corner along an existing section line, in the absence of acceptable evidence at the corners, is at the same proportionate ratio as all other new or missing corners between the marks of the original survey.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Here is what we were talking about, prior to 1988, line trees were often utilized as control to reestablish lost corners and to control the line or alignment or were not used for distance in establishing 1/6th or lower order corners.

Historical Perspective
Line Trees

- **Prior to 1988 lines trees were often utilized as control to reestablish lost corners and to control the line but were not used to establish 1/16 and lower order corners.**

Let's look at this situation, same plat here, we have recovered the original quarter corner of 35 and 36, we have recovered the original section corner 25 and 26, and 35 and 36 and we have recovered the line tree and we need to establish the north 16th corner.

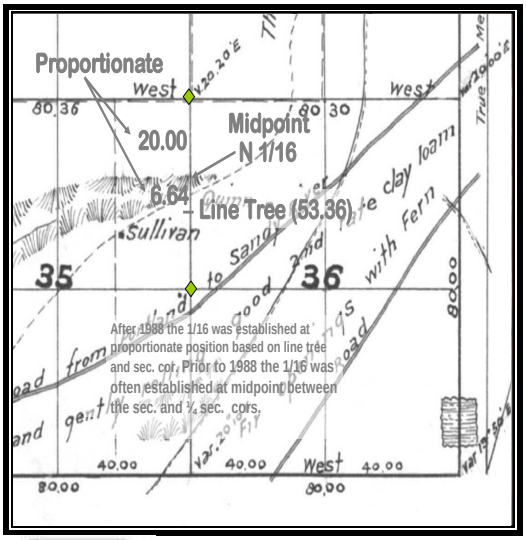


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Well when we look at original plat remember that the line tree does not show up on the plat it only shows up on the notes. So there is one line of thinking that says "Well the line tree should have controlled alignment but the 16th still goes at mid point because the plat did not return areas or lotting based on it."

The areas in lotting are based on the quarter corner and the section corner. Therefore, the line tree should only control alignment and the 16th corner should be placed equal distance between the quarter corner and the section corner. So prior to 1988, the 16th corner was often reestablished at mid point between the section corner and the quarter corner and on line with the line tree or at proportion based on any lotting that might be there.

The line tree was over looked as far as distance goes in establishing corners. It was still used for reestablish corners both alignment and distance for reestablishing corners, but it often was used for only alignment when establishing corners prior to 1988. And there was still some argument going on even when the 1973 Manual was written, I've seen an early draft of the Manual and it this issue was being dealt with early on.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

So that is something that has going on for quite a while. So prior to 1988 that is often at midpoint. After 1988, here is what it says, the memo tells us that the 16th was established at proportionate position based on the line tree and the section corner. So now we are going to use the line tree for both alignment and for a proportionate point for distance. So here is what we are going to do.

If we look at the position of the line tree, it is at 53.36, so we have to go to another 6.64 chains to get to the sort of theoretical original position of that north 16th and another 20 chains on up to the section corner.

We are going to use those measurements as our record for the position of that north 16th so when we retrace that line, we are going to get some other measurement we are going to use the line tree for alignment and it is going to be the southern control for proportioning and we are going to proportion our new measurement between the line tree and the section corner against this record of 20 and 6.64.

Most of the time if we use this procedure, that 16th corner is not going to be at midpoint and northing between the quarter corner and the section corner. Usually we are not talking about a lot of distance, usually a few feet maybe a little more, but there are situations where it could be significant.

So this is the policy since 1988, this is the policy that we are going to stay with however; we realize that there are a lot of surveys prior to 1988 that were done the other way and there are a lot of surveys in the private sector since 1988 that have been done the other method where we put it at midpoint and just used the line tree for alignment.

Most of the time we probably, if we were doing a **retracement**, of one of those we are going to accept that corner if it was done by a private surveyor, if the survey is filed with the county, he used that pre-1988 procedure because the survey Manual does not have that procedure in there yet.

And not everyone has access or sees these internal memorandums

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

even though we have attempted to get those out there; we know that not everyone sees it.

Keep that in mind when evaluating a corner in that situation and it is not always going to be easy, but that is what happened. And this is just one example of how the system has changed just in the last 20 years. We have had kind of a major shift in how things are done. And that happens. And we have some other things that that happens to. This north 16th here we would proportion is based on a record 20 and a record 6.64.

Witness Corners

A **witness corner** is the next intermediate monument on our list and is one that we think should be fairly straightforward and simple, but as it turns out maybe isn't. Let's look at our definition first. And again this is a definition found in our glossary of terms.

A witness corner is a monumented point usually on the line of the survey and near a corner it is established only in situations where it is impracticable to occupy the site of the corner.

In other words, we are not going to use a witness corner when we can go out and drive some kind of monument in the center of the road, we can put something out there, and we can occupy the point. We are not going to use a witness corner. Even at a fence corner or something we are not going to use a witness corner there; we are going to use reference monuments.

Any place we can establish some kind of a monument at the true point that we can occupy the true point, we are going to use reference monuments. Witness corners are for those places where we cannot occupy the true point. Witness corners are established as a witness to the true point. They are not the true corner they are a witness to the true corner. Usually, but not always witness corners are established on the line of the original survey, not always, but usually.

Witness Corners

- **A monumented point usually on a line of the survey and near a corner. It is established only in situations where it is impracticable to occupy the site of the corner.**
- **Witness corners are established as a witness to the true corner point.**
- **Usually, but not always, witness corners are established on a line of the survey.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Many points identified as witness corners are actually **witness points or reference monuments**. If there is a monument at the true point then the witness corner really is not a witness corner it is really a reference monument.

So it is important to read the field notes carefully, see exactly how that witness corner or witness point or reference monument, whatever it is called, make sure what it really is, don't just rely on the name that might be there on the notes, read it carefully, see how it was established and how it is being used so that you know what it really is and not just maybe what it is called.

Lottings in areas are not usually returned to witness corners. They show up on the plat, but there is no lotting in areas are returned to the section corner and quarter corner usually. And the corner is not lost if the witness corner is recovered.

There was no monument at the true point and the witness corner is the witness to that true point if we have the original true witness corner, we have the original corner.

Section 6-27 of the Manual, let's see what it has to say for us. *Ordinarily a witness corner established in the original survey will fix the true point for the corner at record, bearing, and distance.* That is pretty straightforward. But then read the next sentence.

Where the witness corner was placed on a line of the survey, remember just a minute ago, I said normally almost always witness corners are placed on the line of the survey, as this reads, it says, ordinarily witness corners established in the original survey and then later it says, where the witness corner is placed on the line of the survey, it goes on to say something different.

This first part is actually talking about witness corners (WC) that are not placed on the line of the survey, in other words **off line witness corners** and that is what the first part of this section is about and it says that we are going to determine the true point at record, bearing and distance.

Then it says, let's keep going with this, where the witness corner was placed on the line of the survey if no complications arise, it will be used as control from the direction in determining the

Witness Corners

- Many points identified as witness corners are actually witness points or reference monuments.
- Lottings and areas are not usually returned to witness corners.
- The corner is not lost if the witness corner is recovered.

Witness Corners

- Sec. 6-27 Ordinarily a witness corner established in the original survey will fix the true point for the corner at record bearing and distance. Where the witness corner was placed on a line of the survey, if no complications arise, it will be used as control from the direction in determining the proportionate position of the true point.

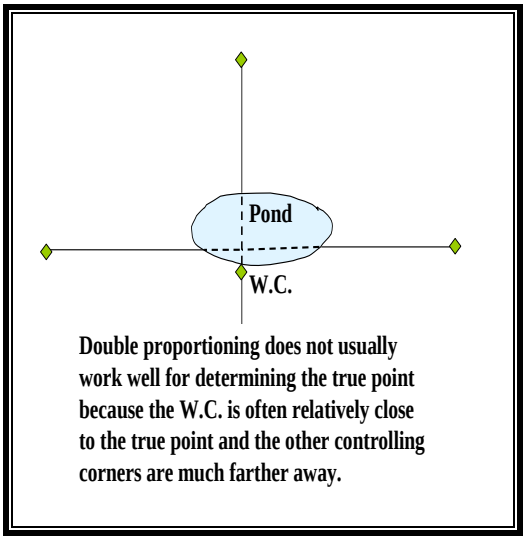
CONTROLLING INTERMEDIATE MONUMENTS – PART 1

proper position of the true point.

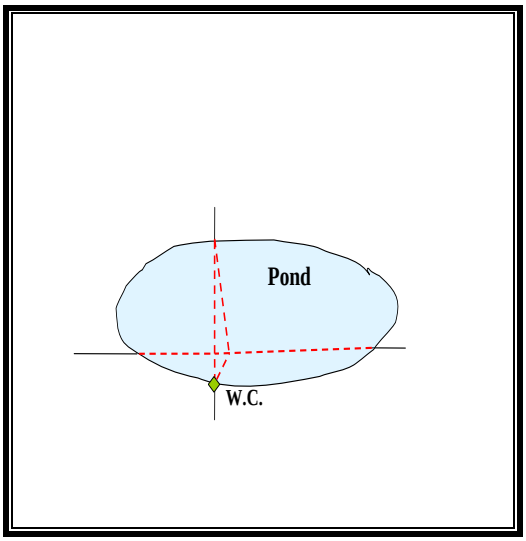
The proportionate position, not the proper position. The proportionate position of the true point. When you look at it that doesn't always work quite as well as we think. If we are in a single proportion situation at a quarter corner something like that, then proportioning from the line tree might work okay, but if you are at a section corner where the method would be double proportion, that normally doesn't work very well.

Let's look at this example where we have a pond and a WC. Now double proportioning normally doesn't work well because the WC is normally relatively close to the true point and the other controlling corners are much farther away.

In this example we have the control to the east and the west and the north are all half a mile away and this WC is only a chain or half a chain.



So let's look at what happens when you proportion, there doesn't have to much error in that east west line and what happens, let's say it pulls that 50 links even to the east, we end up with a very heavy bearing, a point that is obviously not where the true point was and if we have any major, even not major, a chain, 50 links, 40 links, a chain whatever, we get this kind of situation which is clearly not where the true point was so we find that proportioning really doesn't work very well, even though that is what the Manual say right now and if you look in the case book, it basically tell us the same thing.



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But we have some other direction and if we look at witness corners, we will see that really many methods have been used to determine the true point for witness corners.

Where the original witness corner was placed on the line of the survey and no complications arise, now here we are talking about the witness corner originally was on the line of the survey, no complications arise, the present policy and this has been policy for at least 20 years or more with BLM.

Witness Corners

- **Many methods have been used to determine the true point from the witness corner. Where the original witness corner was placed on a line of the survey and no complications arise, the present policy is:**

Here is the present policy. We have kind of two situations, for corners that would be reestablished by double proportionate measurement, the true point for the corner will be determined by extending the line through the witness corner at record distance.

Let's look at what that means. So here we have a witness corner, we have a pond, we have the quarter corner to the south and we are going to determine the true point.

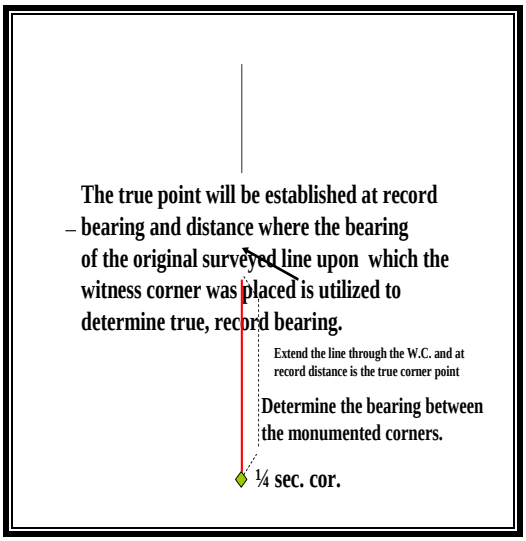
Witness Corners

- **For corners that would be reestablished by double proportionate measurement, the true point for the corner will be determined by extending the line through the witness corner at record distance.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

And here is what it said, the true point will be established at record bearing and distance where the bearing of the original survey line upon which the witness corner was placed is utilized to determine the true record bearing.

Well that was just a lot of words to say, you know what we are going to do, we are going to use that line to the south to determine what the record bearing was coming up that line and we are just going to extend it.



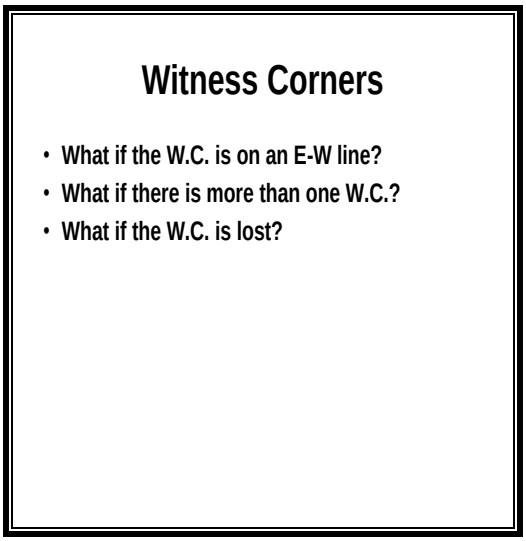
Really what we are doing is going record bearing and distance from the witness corner but we are retracing that line so that we get on the same basis of bearing as that original surveyor.

That is really all that we are doing in this double proportion situation, we are using the line to the south to get us onto the original surveyor's bearing and then we are projecting through and going record distance. It is really record bearing and distance but we are using the line to the south so we can get ourselves adjusted to the original surveyor's basis to bearing.

We extend through the WC and at record distance is the true corner point. We aren't using the measurements to the north, we are not using the line to the north, the east or the west, we are only using the line to the direction that that corner is found.

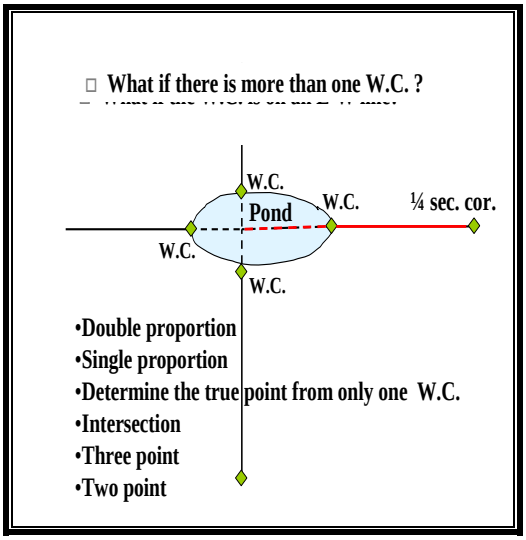
CONTROLLING INTERMEDIATE MONUMENTS – PART 1

So what if the WC is on east west line? How about if there is more than one WC? What are we going to do then? What about if the WC is lost? Well let's look at that.



Same pond, except this time let's assume that the WC is over here on the east west line. There is only one and it is on the east west line. We have the quarter corner to the east. So what are we going to do? We are going to extend that line through the WC and at record distance is the true corner point. Same method we used before except now it is an east west line instead of a north south line.

What if there is more than one WC? What if we have a WC to the east and a WC to the south? The system is designed so that we should only have one, but sometimes we have two, sometimes we have three and sometimes we have four. What are we going to do? Here we have two, three found! Well there are options.



Say we have four of them double proportioning, that is obviously an option. Maybe we could single proportion north south or single proportion east west. Depending on how many we had. If we had a situation where we have a WC to the north and one to the south, single proportioning might work.

Determine the true point from only one. Maybe we determine the true point from just the south WC, the first WC that was set. That could be reasonable. Intersection.

Another option. Three points if we have witness corners in only

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

three directions, we might want to use three point. If we have it in only two directions, we might want to use two point. So we have a lot of options.

What I think you will find is normally and this is a method that we don't usually use a lot, normally the best answer you are going to get is if you use the intersection method.

If you have four WCs, normally you are going to be most satisfied with the method that is an intersection of straight lines between the corners. If you have three, normally the best answer you are going to get is probably connect the two and extend the line through the third to an intersection. If you only have two, probably extending a line through each of them to an intersection.

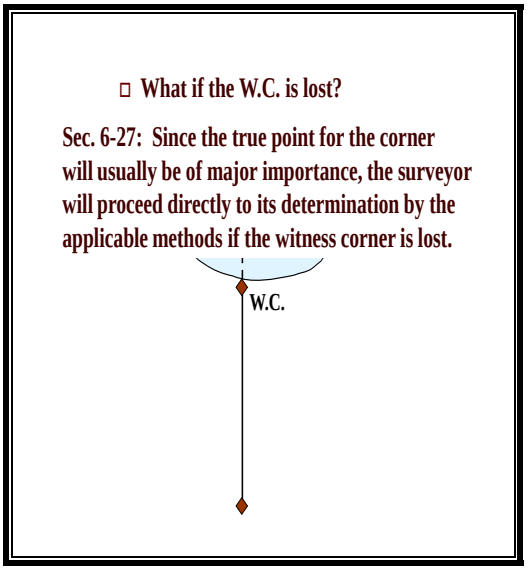
Normally that is going to give you the best answer. However, there is no set procedure, you have to look at each one individually, decide what is the best method to get the corner point out there. We can end up with all kinds of different combinations and really good judgment is the surveyor's best aid there and I think the next thing is do a very very good job of documenting it if we have situations that have multiple witness corners or some kind of major errors in there that can result in several logical true points for the corner.

Do a good job of documenting that so that it is clear why we chose the method we chose and we can defend it down the road.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Lost Witness Corners

So what if the WC is lost? What do we do then? Well the Manual tells us in 6-27, since the true point for the corner will usually be of major importance; the surveyor will proceed directly to its determination by an applicable method if the witness corner is lost.



If the witness corner is lost, we will search for it, we are going to search for it because we want to find it. But if it is lost and we have determined that it is lost, we don't necessarily need to reestablish it, but what we need to do is reestablish the true point, and then if we can't monument and occupy the true point now probably set a new WC does not have to be at the same position as the old WC.

We are going to set a new WC to the true point position once we have identified it. So if the corner is lost we really don't have to deal with reestablishing it however if we have determined that it is lost and we reestablish that true point, it's probably important to go back and do a new search.

Make sure that in reestablishing that true point it doesn't give us a different search area and that that witness corner might really be there. So keep that in mind. So let's keep going.

To start with here we talked about corners that would be double proportioned, section corners.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Now for corners that would be reestablished by single proportion, something like a quarter corner.

The true point for the corner will be determined by single proportionate measurement between the witness corner and the opposite controlling corner. What is that talking about?

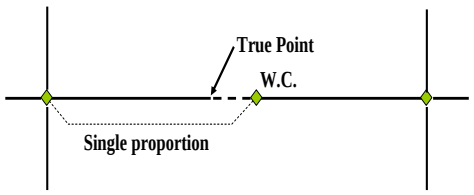
Witness Corners

- **For corners that would be reestablished by single proportionate measurement, the true point for the corner will be determined by single proportionate measurement between the witness corner and the opposite controlling corner.**

A single proportion situation here we have a section corner, section corner, the quarter corner for some reason could not be monumented or occupied and we have a WC and we have some kind of bearing and distance from the WC to the true point.

Here its saying we are not going to extend through we are going to single proportion between the witness corner and the section corner and what we are doing in this situation really is that we are modifying the record ,bearing and distance to match the original surveyor's basis of bearing and to match his chain. That's really what we are doing.

Witness Corners



So we are going to single proportion and normally what will happen is that we will have some kind of an angle point at the witness corner. So we have two slightly different approaches to determining the true point depending on whether the original is a section corner or a quarter corner, whether it is a double proportion situation or a single proportion situation.

Where it is a double proportion situation we extend the line through the witness corner and go record distance. Where it is a single proportion situation we single proportion between the witness corner and the next corner.

That is the policy. That is not what the Manual says. That is BLM policy and remember that has been in effect 20 years or

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

more within the Bureau and that is the direction, if you ask the Bureau how to reestablish a true point from a witness corner that is the answer you are going to get and that is how it should be done.

Now ordinarily a witness corner established in the original survey and not placed on the line of the survey will fix the true point for the corner at record bearing and distance from the witness corner. This is where the original witness corner is not on line it is not on the section line it is off line. What are we going to do? **Record bearing and distance**.

Witness Corners

- **Ordinarily a witness corner established in the original survey and not placed on a line of the survey will fix the true point for the corner at record bearing and distance from the witness corner.**

Now the only time we will modify that is if we have developed some type of bearing rotation that is very consistent throughout the entire survey and it is significant. Then we might modify that. Other than that it is going to be record bearing and distance. So what we have right now, it appears that we have three procedures depending on what kind of witness corner.

If it is a witness corner that is witnessing a corner that would be double proportioned, we are going to extend the line through and go record distance. If it is a witness corner that would be witnessing a corner that would be single proportioned like a quarter corner, then it is going to be single proportioned.

If it is an off line witness corner at either a double or single proportion type corner it is going to be record, bearing and distance. We have those three situations.

Retracements of Retracements

Now just another thing. You know one of the other things that is happening is as this system gets older, we begin dealing with more and more surveys, we are not just dealing with the original survey, we are not just dealing with the original survey and a retracement, we may be the 5^{th}, 6^{th} or 7^{th} retracement surveyor there whether federal authority, BLM surveyor, or private sector surveyor, the more surveyors there it can begin to complicate things.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

With witness corners, just let me make this statement, where the true corner point has been determined in a recent resurvey with accurate bearing determinations and measurements the true point will normally be determined at resurvey record bearing and distance from the WC.

What this is saying is that it is not necessary to continue to rerun these half miles, if I am trying to reestablish a true point for a section corner in 1992 there is a record of a retracement or resurvey of the line and the true point was determined, there is no need for me to rerun that entire half mile of line to determine that true corner point.

Each time we come back we don't have to do this. Once we have a good determination with good bearings and good distances, we should then try to just go record bearing and distance using that resurvey record to establish that corner point.

However, if the resurvey does not give us good bearing or good distance, then that is a different situation.

In situations where the true corner point has been determined by the method described earlier, and we are just dealing with trying to reestablish that same point, there is no need to continue to make that tie to the south or the tie to the quarter corners. So keep that in mind, we don't have to retrace all those lines over and over again once the true point has been determined.

Witness Corners

- **Where the true corner point has been determined in a recent resurvey with accurate bearing determinations and measurements; the true point will normally be determined at the resurvey record bearing and distance from the W.C.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Another point here we have a witness corner that is .67 chains west of the true section corner. It looks like there are some streams; maybe there is a swamp there, who knows.

The areas are calculated to the true point not to the monumented witness corner, we look at this it is just some little notation but the areas are calculated to the true point.

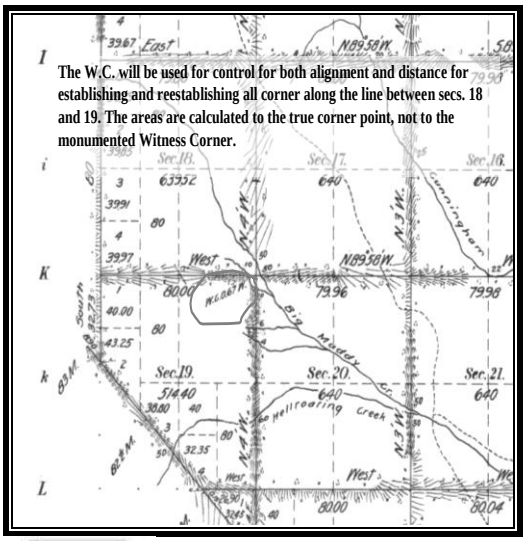


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

But remember that we have that 1988 memorandum about line trees, the principles of that memorandum apply to witness corners as well, even though the areas and lotting were not returned based on this witness corner position.

It is a monument of the original survey and it will be used as control in reestablishing corners along that line and in establishing 16th or lower order corners so if we are establishing a east 16th say between 18 and 19, we are not going to put that corner at mid point between the section corner and the quarter corner, we are going to put it at proportionate position based on the witness corner and the quarter corner.

A little different procedure it goes back to that 1988 memorandum, we are going to use it just like a line tree because it is a monument of the original survey. Even though lotting in areas weren't returned against it, It's still a monument of the original survey and it is going to be used for control in reestablishing corners and for establishing new corners so that is something to be aware of and to make sure that when we do this we are using the

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

proper control.

So WC will be used for control for alignment distance, for establishing and reestablishing all corners along the line just like the line trees will because it is a monument of the original survey.

Exercise Review

Now that we have covered line trees and witness corners, let's go back and look at that first exercise and see if you got those right or if you want to adjust your answers a little bit. So let's go over here and look at this.

Let's begin with the corner of sections 20, 21, 28 and 29. This is a little bit of a trick here but remember that originally the section corner was not monumented; there was a witness corner set south of the section corner.

That witness corner has been recovered therefore the corner is considered recovered. And we determined the true point. How? By extending the line from the south through the witness corner and at record distance. So the control to the south is the quarter corner of 28 and 29 and the witness corner. Those two things, we extend the line through and at record distance because this is a double proportion situation.

That one is a little bit of a trick and we won't do that any more. So it is not lost remember, we found the witness corner. It is not lost. Let's go on. Quarter corner sections 20 and 21 right up here. What is the method? The method is single proportion just like any other quarter corner. What is the control? To the south, the first recovered monument, the line tree. What is the control to the north?

The section corners, 16, 17, 20 and 21. Now to get the record information though you cannot go to the plat, because most of the time the line tree does not show up on the plat, you are going to have to go to the field notes to get the record information for the position of the line tree to get the record distance from the line tree to the quarter corner and from the quarter section to the section corner.

CONTROLLING INTERMEDIATE MONUMENTS – PART 1

Normally we can find that proportionate measurement information on the original plat, but when we are dealing with the line tree, we can't.

Next one, south 16th of 20 and 21, okay, how are we going to do that? If it were before 1988, we would use one method.

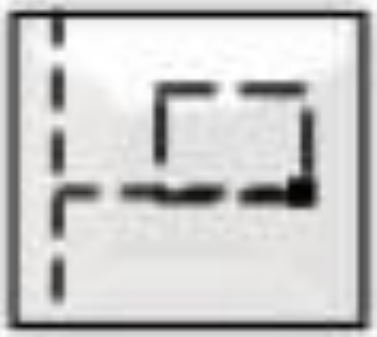
But it's after 1988, so we are going to use single proportion, and we are going to use for control to the north, the line tree, and for control to the south the true point for the corners of the sections of 20, 21, 28 and 29, that means we have to determine this true point before we can go about determining that 16th corner.

West 16th at 21 and 28, let's go over here, single proportion which in this case will be mid point because section 21 is a regular section, midpoint between the quarter corner of 21 and 28 and the true point again for 20, 21, 28 and 29. We don't want to go all over here to the quarter corner of 20 and 29 because we have this point that is the true point for the corner that we can determine from the witness corner and its treated as if it is a found corner because we have that witness corner there.

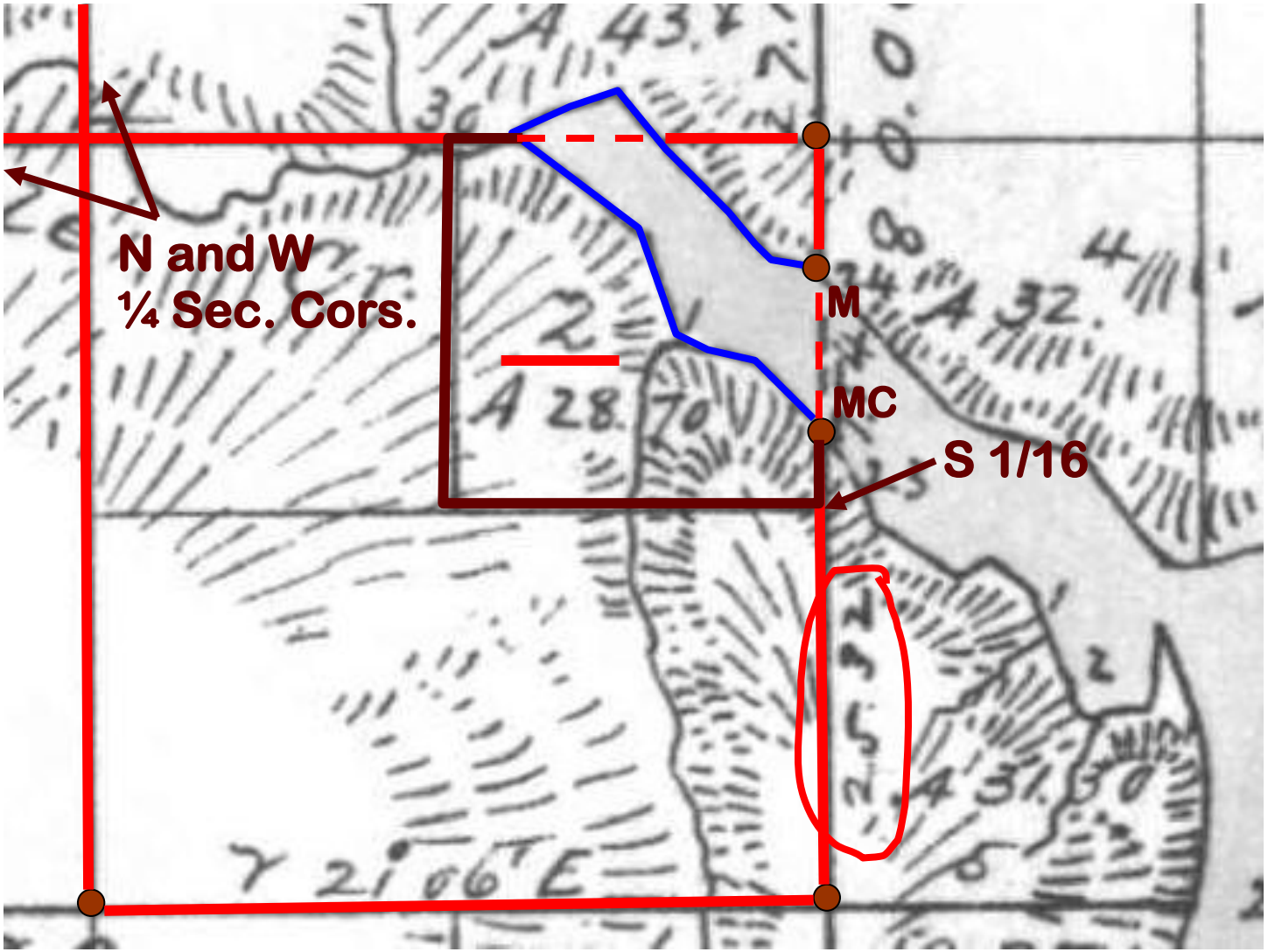
We aren't going to go past it and go all the way to the quarter corner of 20 and 29. And last the north 16th between 28 and 29 down here, the method is single proportion and the control is the quarter corner of sections 28 and 29 to the south and the witness corner for sections of 20, 21, 28 and 29 to the north, right here.

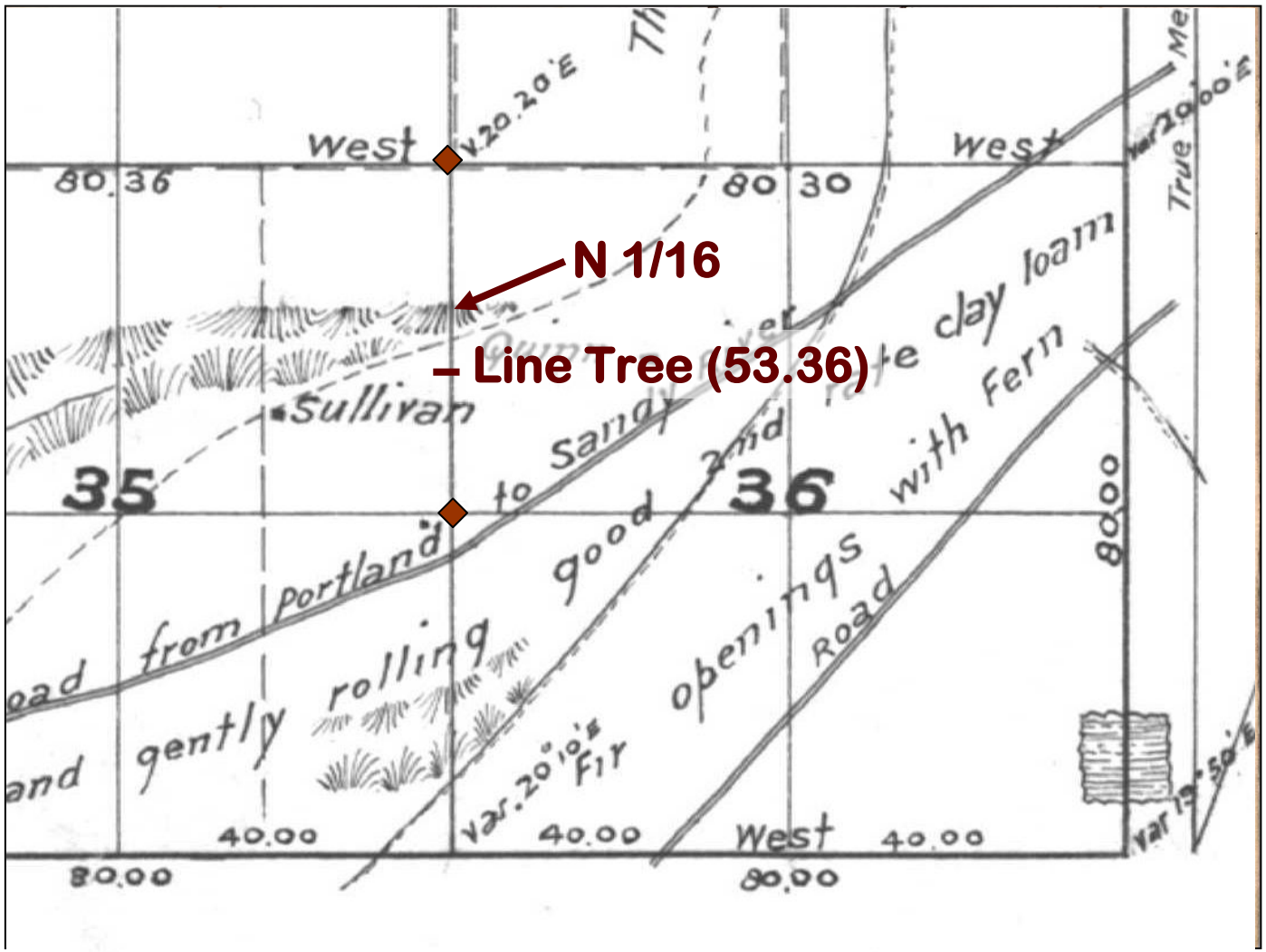
We are not going to go all the way to the true point because this is a monumented position on the original survey and according to that 1988 memorandum we are going to use it to reestablish this lost corner of 28 and 29.

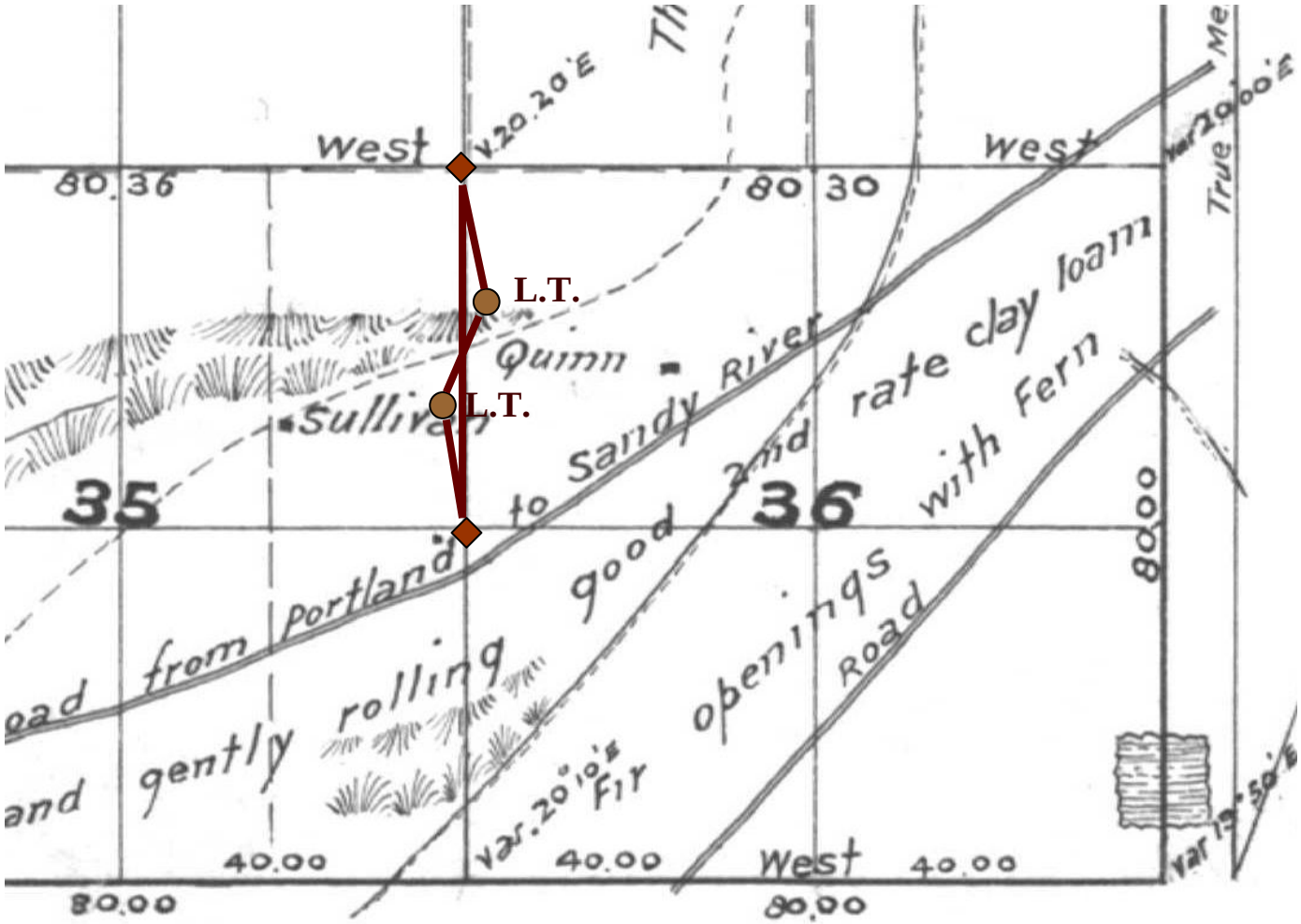
I think it is time to take a break now and when we come back, we are going to look at witness points and we are going to do another exercise.

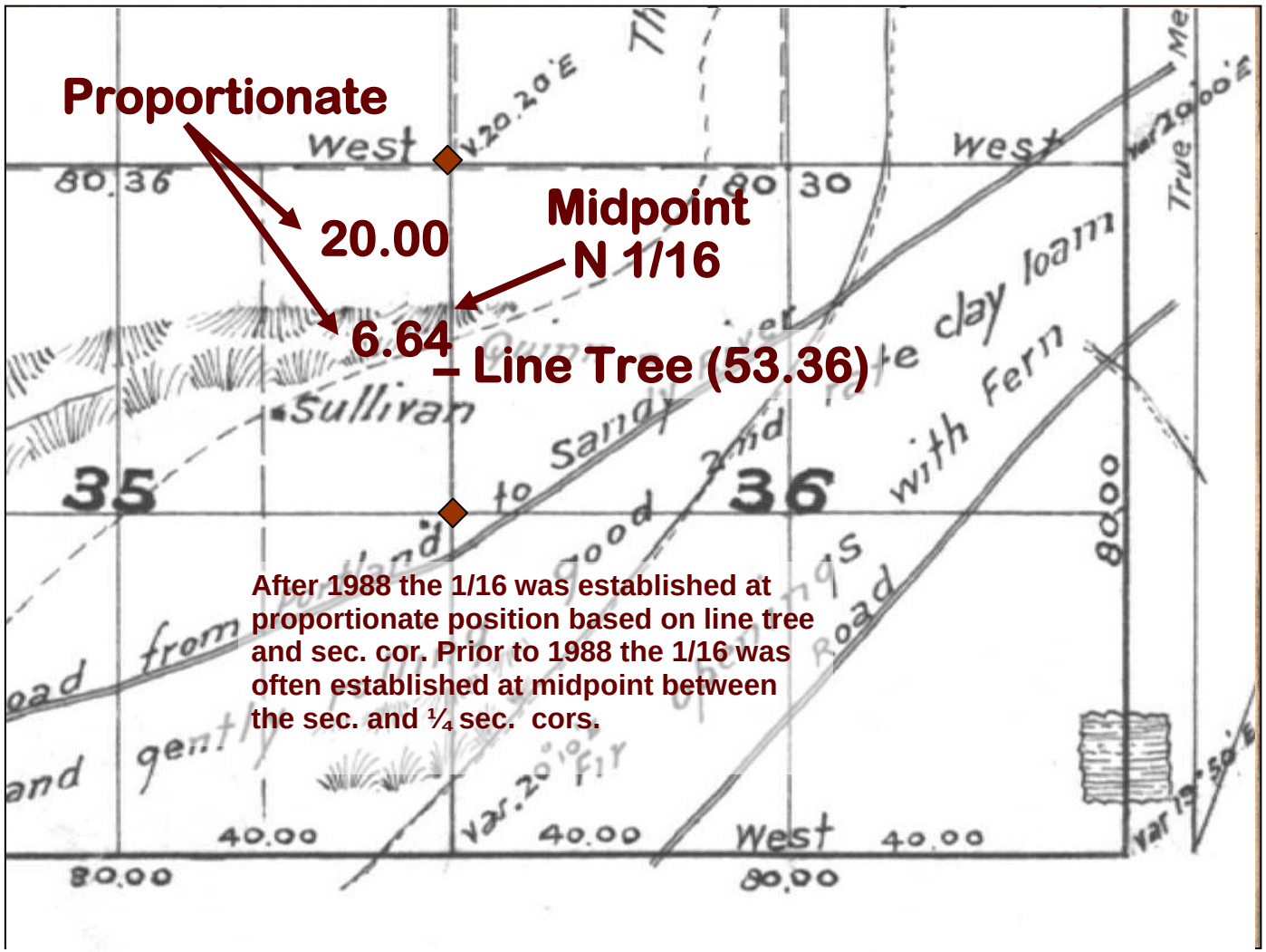


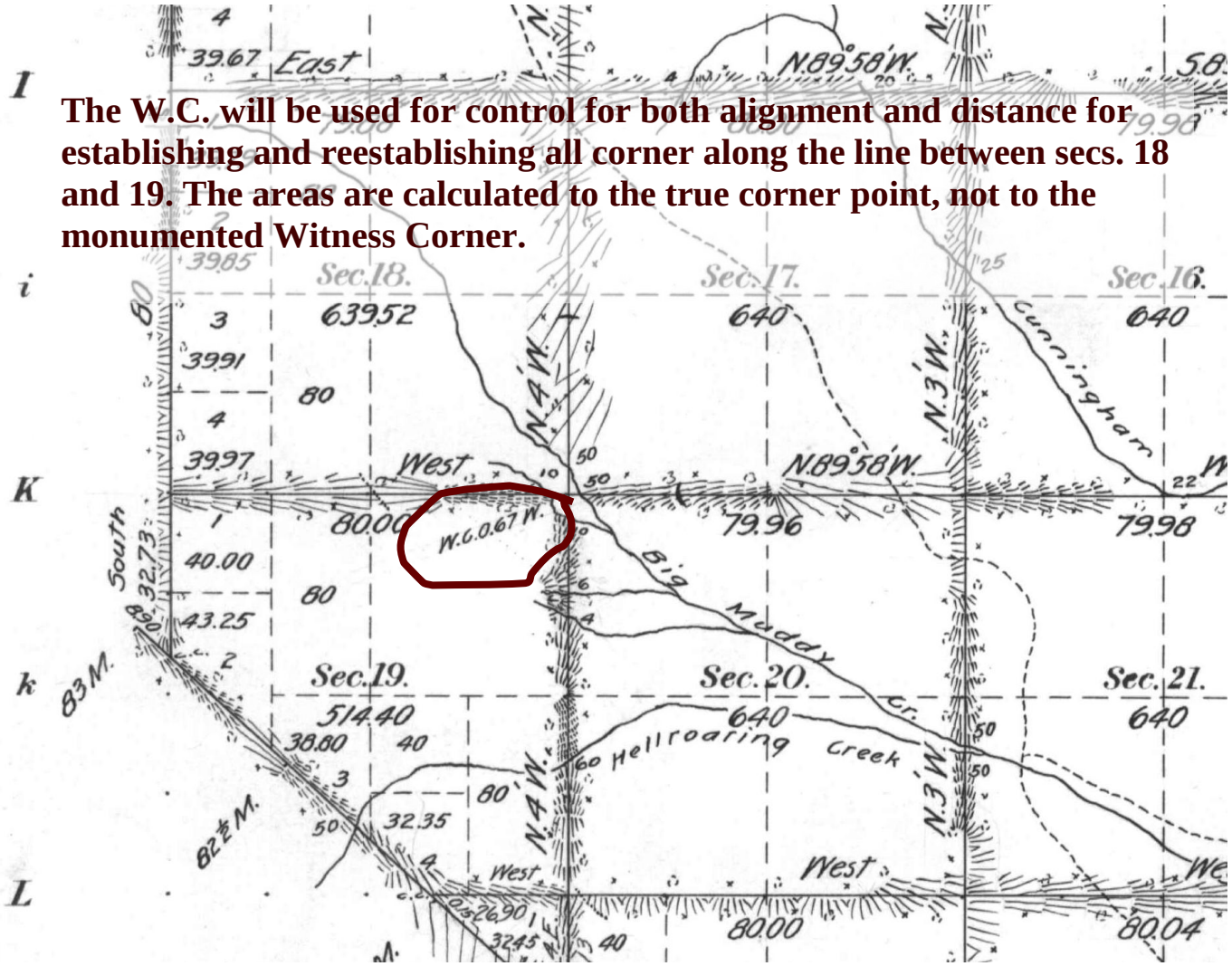
DIAGRAM


N and W
¼ Sec. Cors.
M
MC
S 1/16


N 1/16
– Line Tree (53.36)
West
80.36
80 30
West
35
36
Sullivan
to Sandy
from Portland
gently rolling
good
and
with Fern
openings
Road
Fir
40.00
40.00
West
40.00
80.00
80.00
80.00


West
80.36
80.30
West
L.T.
L.T.
Quinn
Sandy River
35
36
from Portland
to
rate clay loam
with Fern
openings
Road
gentle rolling
good
2nd
Fir
40.00
40.00
West
40.00
80.00
80.00
80.00


Proportionate
20.00
Midpoint
N 1/16
6.64
– Line Tree (53.36)
After 1988 the 1/16 was established at proportionate position based on line tree and sec. cor. Prior to 1988 the 1/16 was often established at midpoint between the sec. and ¼ sec. cors.
West
80.36
80.30
West
35
36
Sullivan
40.00
40.00
West
40.00
80.00
80.00
80.00


The W.C. will be used for control for both alignment and distance for establishing and reestablishing all corner along the line between secs. 18 and 19. The areas are calculated to the true corner point, not to the monumented Witness Corner.
Sec.18.
Sec.17.
Sec.16.
Sec.19.
Sec.20.
Sec.21.
N.89°58'W.
West
East
South
W.C.0.67 W.
Big Maddy Cr.
Hellroaring Creek
Cunningham
N.4°W.
N.3°W.

EXERCISE

PROBLEM #3

Corner of Sections 20, 21, 28, and 29:

Method _____

Control _____

_____

¼ Section Corner of Sections 20 and 21:

Method _____

Control _____

_____

S 1/16 Section Corner of Sections 20 and 21:

Method _____

Control _____

_____

W 1/16 Section Corner of Sections 21 and 28:

Method _____

Control _____

_____

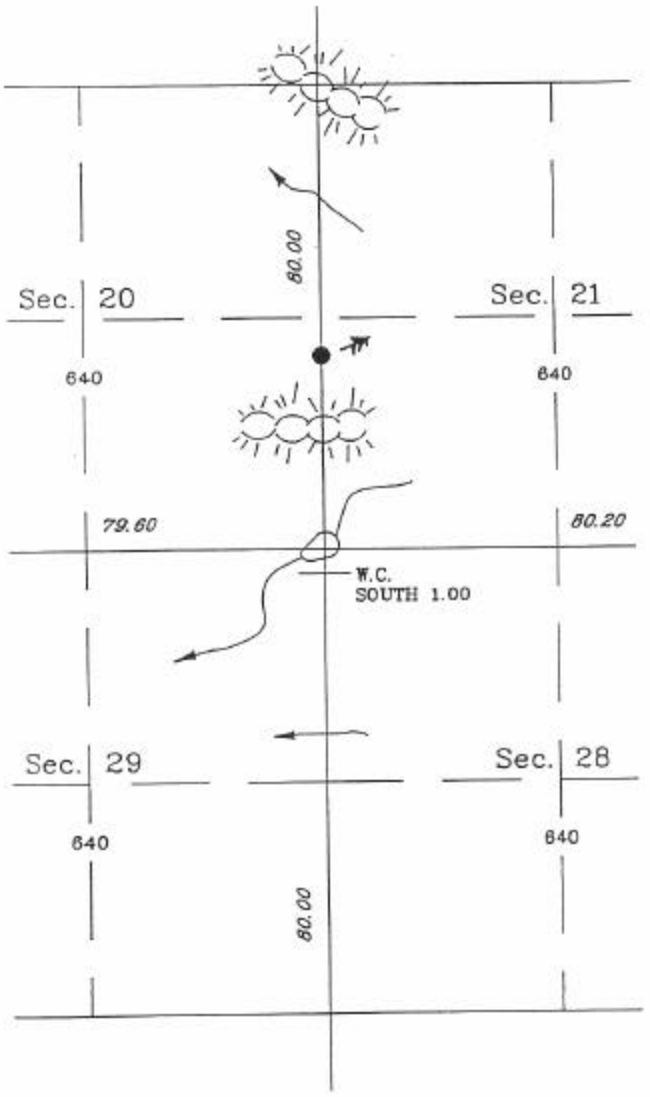
N 1/16 Section Corner of Sections 28 and 29:

Method _____

Control _____

_____

ORIGINAL PLAT and CALLS



80.00=Sec. Cor. on Ridge

60.00 Creek

30.00 Line Tree

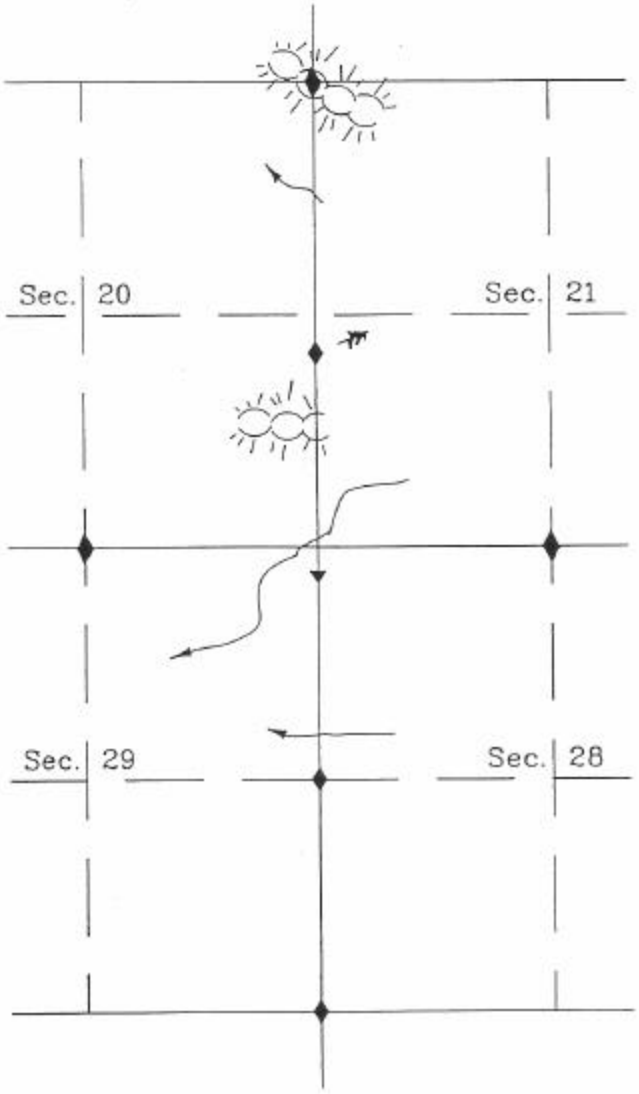
20.00 Ridge

Sec. Cor.in Pond
W.C.,1.00 SOUTH

50.00 Creek

40.00=1/4 Cor.

RETRACEMENT DATA



49.40=Sec. Cor. on top of Ridge

29.45 Creek

1/4 Cor. Lost

30.20 Line Tree

20.70 Ridge

1.20 Creek

38.80 W.C.

9.60 Creek

PROBLEM #3

Proper Procedure for Reestablishing/Establishing Corners

1) **Corner of Sections 20, 21, 28, and 29:**

Method - Extend line from the south through the W.C. at record distance
Control - W.C. secs. 20, 21, 28, and 29
¼ sec. cor. of secs. 28 and 29

2) **¼ Section Corner of Sections 20 and 21:**

Method - Single proportion
Control - Line tree
Cor. of secs. 16, 17, 20, and 21

3) **S 1/16 Section Corner of Sections 20 and 21:**

Method - Single proportion
Control - Line tree
True point for the cor. of secs. 20, 21, 28, and 29

4) **W 1/16 Section Corner of Sections 21 and 28:**

Method - Single proportion (midpoint)
Control - ¼ sec. cor. of secs. 21 and 28
True point for the cor. of secs. 20, 21, 28, and 29

5) **N 1/16 Section Corner of Sections 28 and 29:**

Method - Single proportion
Control - ¼ sec. cor. of secs. 28 and 29
W.C. secs. 20, 21, 28, and 29

Course 2: Boundary Law & Title Examination Study Guide

COURSE DESCRIPTION:

This course is about boundary law and records research. It discusses several basic land law principles and the analysis of legal descriptions contained in deeds and other official documents that transfer interests in land.

While a brief discussion is made on state boundary laws, special emphasis is spent on federal boundary law, which consists mostly of the Public Lands Survey System. The basics of that system are presented in an optional separate lesson for those who have little or no experience with the federal system. A lesson and case study on metes and bounds procedures is also presented.

COURSE OBJECTIVES:

Upon completion of this course, students will be able to:

- Review basic boundary law and title concepts in order to analyze interests in land
- Introduction to the PLSS fundamentals and records
- Learn about IBLA decisions
- Identify the control exercised by Controlling Intermediate Monuments

COURSE INSTRUCTOR(S):

Dennis Mouland, Bureau of Land Management

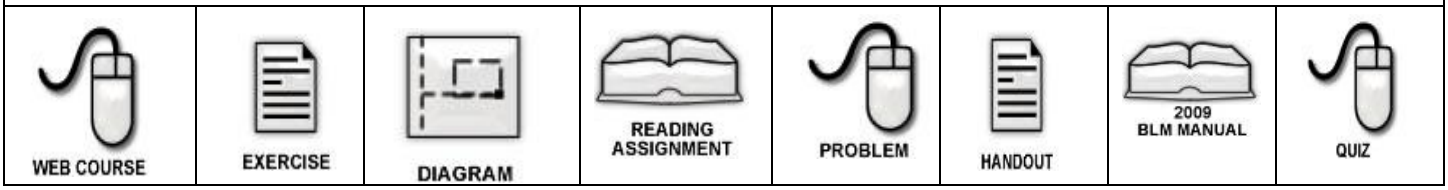
Robert Jackson, US Forest Service

Ron Scherler, Bureau of Land Management

VIDEO LECTURE TITLE:

Controlling Intermediate Monuments – Part 2 (74 minutes)

ICON LEGEND



CONTROLLING INTERMEDIATE MONUMENTS – PART 2

Exercise

Next, we are going to do another exercise. This one deals with some other controlling intermediate monuments so let's look at the information first, I just want to point out a couple of things, first of all this is a meandered stream, you will notice that there are meanders on both sides, assume that all of these section corners and quarter corners were monumented.

PROBLEM 1 can be found in the Exercise section at the end of this study guide.

This diagram shows the bearings to distances, there would have been meander corners on each side, basically the original survey information. Then I want to show you the retracement information.

These are the hashed marks showing ownership where this would be probably federal land or maybe reservation land, whatever and the rest of it is private. The diamonds again are found original corners, the half diamonds are found original meander corners and you will notice that we have a few of those. You will notice the meander corner on the north side here was not found.

You will notice the one here is not. So we have some found original corners. We have some lost corners, section corner here and some others. So what we want you to do is take that answer sheet and go through this exercise. Again, write down the what is the proper method for reestablishing the corners or establishing the corners that are called for and what will serve as the control in each direction for that proportion or reestablishment.

Witness Points

Now let's have a look at **witness points**. Witness points are actually very similar to line trees and how we end up treating them. Let's start with the definition. This comes from the glossary again.

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

A witness point is a monumented station on a line of the survey that is used to perpetuate an important location more or less remote from and without special relation to any regular corner.

So it is really just a point that we want to monument for some reason. And you will find sometimes and this may sound kind of funny but sometimes we have a corner that we want to monument and we by golly can't figure out what to call it. What in the world are we going to call this thing? We'll call it a witness point. It monuments a position. It is clear where that position is. It shows up on the plat. We can lot to it, we can do a lot of things to it. We end up calling it a witness point.

Witness Point

- **A monumented station on a line of the survey that is used to perpetuate an important location more or less remote from and without special relation to any regular corner.**

Witness points are used for lots of different things. And we will look at that as we go through. First of all, they were originally established on the line of the survey. They are always on the line of the survey. Second, usually they are on a ridge, near a road, a creek, a trail at an intersection of a non-meandered body of water or at the terminus of a line.

There are at some position that we wanted to mark the line. Maybe a wilderness boundary that follows a section corner and there is a main trail going into that wilderness. We might set a witness corner near that trail near that line so that it is very easy for the land managers to know where does that trail enter the wilderness area.

Different positions where we just want to mark the line, we want a good solid identification of it. That is some places we might do it.

Another place that you see it often in the original surveys was where the terrain got so difficult that this survey was terminated. So they might survey 50 chains of the south boundary and then you will have some statement about the terrain being very difficult, they set a witness point and stop.

Now they don't always tell us exactly what that corner is supposed to be. It may not always be called a witness point. Sometimes they will just say that they set a monument, set a stone, terminate the line. It doesn't say it is a witness point, doesn't say it is a witness corner, doesn't say anything. Sometimes it will be called a witness corner. So we have to make sure that we read the record

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clearly so that we know what it is really.

What is a witness point? A witness point is a monumented position on a line. It does not reference a true corner point. A witness corner is a monumented position normally on the line. But a witness corner is always is going to reference a true corner point.

So let's say in the original record, the surveyor is surveying the south boundary of the section and at 30 chains, he says terminate the line, too steep. He stops the line there. That is all he says.

You look in the field notes and you look at the plat, there is no distance bearing given from the point to the quarter corner. That is a witness point. He didn't reference the true point.

However, if at 30 chains, he said, terminate the line, it is too steep, the quarter corner bears west 10 chains, then what has he done. Then that point is a witness to the quarter corner. He has given a bearing and distance from the witness point, the witness corner, or the point or whatever he called it to the true point.

So don't look so much at the name in the record or in the field notes, look at its function. Make sure it is a witness point, it is not a witness point, it is a witness corner, it is not a witness corner. And it is determined by its function and not by the name that might be in the field notes.

In some parts of the country, at the termination of those lines there are almost always called witness points but almost never give a distance to the true corner point. So they are called witness corners but they are almost always witness points. Other places there is no designation for the corner.

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

Here is an example, here it says south between sections 23 and 24 at 15 chains set by stone 14 X 10 X 8 for corner to fractional sections 23 and 24 at the foot of a steep left from which. That's it.

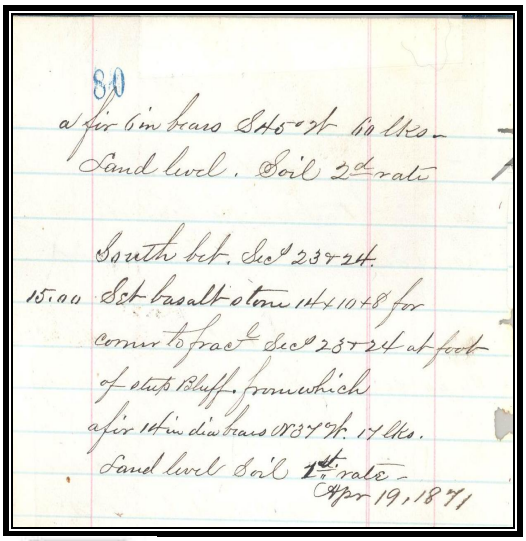
80
a fir 6 in brass S 45° W 60 lks
Sand level. Soil 2d rate
South bet. Sec's 23 & 24.
15.00 Set basalt stone 14 x 10 x 8 for
corner to frac'd Sec's 23 & 24 at foot
of steep Bluff. from which
a fir 14 in dia brass N 37° W. 17 lks.
Sand level Soil 2d rate
Apr 19, 1871

DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

Mark the corner. Terminated the line. He doesn't call it a witness point. He doesn't call it a witness corner. He just stops. Well it really is a witness point because it doesn't reference a true corner point, and it marks the line. It's on that line.

Now witness points are normally measured to very accurately just like other corners so they are going to be measured to the nearest link. Going to have good bearing, good distance. Areas are not normally returned against it. It is not like a meander corner where we have areas returned against it. It is more like a line tree or a witness corner where it is on the line, it is a monumented point on the line, but the areas are not returned based on that measurement to it.

Witness Point

- **Usually measured to accurately.**
- **Areas are not returned against it.**
- **Usually becomes an angle point in the line.**
- **Witness points will be utilized for control for the reestablishment of lost corners and the establishment of 1/16 and lower order aliquot part corners.**
- **Actually an artificial line tree.**

It usually becomes an angle point on the line, we are usually not going to find them exactly on line, so when we recover an original witness point, we usually remonument it and it is going to become an angle point in that line. There is going to be a bearing break there. The witness point will be utilized for the control for the reestablishment of lost corners and the establishment of 16th and lower order aliquot part corner. Just the same procedure that would be used as if it was a **line tree**.

Prior to 1988, same thing. May not have been used to establish new corners, it would have been used for alignment but may not have been used to establish 16th or lower order corners. It would

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

have been used to reestablish lost corners.

So the history in how witness points have been used is going to be very similar to how line trees have been used in the past and how line trees are supposed to be used now. It is actually an artificial line tree. It is a point on line that's all it is. It is a monumented point on line. We have a measured distance to it and we know that it is on the line.

So it is a pretty straightforward situation but remember to look at the field notes and look at the record very carefully so that you are sure exactly what it is, don't just go by what the record calls it.

It might be a witness corner; it might be a witness point. Read the record carefully and find out which it is really because that will determine how it will be used in certain situations.

If recovered it should be perpetuated or remonumented. If lost, it may not be necessary to reestablish. When you think about a witness point, we always want to make sure that we search for it. We want to make sure because it is a monumented position of the original survey.

If we do not recover it, if we determine it that it is lost, many times it is not necessary to reestablish because it is not a point that anybody needs. If we haven't reestablished it there is not going to be a bearing break there, it is going to be a straight line; it is not going to be a corner of any parcel.

So many times it is not necessary to reestablish it if it is lost but it is important to do a good job searching for it and making sure that it is not there and in your record make sure that you have documented that you searched for it and it is lost. You want to make sure you've done that. That completes witness points.

Witness Point

- **If recovered it should be perpetuated or remonumented; if lost it may not be necessary to reestablish.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

Meander Corners

Next we are going to look at meander corners. The definition for a meander corner is a corner established at the intersection of a standard township or section line with the meandered line near banks of navigable streams or any **meanderable** body of water.

That is our definition from the glossary. We have situations in original survey where sometimes the meander corners were only established on one bank, not on both banks. We have situations where sometimes very small streams were meandered. We have situations where you might expect a meander corner because it appears to be a fairly large stream and it is not meandered.

All of those things don't really affect us an awful lot because what we want to know is what we did happen in the original survey. Not what should have happened? What did? We look at the record. We look at the field notes and the plat that tells us what did happen and that tells us how we are going to restore that survey. So we have grouped it with intermediate monuments but it is actually a corner of the first order because lots are created and areas returned against meander corners. In fact if you look in the Manual dating back to the 1890s, you will find when it talks about standard corners; it talks about standard township sections, quarter sections and meander corners.

Meander Corners

- **A corner established at the intersection of standard, township or section lines with the meander line near banks of navigable streams or any meanderable body of water.**
- **We have grouped it with "Intermediate Monuments" but it is actually a corner of the first order because Lots are created and areas returned against meander corners.**

So it is really a corner of the first order, but it is intermediate its between the section corners and the quarter corners. So we have grouped it here. The actual boundary is the ordinary high water line or the ordinary high water mark; it is not the meander corner. The meander corner marks the section line but it does not mark the boundary with the water. Remember the meander lines were surveyed to help to define area, not as a boundary.

When recovered it normally controls both alignment and all proportions along the line. I am going to say almost always because there are always these situations that are real special, but it is normally going to control everything just like a quarter corner or section corner would.

Division of **accretion** lines normally begin at a meander corner and we have not talked about that yet I realize it, but you will get

Meander Corners

- **The actual boundary is the Ordinary High Water Mark (OHWM)**
- **When recovered it normally controls both alignment and all proportions along the line.**
- **Division of accretion lines normally begin at meander corners.**
- **The section line is a "blank line" between the meander corners.**

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that later in the introduction to water boundaries. But I want to show you a couple of things about how meander lines are used and these division of accretion lines because it influences what we do there. And when you get to introduction to water boundaries, I think it will help make more sense.

The section line is a **blank line** between the meander corners. Now what in the world do I mean by that? The section line is a blank line between meander corners. Well in the upland side, the section line marked on the ground is the boundary. It is the boundary of the section, however, once you go past the meander corner the section line doesn't actually, if the river begins to slowly move away from the bank and there is accreted land there, the section line doesn't normally extend out, there are special rules about how to divide that land inside the meander lines.

So the section lines don't normally, if there becomes land out there between the meanders, they aren't normally extended out. And I will show you what I mean by that.

Let's look at this original plat and we will look down here, we have the south boundary of 14 is surveyed and the west boundary and we would have a meander line along here.

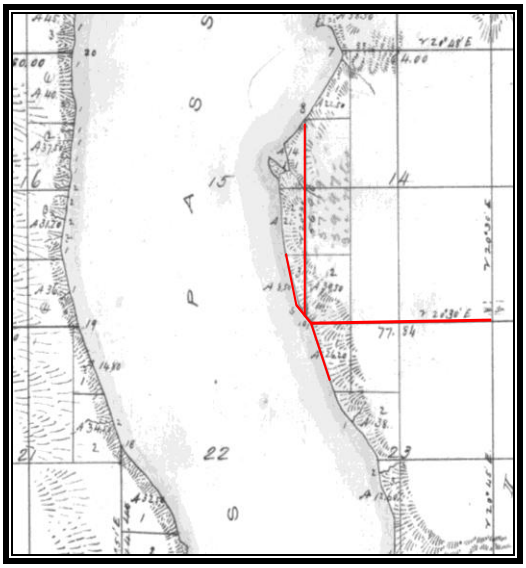
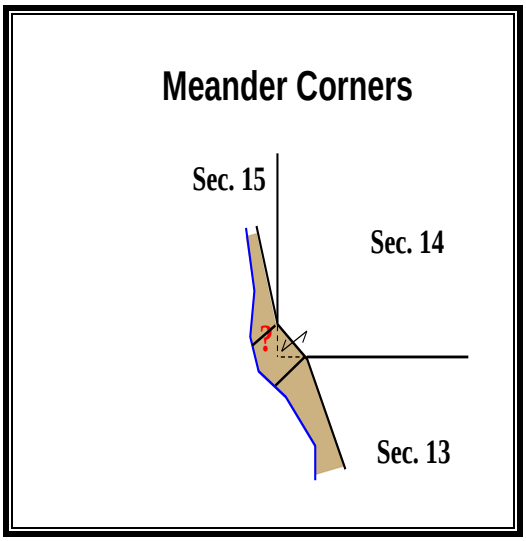


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

CONTROLLING INTERMEDIATE MONUMENTS – PART 2



Well you will notice that the section corner is out in the water slightly, so what happens if you are called upon to do a survey here and when you come out to the corner, you find that the meander line, or the edge of the river, is significantly west of where it was originally and there is ground, high and dry. There are trees on that. It is solid ground now.

The position for that section corner can be monumented. It is out there. You can go monument you. You can set your instrument over it. What are you going to do there? Well, we don't want to monument that position.

We don't want to monument the position of section corners or quarter corners that fall within the original meander line. Because normally it is a position that is not a property boundary at all.

Now sometimes it is a position that needs to be calculated so that we can do other things in subdividing the section or computing corner points or something.

But almost always it is a position that we do not want to monument because it does not mark a section boundary and if we monument it on the ground, all it does is begin to confuse people about the boundary because and this is what you will learn in the introduction to water boundaries.

How do we divide that line? We don't extend those section lines, what we do is division of accretion lines. This is what the court says. So we are gong to come across here and this area becomes a part of the parcel that is section 14.

Whoever owned that land up against the water there, we don't just extend lines out they get a proportional frontage or they get a right angle frontage, we are going to come up with some method to protect their riparian rights there and it almost always will be a method that is not an extension of the section line.

If you set that section corner out there, someone is going to think that that marks somebody's property boundary, somebody is going to trespass and there is going to be problems. Don't monument that corner out there. It is okay to compute it, know where it is, if you need to but don't monument it.

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

Another just little interesting thing about meander corners is something that came about in the 1947 Manual and I'm relating this to you so that you are aware that it has happened and if you run into the situation you know why it happened and if you run into the situation and you'll know why it happened and it will make a little more sense to you.

The 1947 Manual the language explaining meander corners was changed slightly and it was misinterpreted for a while.

It says, lost meander corners originally established on a line projected across the meanderable body of water and marked upon both sides, so we have something where we have a meander corner on both sides, will be relocated by **single proportionate measurement**, now here is the confusing part, after the section corner and quarter section corners upon the opposite sides of the missing meander corner have been duly identified or relocated.

Meander Corners

- **1947 Manual of Surveying Instruction**

Sec. 3-77 Lost meander corners, originally established on a line projected across the meanderable body of water and marked upon both sides will be relocated by single proportionate measurement, after the section corner or quart-section corners upon the opposite sides of the missing meander corner have been duly identified or relocated.

Well, consider a situation where the quarter corner falls in a stream and we have a **meander corner** on either bank of the stream and the quarter corners between it.

Because of this, if one of those meander corners was lost, because of this statement in the Manual, which says we are going to reestablish those meander corners after the section and quarter corners have been reestablished, the meander corner was not reestablished first and the quarter corner was positioned based on the section corners on either side of it. Kind of a strange way to do it. That only happened for maybe about 2 or 3 years after the 1947 Manual came out and then they got it straightened out and it didn't happen anymore, as far as I know.

But you might run into that on a survey that was done somewhere around 1948, 1949, 1950 something in that area. I am aware of a couple of situations where that happened.

I just wanted to bring that to your attention because the wording was a little different in the 1947 Manual and it caused some confusion. A couple of other things we want to talk about. That covers meander corners basically, the normal meander corners because they are a pretty straightforward thing and we haven't

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

really had a lot of controversy about how meander corners should be used.

They have been a pretty settled policy for a long time, except for that little 1947 Manual thing and there may be a few others but pretty settled policy on how meander corners should be used.

Special Meander Corners

I want to cover a couple of more things before we move on. One is a **special meander corner** and what is it.

A special meander corner is and I am going to use the definition out of the glossary again, is a corner established at number one, the intersection of a surveyed subdivision of section line and a meander line. If I am subdividing a section, let's say I am surveying the north south center line of a section and I intersect a meander line, I set a special meander corner.

It is not a meander corner that is for section lines, on the section lines, township lines we set meander corners. On the subdivision of section lines, we set special meander corners.

Number two, the intersection of a computed center line of a section and a meander line, in the latter case the center line of the section is calculated and surveyed on a theoretical bearing to an intersection with the meandered lake which is located entirely within the section.

That is kind of a long winded way of saying, if we have a meandered lake within a section, entirely within a section, and we are not subdividing that section but we need to meander that lake, what we do is we compute the line, whatever subdivision line, that intersects that lake, we compute it and we calculate a position for a special meander corner and then we make a tie from that special meander corner to one of the corners of the regular survey.

That gives us a monument on that lake that is being meandered without having to subdivide the entire section just to account for that meander line. So those are the two situations where we normally use special meander corners.

Special Meander Corner

- **A corner established at: 1) The intersection of a surveyed subdivision-of-section line and a meander line; 2) The intersection of a computed center line of a section and a meander line. In the latter case the center line of the section is calculated and surveyed on a theoretical bearing to an intersection with a meandered lake which is located entirely within a section**

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Auxiliary Meander Corners

Of course the other kind of meander corner is an **auxiliary meander corner** and the definition again from the glossary.

An auxiliary meander corner is established at a suitable position on the meander line of the lake lying entirely within a quarter section or on the meander line of an island falling entirely within a section or which is found to be too small to subdivide.

A line is run connecting the monument to a regular corner on this section boundary. Again we have a island that we need to meander, it is entirely within a section or it is too small to subdivide or often if you are in a larger body of water it might just be this tiny little island out in the middle of no where, out in the middle of the lake so we set an auxiliary meander corner on it and give a tie from the auxiliary meander corner to a regular section or quarter section corner.

Auxiliary Meander Corners

- **An auxiliary meander corner is established at a suitable position on the meander line of a lake lying entirely with a quarter section or on the meaner line of a island falling entirely with a section and which is found to be too small to subdivide. A line is run connecting the monument to a regular corner on the section boundary.**

Those are the two kinds of other meander corners. Again, there is no really special things about what they are, you have to look at how they were established, exactly what the record says about them and then you can begin to determine how it should be used in controlling the restoration of lost corners or the restoration of a meander line or establishing corners for the first time, such as 16^{th} corners or 64^{th} corners. Examine the record. I just wanted to touch on exactly what those are so we don't get confused as to what an auxiliary meander corner is or a special meander corner.

Exercise Review

Now I want to move back to the overhead and let's see if we can go through our problem or exercise that we had looked at before.

Of course, this is dealing with the meander corners, and let's just talk through it a little bit, first of all the corners of section 7, 8, 17 and 18 well that is a double proportion situation, so that is the method.

To the north we are going to use the quarter corner of 7 and 8, it is a recovered corner, to the south we are going to use the quarter corner of 17 and 18, that is a recovered corner, to the east we are going to use the quarter corner of 8 and 17 and to the west we are

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going to use the recovered meander corner, we are not going to go all the way to the quarter corner, the meander corner is recovered.

It's a monument of the original survey so it's going to control. Let's go to the meander corner on the left bank between 7 and 18, so we are over here. It is a meander corner. It is a single proportion situation and we are going to use the meander corner on the right bank between 7 and 18 to the east and we are going to use the quarter corner of sections 7 and 18 to the west. Pretty straightforward.

Meander corner on the left bank between 7 and 8, very similar, we are going to use the meaner corner between 7 and 8 down here on the right bank and we are going to use the corner 5, 6, 7, and 8 up here to the north. North 16th between 7 and 8. It is not a midpoint between the quarter corner and the section corner.

We are going to use the nearest control, it is a proportion a single proportion between the meander corner of 7 and 8 on the right bank and the section corner of 5, 6, 7 and 8 to the north. West 16th between 5 and 8 right up here. Same thing.

It is a single proportion and we are going to use the quarter corner and the meander corner. Meander corner on the left bank between 5 and 8 right up here. Same thing. Single proportion and we are going to use the meander corner and the section corner. I am just going to go down the list pretty quickly I think once we have gotten this far you are understanding exactly what we are doing.

But the south 16th between 7 and 8 is going to be single proportion, mid point in this case, between the quarter corner of 7 and 8 and the reestablished section corner of 7, 8, 17 and 18. We need to reestablish this corner point and then establish this 16th corner once we have reestablished that corner point. So we have to do it in the proper order.

North 16th between 17 and 18 same thing we are going to use quarter corner and the reestablished position and it is going to be single proportion, which in this case is also midpoint.

The last one, west 16th between 7 and 18 and here we are going to go single proportion and we do have parenthetical distances here

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so this is not a midpoint. It is single proportion but not midpoint and it is between the quarter corner of 7 and 18 and the recovered corner of 7, 12, 13 and 18 on the township boundary.

Once you have looked through and we talk about how meander corners are supposed to be used and we examine really the record, then I think it's pretty easy then to work through these problems. I hope that clarified or helped strengthen the information that we talked about earlier about meander corners.

Exercise

Well now it is time for our final exercise in this segment. Let me just go through it real quickly with you again and here is the original survey and this shows you that we have a closing corner up here we have a witness corner what its called over here, we have a witness point here, you will notice that section 4 is not completely surveyed.

EXERCISE **PROBLEM 4 is located in the Exercise section at the end of this study guide.**

We have dashed lines out here that means that that section is not completely surveyed. Section 9 is not surveyed and portions of section 8 are not surveyed. Keep that in mind. So we got some kind of different situations, we have closing corner, witness corner, witness point.

Now we have a completion survey that comes in and does some stuff here. First of all in the completion survey these diamonds are the corners that they recovered. So we will notice they recovered this witness corner here. They recovered the quarter corner here but you will notice that they did not recover this witness point. This witness point they did not recover.

Up in this part, they didn't retrace this so this is just record. But they have recovered the section corner, the witness corner and the quarter corner and the section corner down here. Now remember I said as the system gets older, we aren't always the first or second retracement, sometimes we are the 4^{th}, 5^{th} 6^{th} or 7^{th}.

Well here in this example you are the 2^{nd} retracement surveyor, you are the third surveyor. So let's look at what you find and what you find is the original closing corner up here but it is north of the line by 13 links. You found the original but when you run the

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north line 13 inches. You also find this thing over here, you remember it was called a witness corner before and on this diagram it is called the witness point. What is that all about?

Down here you do not find the quarter corner the section corner, you do not find this quarter corner, but you find the witness point. Remember that the retracement surveyor found this section corner, he found the quarter corner and down here at the bottom we also found this section corner. Now, remember that the retracement surveyor found the section corner, the quarter corner, and section corner but did not find that witness point.

You have to decide what to do with that in reestablishing this quarter corner and section corner. So take some time, look through that and fill out that answer sheet and when you are done with that we'll come back and talk a little bit about closing corners and some other types of intermediate monuments.

Closing Corners

Next on our list is **closing corners**. Closing corners can be one of those things that can cause quite a few difficulties. So we are going to go through it and try to cover a lot of different though on what closing corners are used for and how they are used. Let's begin again with the definition from the glossary.

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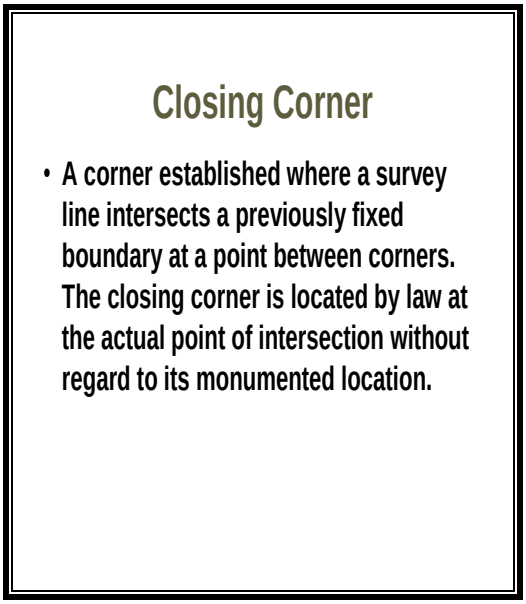
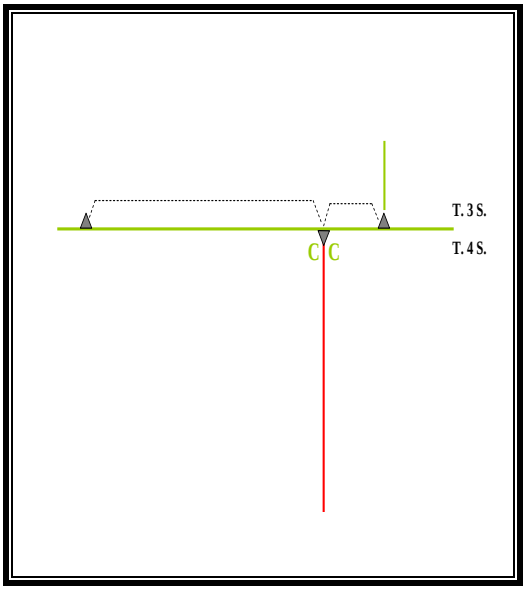
A closing corner is a corner established where a survey line intersects a previously fixed boundary at a point between corners.

The closing corner is located by law at the actual point of intersection without regard to its monumented location. So we have an existing line. We have another survey line that is going to intersect it at some point or try to terminate at that point and we have a monument set there. Now there are some other points about that.



Let's look at this. Here is the north boundary of a township. We have a section corner, a quarter corner north boundary. We are surveying the line from the south, this is a section line, we come up, and we intersect the boundary.



In the older Manuals prior to 1973 to establish a closing corner we only needed to tie one direction. So when this existing township boundary is there, the next then the surveyor that is surveying this section line going north, when they intersected that boundary they only had to make a tie in one direction.

They did not have to tie the corner off to the west here. Well so what does that do? Well what that means is that they have not really retraced the line that they are intersecting. They have only made it tie one direction. And the closing corner is not going to be on that senior line unless it just happens to be by luck that we got it there.

So really by definition, a closing corner is an approximation of where that intersection is. It clearly controls the direction of the section line coming up from the south, but it is really just an approximation of where the section line intersects that existing township line. In the 1973 Manual, the language changed, and it said, to establish a closing corner, we need to tie both directions.

Now it is no longer an approximation because we have retraced

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

that whole line and we know exactly where that line is and we have established the corner there. It is really in that situation becomes much more like a junior corner described in other places in the Manual.

And in fact in Alaska, where the majority of original surveys are done now. They have stopped calling these closing corners; they now call them section corners. It is a section corner of minimum control. It is only for the south but we have tied both directions.

So it is not an approximate intersection point we have calculated and we have surveyed all the lines we need. It is the true intersection point. And they have stopped calling them closing corners up there. So a closing corner up until 1973 Manual was an approximate intersection of the lines.

Now let's look at a few points about closing corners.

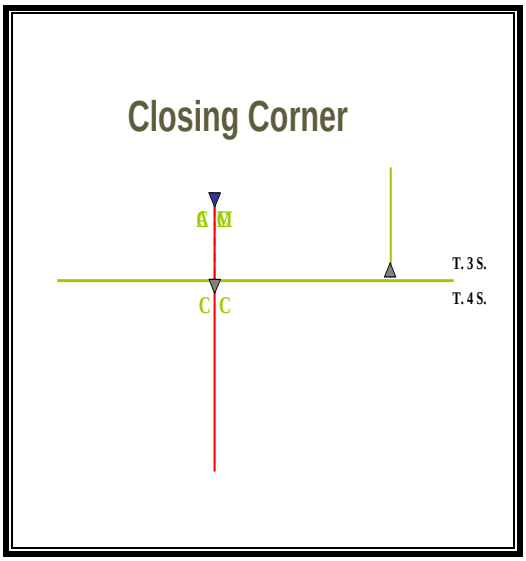
It is not always an intermediate monument because sometimes it is the terminus of a line like we just looked at there. It is a section corner for minimum control for one side only but it is controlling the section line. Lots were created and areas were returned against most closing corners.

That's important, as we will see as we go along. A recovered closing corner not actually located on the line closed upon will determine the direction of the closing line but not its legal terminus. Let's see what we mean there.

Closing Corner

- It is not always an intermediate monument.
- Lots were created and areas returned against most closing corners.
- A recovered closing corner not actually located on the line closed upon will determine the direction of the closing line, but not its legal terminus.

CONTROLLING INTERMEDIATE MONUMENTS – PART 2



We have a line. Originally the survey field notes say that this closing corner was established on that east west line. That is what the record says.

You show up today and you find the east west line and establish it and you find the original closing corner and it is north of the line. It is not on the line. It's up there 5 ft., 10 ft, 15ft, 20 ft., 20 links, 30 links. It is not on the line.

Well what the Manual was saying is the closing corner determines the direction of that north south line. It determines alignment of that north south line. But it does not determine its legal terminus. The legal terminus is where that north south line intersects the north boundary of the township. That is the legal terminus of the line.

So we are going to mark that original closing corner, we are going to make it an **amended monument**, we are going to calculate that intersection point and that is what is going to become the new closing corner position, the true closing corner. So the original monument will be marked AM for amended monument.

Now a lot of things have happened over the years, sometimes a monument was marked AM and buried. Sometimes it was marked AM and left in place and sometimes it was remonumented and the new monument was marked AM and the old monument was buried along side.

You'll find all kinds of different things that have happened but that amended monument position is important. We don't want to destroy it. It is important and you will see why in a little bit. But it is amended and we have the true intersection point and it now becomes the new closing corner and it is marked as a closing corner.

It is at the intersection. So the original closing corner controls the alignment of that section line but not its legal terminus.

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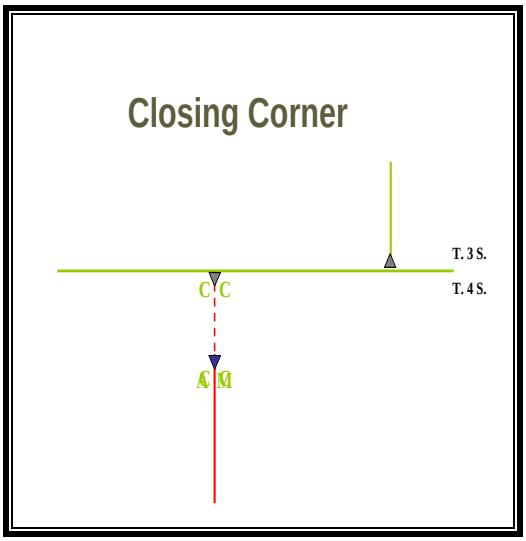
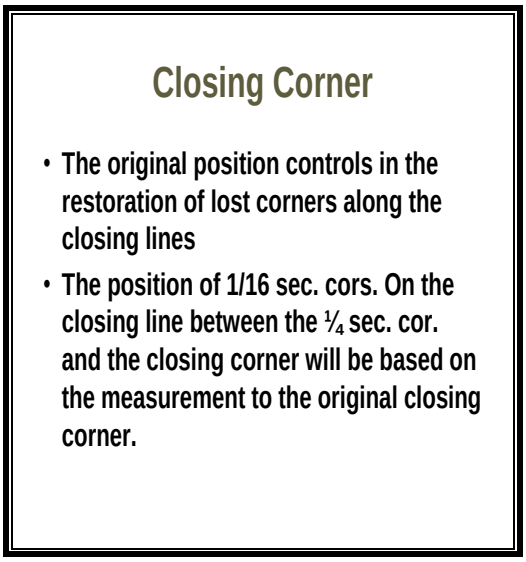
Of course the other thing that can happen is that we find it south of the line. Well we use a very similar procedure.

We extend the line through the closing corner up to intersection with the township line. We mark the original closing corner AM it is an amended monument now. The crossing closing corner now is the legal terminus of that line.

A few more points about closing corners.



The original position controls in the restoration of lost corners along the controlling closing line. The position of 16th section corners on the closing line between the one quarter section corner and the closing corner will be based on the measurement to the original closing corner.

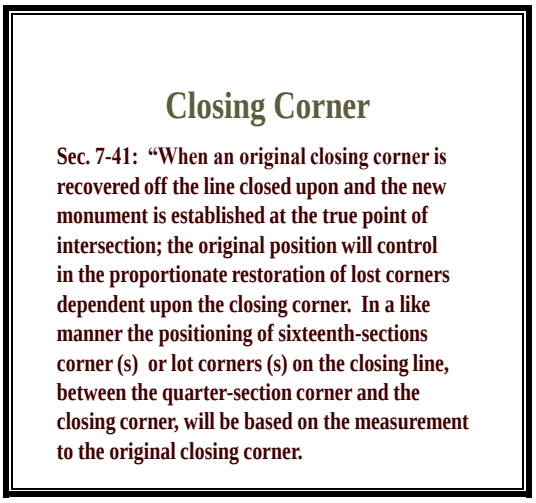


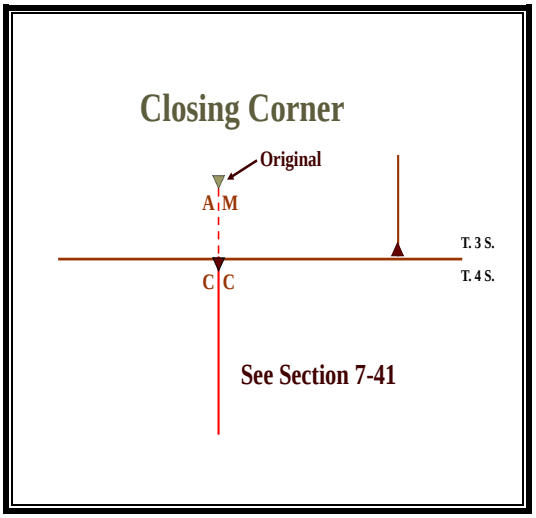
CONTROLLING INTERMEDIATE MONUMENTS – PART 2

Let's look at what the Manual says. Section 7-41, when an original closing corner is recovered off the line closed upon and the new monument is established at the true point of intersection the original position, now pay attention, will control in the proportional restoration of lost corners dependant upon the closing corner.

In other words closing corners along the line, on that closing line, not the line closed upon, but the closing line, that north south line, that original corner position is going to control in the proportionate restoration of lost corners depending upon the closing corner.

In a like manner, the positioning of 16th section corners or lot corners on the closing line between the quarter section corner and the closing corner will be based on the measurement of the original closing corner.
Let's look at what that means. If we go back to this situation where we have the original closing corner that was found north of the line, its marked AM right and the true corner position is marked CC, if we need to establish a 16th corner down here. What are we going to use for control?





What the Manual is saying, for control you are going to use the AM, the original monument, the AM position to control the 16th corner and if the quarter corner is lost to the south, you are going to use that amended monument, the original position, to determine your position proportionate positions for a quarter corner or 16th corner.

If you think about it, it makes a lot of sense because areas were returned against the original closing corner.

So if we are going to protect that plat, we need to use that original position to reestablish corners because that is was measured to and we need to use it to establish 16th corners or other corners along the line because what was lotted to.

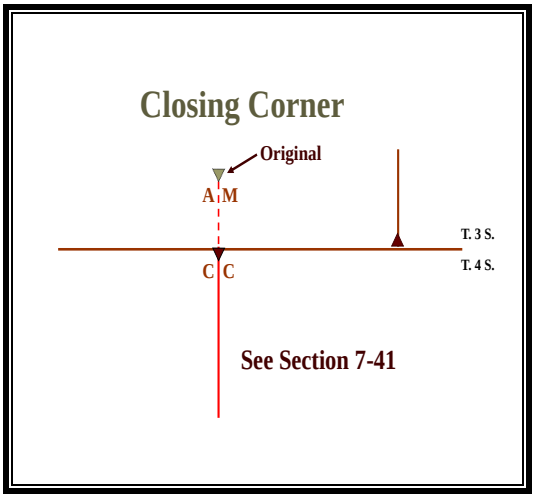
The Manual is very clear. That section of the Manual is very clear with that procedure, you use the original corner position if you are setting that north 16th along there. So the original is the one we

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

are going to use and section 7-41 is going to tell us how we are doing that.

The same thing if we have found the corner to the south. The original corner was found to the south. So we are going to use that original corner that is marked AM now to reestablish a south 16th or some other corner south on that line.

We are going to use it to reestablish the quarter corner, establish the 16th, anything along that line we are going to use that original corner position because that was the position that was measured to and that is the position that areas in lotting were returned to, original corner position, not the true intersection point.



Again, section 7-41 the Manual will explains that. Well, another situation that is not clearly explained in the Manual I believe is how are we going to determine the position for this quarter corner on the north boundary of section 2 when the original north east and North West corners of section 2 are both closing corners.

Almost always, not always, but almost always, that north quarter corner was not monumented. So the north quarter corner has never been monumented. The line is surveyed because it was surveyed when the township to the north was surveyed when that north boundary was surveyed.

This is a standard parallel here. So it was surveyed first standard corners were all set but when we surveyed those lines from the south north we set closing corners which makes the quarter corner for 35, that doesn't work for section 2 because there is this 8 chain offset between the closing corners for the south and the section corners for the north. That quarter corner for the south has never been monumented; its platted and in this case with section 2 it is going to be midpoint.

If we were over at section 6, it would be at some kind of proportion, even at some interior section 2s it might be at some kind of a proportionate position. You have to look at the plat carefully. Here it is at midpoint. So it is going to be at midpoint

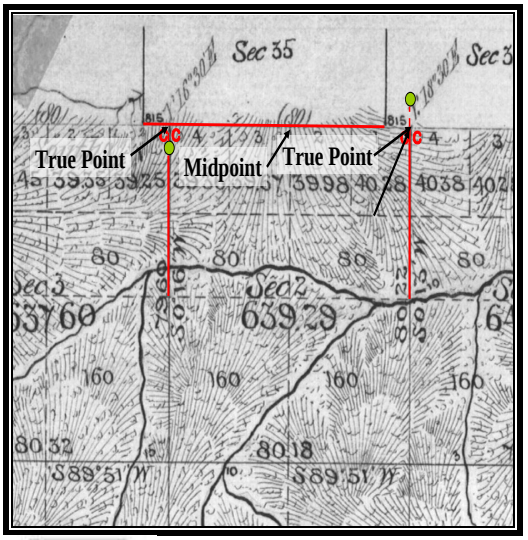


DIAGRAM **A full size version can be found in the Diagram section at the end of this study guide.**

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between the closing corners. But what are we going to use?

What happens if our closing corner over here to the east is found north of the line and the true point, we can calculate the true point. Because that's where that line intersects. And now over here to the west we find the original closing corner south of the line some distance and calculate it at true point.

What points are we going to use to determine our midpoint? Are we going to use the original closing corners? And normally there is not a lot of difference east west position between the closing corner, the original and the true point. But there are situations where the original closing corners can be significantly off the line and we can have a significant bearing.

It makes quite bit of difference. Again, the Manual doesn't give us specific directions, but the policy within BLM is to use the true corner point. So when we are determining the mid point position for this quarter corner, we are going to go at midpoint between the true closing corner positions and not the original closing corner positions.

Now right away you can see that could mean additional work, if I didn't really need to survey the east boundary or the west boundary, or whichever of those boundaries. How can I determine that true point? I would have to retrace the east boundary to get the true point of intersection with the boundary.

I would have to retrace the west boundary to get the true point of intersection with that boundary. If my survey that I am doing didn't really require me to do that, it can be quite a bit of extra work, and normally you are going to get the same answer whether you use the original position or the true point. But keep in mind that it can be different, if you have closing corners significantly off the line.

So I think that my advice to you would be that if the closing corners are significantly off the line then you are probably going to want to retrace that line and find out where the true point is. If they are very close and you do not in the rest of your survey do not have to retrace it, it is probably okay to use that original corner position and put at midpoint.

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You are going to get the exact same answer as if you used the true points. Within BLM, we use the true point; we run those lines, calculate those true points and put that corner at midpoint. Now that gives us its east west position. What about the line? What about the north south position? What line are we going to put it on?

Well, what is the controlling senior line here? It's the south boundary of section 35 so we are going to put that quarter corner for section 2 at midpoint between the true point for the closing corner of 1 and 2, the true point for the closing corner of 2 and 3 and on the line along the south boundary of 35. If we find the quarter corner it is going to be between the section corner and the quarter corner and if we don't it will be between the section corners.

It will be on that south boundary of 35, that senior line that established it. So it is important to remember what we are dealing with here in closing corners. They were approximations. It is important to know how we put them on line and then how that might affect where that quarter corner goes. So now let's go back and review that last exercise and see how we are going to use these corners.

Let's start with the corner of 4, 5, 8 and 9. And this is because we have that retracement in there this gets a little more difficult but let's look at what we might use there.

First of all, to the east, we are going to use the witness point, and remember on the original survey this was called the witness corner, however there was no distance given to the quarter corner, it was not witnessing any point out there, any corner out there, it was just the terminus. They stopped the line.

It was really a witness point even though it was called a witness corner. So this is a witness point, we are going to use that for the control to the east. To the west we are going to use the section corner. To the north we are going to use the original point for the closing corner. We are going to use the original closing corner position because that is what was measured to. We are not going to use the true point; we are going to use the original point.

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To the south, well this gets a little more difficult because remember our retracement gave us a distance to the quarter corner and to the section corner but no distance to the witness point. Remember the original survey says 1850, the retracement is 1890. So probably the best measurement in reestablishing this corner is to use the retracement all the way from this section corner, which means we are passing a control point, we are going to a farther control point but we are using the latest record.

So here I think we are going to use the latest record, the distance to the south, all the way down to the section corner. This recovered witness point is still of course going to control alignment but for distance we are going to use that latest retracement all the way to the section corner.

Some of you might want to argue with me on that a little bit, and we could have some long discussions about that I think. How about the quarter corner of 4 and 5. Well, it is single proportion between the reestablished section corner of 4, 5, 8 and 9.

And the original position again original position of the closing corner of 4 and 5. The north 16th between 4 and 5 and that is between the reestablished corner position and the original position of the closing corner. The quarter corner of 8 and 9. Well what are we going to use?

Well this witness point down here is going to control alignment but the north south position will be determined by the reestablished section corner and the original section corner. So we got a position here that controls alignment only and not distance. South 16th of section 8 only, and why do I say south 16th section 8 only?

If you go back and look at the retracement diagram and you look at the lotting you will see that it is. And it is at the witness point. There is no proportioning. Why is it at the witness point, because the original record said it was at 20 chains. It was at the position of the 16th so it is going to control.

South 16th of 9 only, if you go back and look at that retracement you will see that it is a proportion its going to be a proportion

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between the reestablished quarter corner, the section corner to the south but the witness point is going to control alignment because that is the original alignment along there.

The quarter corner of 5 and 8 well that is pretty straightforward. That is between the established corner 4, 5, 8 and 9 and the original 5, 6, 7 and 8. The key on this diagram I think is remember that we use the original closing corner up here, we don't use the true corner point.

Where we have a witness point or a witness corner that was originally at the 16th corner position, it is still going to mark the 16th corner position. We are not going to do some kind of proportioning that ends up with a 16th corner some place else.

I think that is a pretty good summary of how we are going to use closing corners how we are going to use witness points and witness corners. How those are going to play into things.

Now let's go to **crossing closing corners** and of course crossing closing corners first show up in the 1973 Manual.

There were no crossing closing corners talked about in any other manuals of course the monuments were being set, they were just being called something else.

The 1973 Manual was the first Manual to actually talk about it. So a crossing closing corner is a closing corner established where a line crosses another surveyed line. Pretty straight forward.

When one line crosses another it is really an intersection point, right? There are three types of crossing closing corners. Junior line crossing a junior line, in other words at the time the crossing closing corner is set, that is the original survey of both of those lines.

We are surveying both lines for the first time at the same time and we set a point where the lines intersect, junior line crossing a junior line.

Next we have a **junior line** crossing a senior line, this would be a situation where one line exists, the senior line and we are now

Crossing Closing Corner

- **A closing corner established where a line crosses another surveyed line.**
- **There are three types of crossing closing corners**

1. **Junior line crossing a junior line**
2. **Junior line crossing a senior line**
3. **Senior line crossing a senior line**

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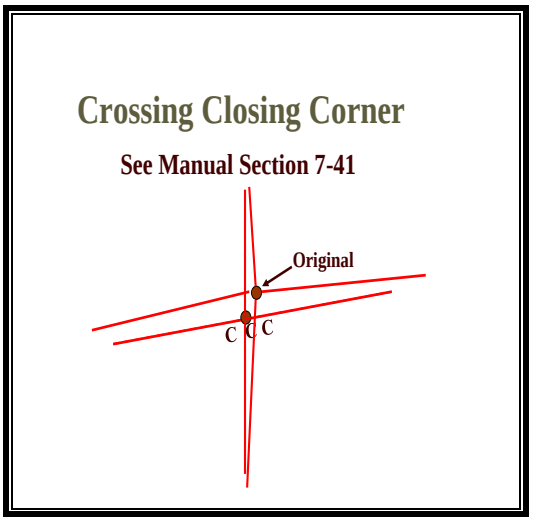
surveying a line for the first time that crosses that senior line and we set a crossing closing corner at the intersection. And the last is a senior line crossing a senior line. In other words both of these lines have been surveyed but they never set a point where they intersect.

The lines are both surveyed but there is no intersection set. This happens often on mineral surveys, where the mineral survey is surveyed but where the section line crosses it has never been monumented. So when that crossing closing corner is established, that is what we are talking about here.

The first situation, a junior line, here it is, this is one line and when this crossing closing corner was established both of these lines were being surveyed in the same survey, so the easterly westerly line and the north south line, both of these lines were established at the same time and the crossing closing corner was established at the intersection.



This survey was approved and now you are out there retracing this survey. So this is the record both lines were surveyed at the same time and the closing corner was set when these two lines were surveyed. You go out today and you find the original closing corner here.

You have retraced both of those lines. You've calculated the true intersection point of straight lines, of the true lines and you find the original closing corner to be somewhere off of those two lines. Let's think about what that closing corner was.

It was established when the north south line was run, right so it should control the bearing of that north south line because it was established at the time that that north south line was run and almost certainly areas were returned against it on that plat. It was

CONTROLLING INTERMEDIATE MONUMENTS – PART 2

also established at the time that the east west line was run. Both lines were run at the same time.

This point was established as an intersection between the two. So what are we going to do? It is going to control the alignment of both. It is still going to mark the intersection of the two lines.

The easterly westerly line is going to bend through it and the north south line is going to bend through it because it was established at the time that both of these surveys were executed. All right? Section 7-41 of the Manual explains that.

Let's go to the next one. A senior line and a junior line. So the senior line is in existence, It was an approved survey that was done 20 years ago, 50 years ago.

Later another surveyor came along and surveyed the north south line, retraced the east west line and established a corner where they intersect, the crossing closing corner. That survey is approved, now you come back. So the senior line was surveyed in one survey and the next surveyor came along retraced the senior line, surveyed the junior line and set a point of intersection.

You are the third surveyor. You come along retrace both lines, recover the original right here. What are you going to do? What does that control? What does that original position control? It is not on the north south line. It is not on the east west line. Well, let's think about that. It was established when that north south line was surveyed for the first time. Right? It is a monumented point of that line. So it should control the north south line, the junior line.

But can it put a bend in the senior line? Well, no that senior line already existed. So we don't want this junior survey to put a bend in that senior line. Since this controls on the junior line but it doesn't control on the senior line.

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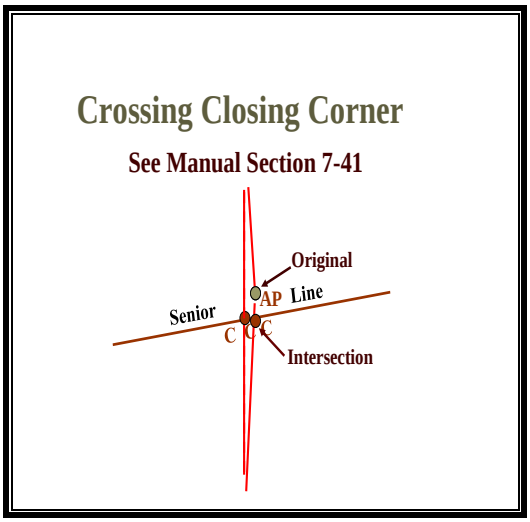
What happens is that original crossing closing corner becomes an angle point in the junior line. That is what it does, it controls the junior line. And the true intersection point is monumented down here. That is the true intersection point.

That is where the junior line crosses the senior line and we don't want to put a bend in that senior line. So when we have a junior survey crossing the senior line then that original crossing closing corner only controls one of the lines.



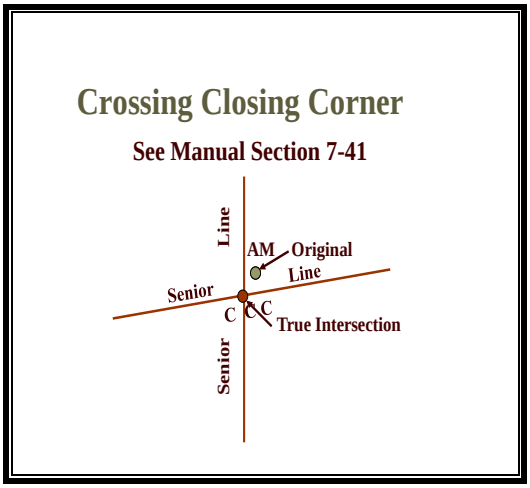
In the first example, when we had junior crossing junior, the crossing closing corner controlled both lines. Now we have a junior line crossing the senior line and that crossing closing corner controls only the junior line.

Now let's look at the senior lines. Again, section 5-41 of the Manual explains this. So now let's look at a senior line, that is an existing line and a senior line.

So, here both of these lines have been surveyed but there is no intersection point. The intersection point was never established.

There was no crossing closing corner. No intersection. These lines just cross. So a second surveyor after both of these lines have been surveyed comes out and sets a crossing-closing corner. This survey retraced both lines, set a point where they intersected, a crossing closing corner. That's the record. Now it is your turn.

You get here and you recover the original crossing closing corner. It is not at the intersection. You have retraced the senior lines, you've found the original crossing closing corner. It is not at the intersection. So now what? What does it do? Well it is amended. Because what happens.



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It does not really control either line because we have an existing senior line going east west, we have an existing senior line going north south and we are not going to bend those lines through this junior survey.

So that original closing corner actually doesn't control anything. Now it can be used to reestablish a lost corner maybe. We have ties. You know it is good survey information.

It is a monumented point. We want to keep it. Because it's tied to other things but it doesn't necessarily monument the true intersection point there. Now let me say this about all three of these situations. When I am talking about the closing corner not being at the true intersection, I am not talking about a very minor technical difference.

I am not talking about a situation where this crossing closing corner was set in 1940 and we come along today and retrace it and we find it a half a foot off line. We don't need to move these corners all the time, especially in this situation. Remember that a normal closing corner is an approximation of the terminus of the line because we only retrace one way. These crossing closing corners, we have retraced both lines.

We have retraced both lines, we have determined an intersection point and monumented it. If a later surveyor comes along, he is going to want to amend that if that original survey is grossly erroneous or there is fraud or something, not just for very minor technical differences.

We don't want to be moving corners over and over again because we keep measuring a little better and a little better. And I am not going to tell you how far that minor technical difference is, that is something that you might want to talk with your BLM office, your BILS, or some other CFedS who are experienced boundary surveyors, talk with some of those people and see what they think if you get into a situation like this.

Because we don't want situations where we have corners just a few tenths apart that are supposed to mark the same corner.

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With that let's move on to some other types of monuments. And I am going to go through these a little bit more quickly.

The first group that we talked about each of those have a very specific rules, some very specific procedures associated with it and some very specific historical perspectives associated.

This next bunch that I am going to talk about, we have kind of lumped in here and I want to talk about them but they can be a lot of different ways that they can be used. When I talk about **angle point**, I can't be real specific about how angle point might be used. It might be used in a lot of different ways. How **mile posts** can be used. Maybe a lot of different ways.

So these that I am going to talk about now, it is really important that you thoroughly read the field notes, know how it was established what it was established to do and then determine how it should be used in reestablishing or establishing corners. So let's just talk about a few of them. We will go through these kind of quickly.

Well, you have noticed that our one crossing closing corner that was off the line, it became an angle point. Remember that, so that is a way for angle points to show up. You are going to find angle points on reservation boundaries, on grant boundaries sometimes, you are going to find angle points where a line tree was originally recovered and we have a bearing break there now, maybe the line tree is long gone but there is a monument there as an angle point.

So we have to look at the history of each monument that is called an angle point and determine how is should be used in reestablishing corners or establishing corners.

If you are careful to look through the history, it normally becomes pretty clear how it should be used. Many times it is very similar to a line tree. It is not going to be shown on a plat sometimes, sometimes it is.

Usually it is going to because you have a bearing break there. So you usually have distances and bearings shown on the plat, but often areas are not returned to it. It is just there so you need to look at it carefully see what it is and then make your determination

Other Types of Monuments

- **Angle Points**
- **Lot Corners**
- **Mile Posts**
- **Intersection Points**
- **Corners of Minimum Control**
- **Aliquot part corners established subsequent to the original survey**

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about how it should be used. Lot corners.

Many lot corners are very similar to aliquot part corners, 16th through 64th corners. Sometimes there are not and in lot corners we could mean both. Government corners that were set to mark the boundary of a government lot.

We also might mean corners in a residential subdivision that have been set by a local surveyor or private surveyor under state authority and we might have all kinds of lot corners along the line. So we need to look at those.

How have they been used, who has used them, how were they established those kinds of things to then determine, do they control any proportioning along the section line, how are we going to use those corners whether they are those filed in the county, done under state authority, or lot corners that mark aliquot parts or other lots, on the federal side, those filed in the federal record. You have to look at that record very clearly to determine how they should be used.

Mile posts. Mile posts will show up on reservation boundaries, state boundaries, sometimes along large parcels like a grant, something like that. Even in Alaska, some mile posts on large US surveys. Mile posts also on **reservation boundaries**, sometimes follow the section lines.

So you might have section corners and quarter corners and in between them have mile posts and half mile posts. Well, what are they? Look at the record. When did they get there? Are they senior? Are they junior? Do they tie to all the other corners? Are all the areas returned against them? Ask all of those questions.

Make sure you know the answer to all of those and then decide what control these mile posts exercise in this specific situation. We really can't talk about mile posts or lot corners or angle points as a whole because the history of each one is so unique.

Whereas line trees, meander corners, crossing closing corners, witness corners, witness points. We have some with set procedures and their history is different.

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Intersection points. One of the things that you will see that is many times a corner that is exactly the same as the crossing closing corners we were talking about earlier are called intersection points.

Everything about theme is the same, the procedure, we can have them where junior lines cross senior, where seniors cross seniors, where juniors cross juniors. But instead of being called crossing closing corners or closing corners, they are called intersection points.

Well, what it is called doesn't change what it is. Read the record. Look at the plat and determine what it really is and then we that is going to tell us what procedure to follow in reestablishing corners or establishing corners where we have recovered intersection points.

Prior to the 1973 Manual when we started talking about crossing closing corners, many times the term intersection point was used or we just called them closing corners. Even though technically it was according to the 1973 Manual it was a crossing closing corner.

Look at that record and see what it really is. **Corners of minimum control**, these are situations where we have corners for one side of the line and in a different location we have corners for the other side. Commonly along the north and west boundary.

Here again, we need to look at when the corners were set, what corners tie to what corners. When patents were issued, when did it leave the federal government? What is the ownership status? When is the survey in relation to when land left? And there is some good discussion of that in the case book. So corners of minimum control are those who controls for only one side of the line.

And each one of those you always have to look at what is the history of it. How did it get there? When did it get there? Did the surveyor retrace all of the senior lines? Was all of the land federal at the time that that minimum control corner was established? All of those types of questions have to be asked before we can decide does it control the alignment? Does it not control the alignment?

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Are we going to reestablish corners with it? Does it control for distance?

We need all of that information before we can decide that. So again, this is another corner that I guess is an intermediate monument sometimes.

But we really need to look at the record. The last one, this is an issue that has come up more and more as we continue to resurveys of resurveys. Aliquot part corners established subsequent to the original survey. So let's say we have an original survey that sets the section corners, quarter corners, returns a normal section.

Later the section lines are retraced and a south 16th corner is established. The surveyor retraced the line properly, used the proper procedure and now we have a south 16th corner. And you then in a later retracement recover that south 16th corner.

Well, what kind of control does it exercise? Can we reestablish corners from it? Does it control alignment? What are we going to do with it? Again it has to do with how was it established? When was it established? What was the status of the land at the time it was established? Was it done properly?

Again, we are not just talking about federal surveys. But we are talking about all surveys. There are a lot of monuments out there. We need to look at each one. Look at the record. Decide what kind of control it should exercise and how it should be used and the only way to do that is that is carefully examining the record. Then comparing it to these other standard things like closing corners, witness corners, line trees.

All of these that we have set procedures for. Look at how these were established; what the records say about these and that will help us decide how they should be used. Well, we've covered a lot of information and we have covered it fairly quickly.

The Manual I think does a pretty good job of explaining much of this and there are portions that you have been assigned to read in your reading assignments.

Another place to find some good information is the history book.

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It has some good examples of line trees, closing corners and witness corners. So look through that when you have a chance and I think that will help just clarify some of the information that we have talked about.

Conclusion

So our objectives in the beginning were to identify the control exercised by intermediate monuments for the restoration of lost corners. I think that we have done that.

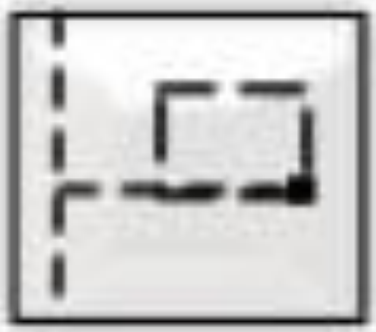
We need to kind of build on that and we have some exercises to do that. Identify the control exercised by intermediate monuments when establishing lower order corners such as 16th and 64th corners. Remember that 1988 memo changed some things about how they may have been done before 1988 and after 1988. And last identify situations, which may be exceptions to the general rule. And as we looked at that last group of monuments, many of them are not really a standard procedure; there may be exceptions we may really have to work at how they can be used in control and exactly how they function.

Well, I hope you have enjoyed this session and I hope you have a better understanding of how these intermediate monuments should be treated, how they should be used in the restoration and establishment of corners.

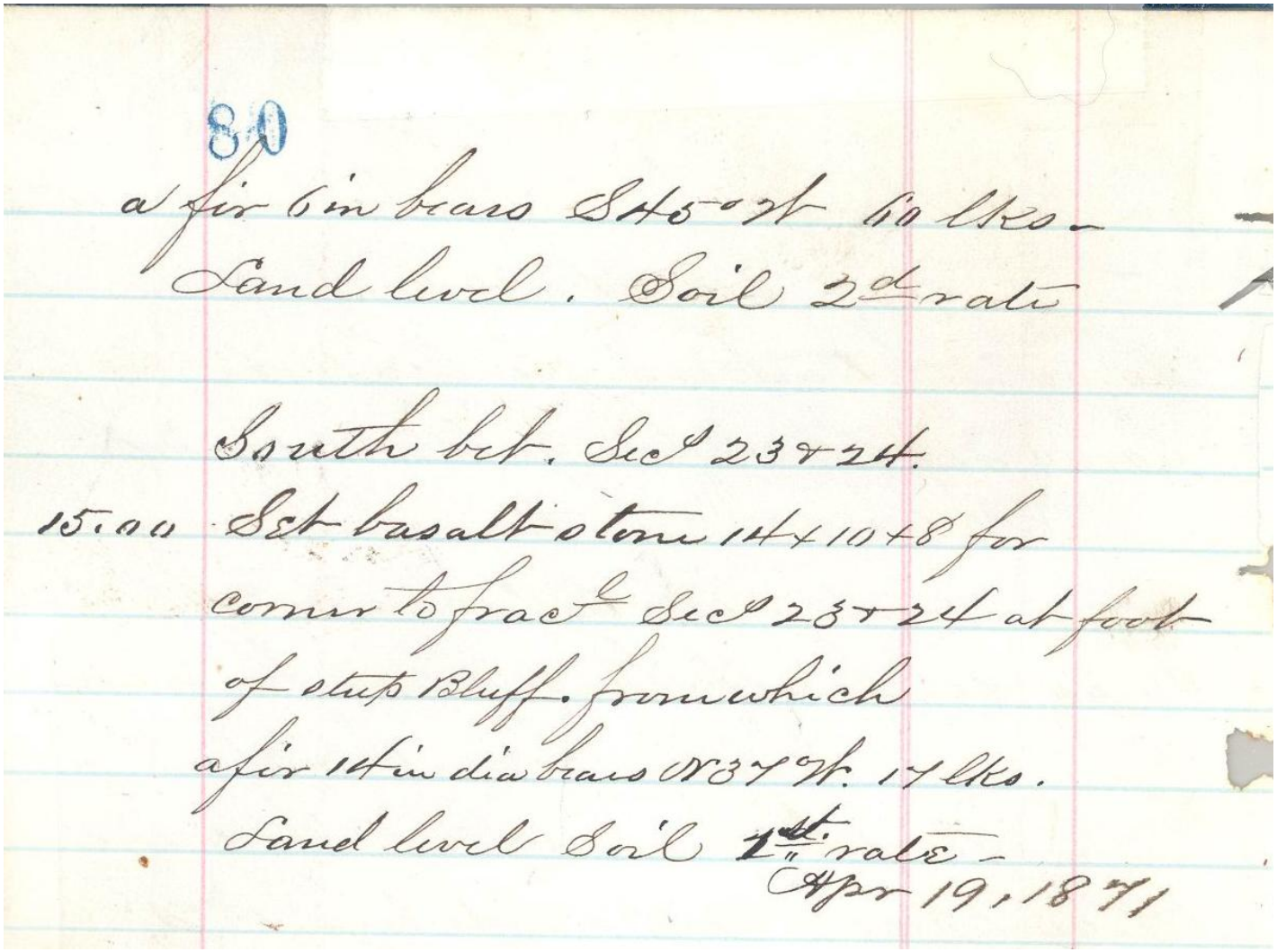
LESSON OBJECTIVES

- **Identify the control exercised by intermediate monuments for the restoration of lost corners.**
- **Identify the control exercised by intermediate monuments when establishing lower order corners, such as 1/16 and 1/64 section corners.**
- **Identify situations which may be exceptions to the general rule.**

It's time to take the Course 2 Quiz which you can access from the CFedS website.



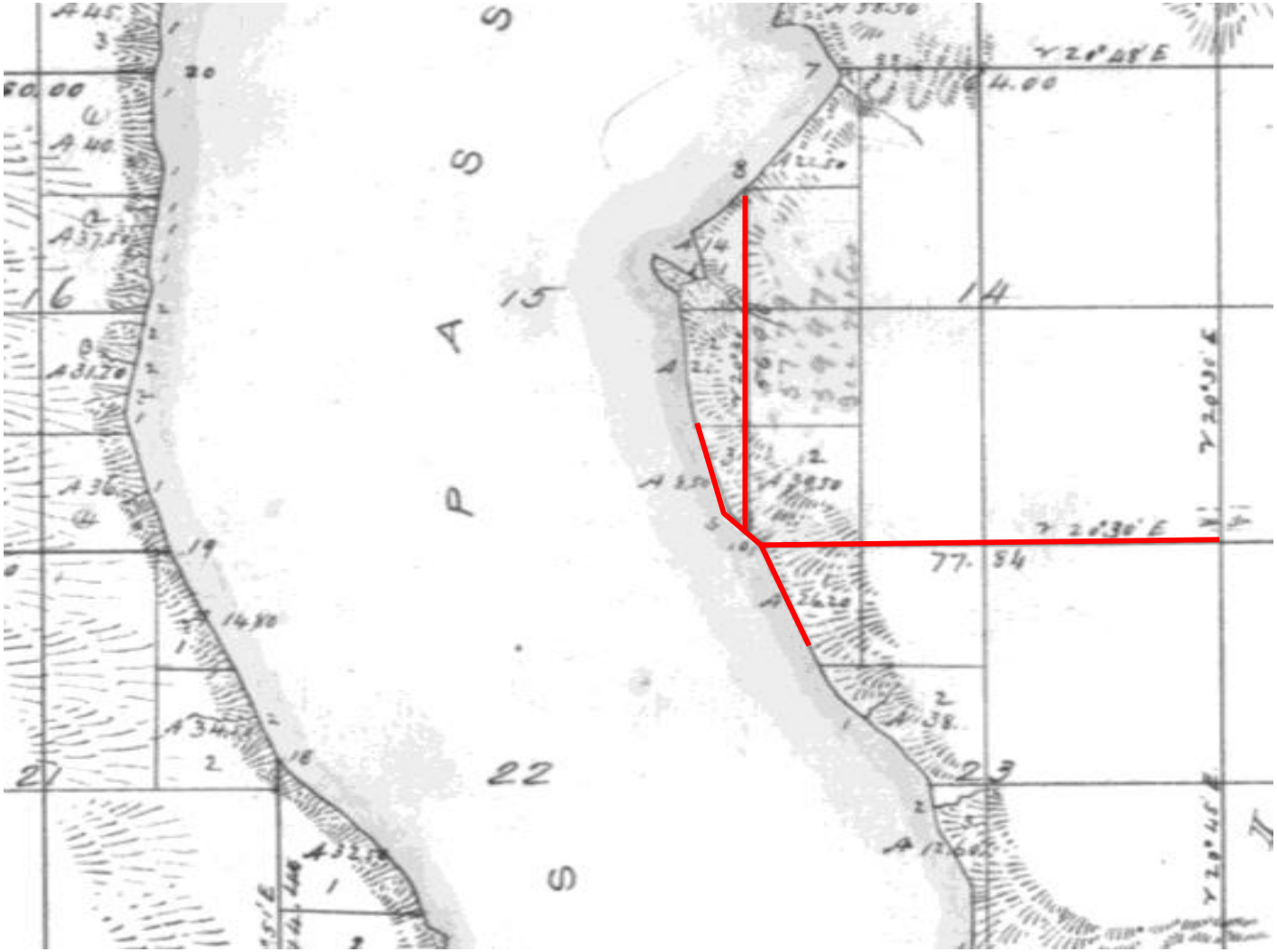
DIAGRAM



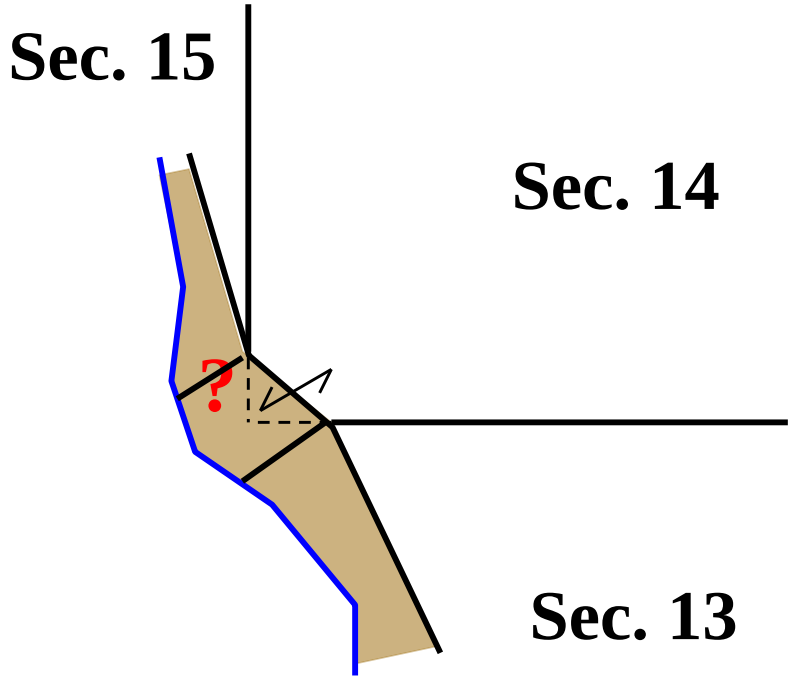
80

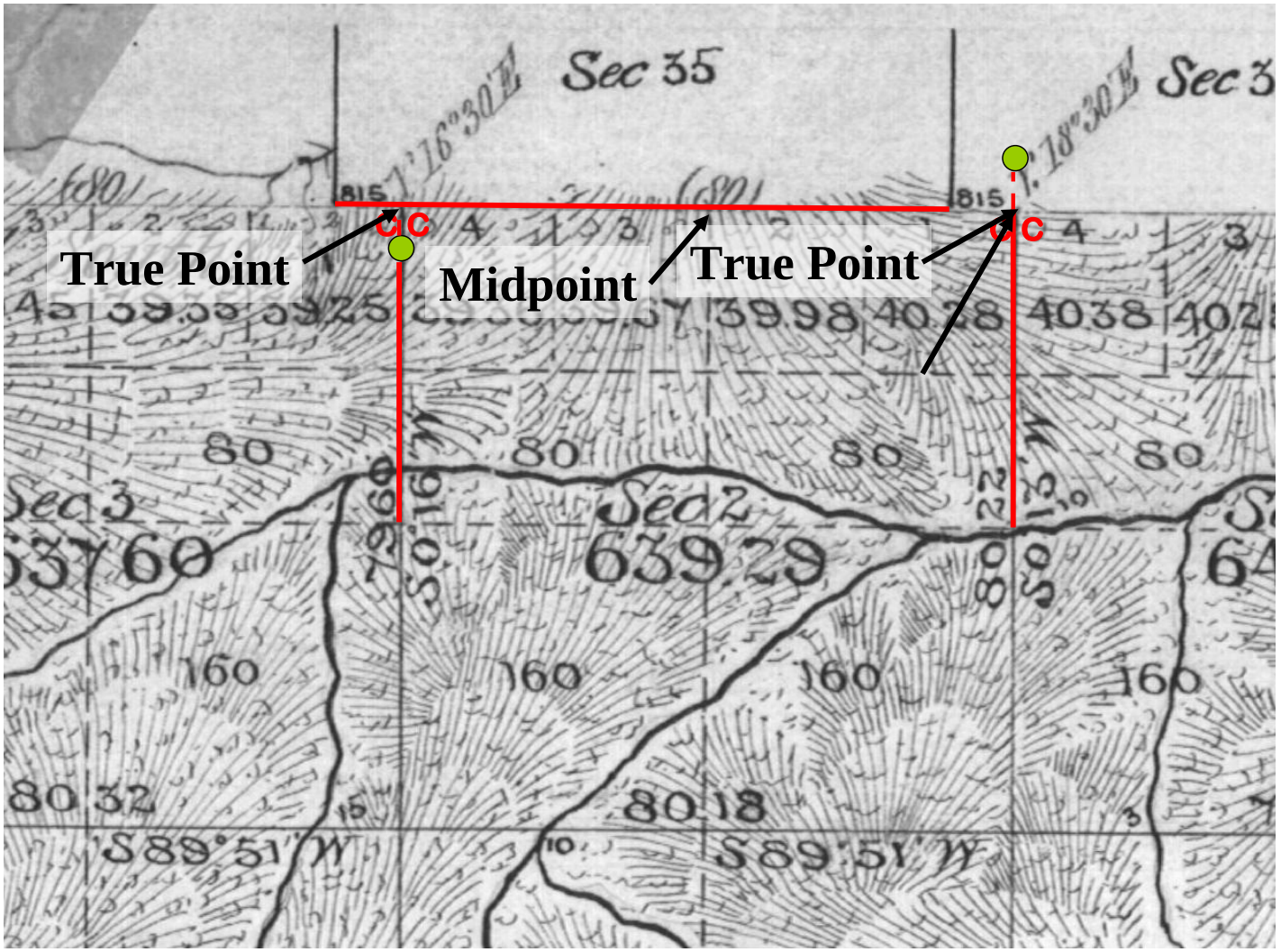
a fir 6 in brass S 45° W 60 lks -
Sand level. Soil 2d rate

South bet. Sec 23 & 24.
15.00 Set basalt stone 14 + 10 + 8 for
corner to fract Sec 23 & 24 at foot
of steep Bluff. from which
a fir 14 in dia brass N 37° W. 17 lks.
Sand level Soil 1st rate -
Apr 19, 1871


P A S S
15
14
22
77.84
4.00

Meander Corners




True Point
Midpoint
True Point
Sec 35
Sec 3
815
815
C/C
C/C
80
80
80
80
160
160
160
160
639.29
80 32
80 18
S 89° 51' W
S 89° 51' W

EXERCISE

PROBLEM #1

Corner of Sections 7, 8, 17, and 18:

Method _____

Control _____

_____

_____

_____

M.C. Left Bank Sections 7 and 18:

Method _____

Control _____

_____

M.C. Left Bank Sections 7 and 8:

Method _____

Control _____

_____

N 1/16 Section Corner of Sections 7 and 8:

Method _____

Control _____

W 1/16 Section Corner of Sections 5 and 8:

Method _____

Control _____

_____

M.C. Left Bank Sections 5 and 8:

Method _____

Control _____

_____

S 1/16 Section Corner of Sections 7 and 8:

Method _____

Control _____

_____

N 1/16 Section Corner of Sections 17 and 18:

Method _____

Control _____

_____

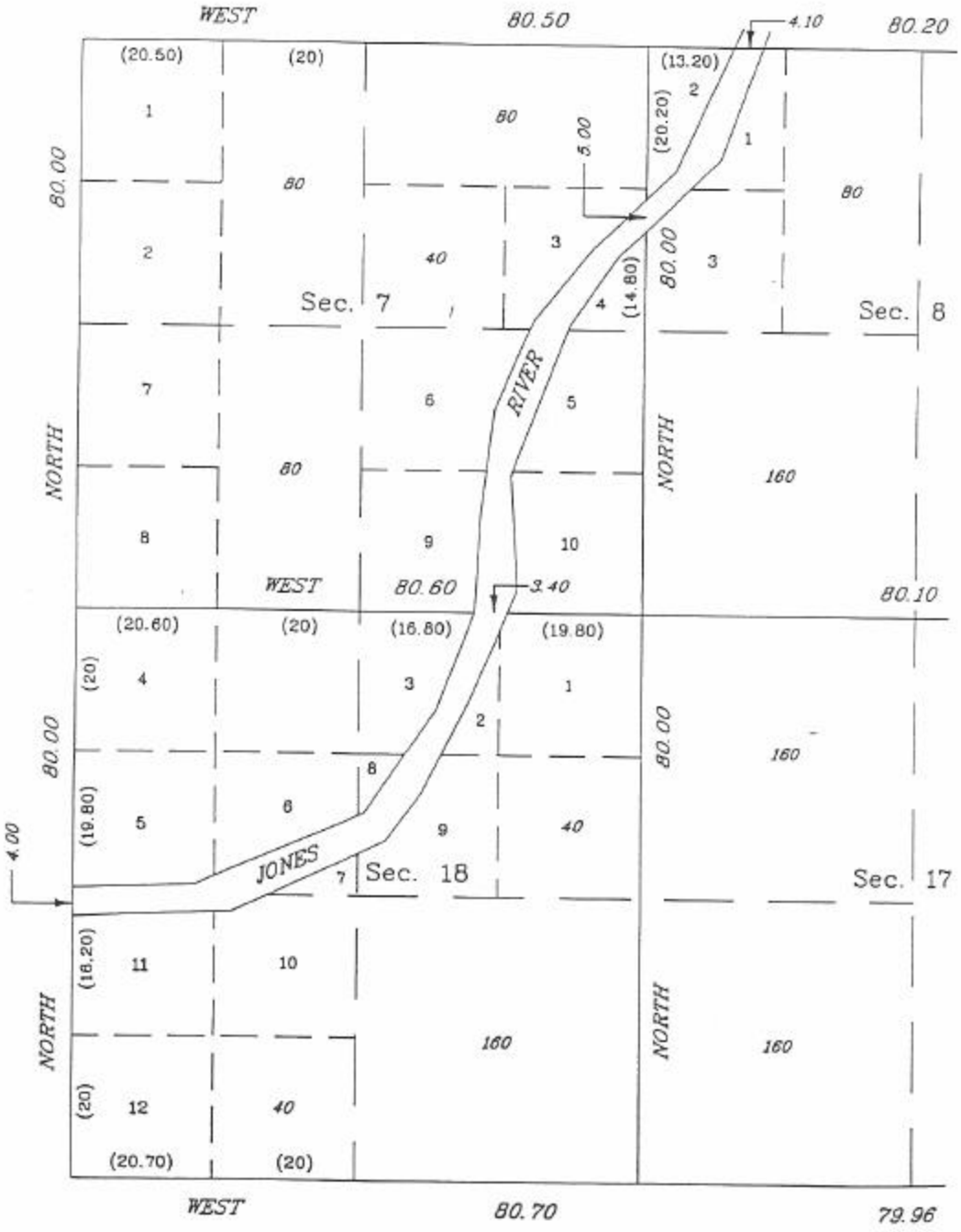
W 1/16 Section Corner of Sections 7 and 18:

Method _____

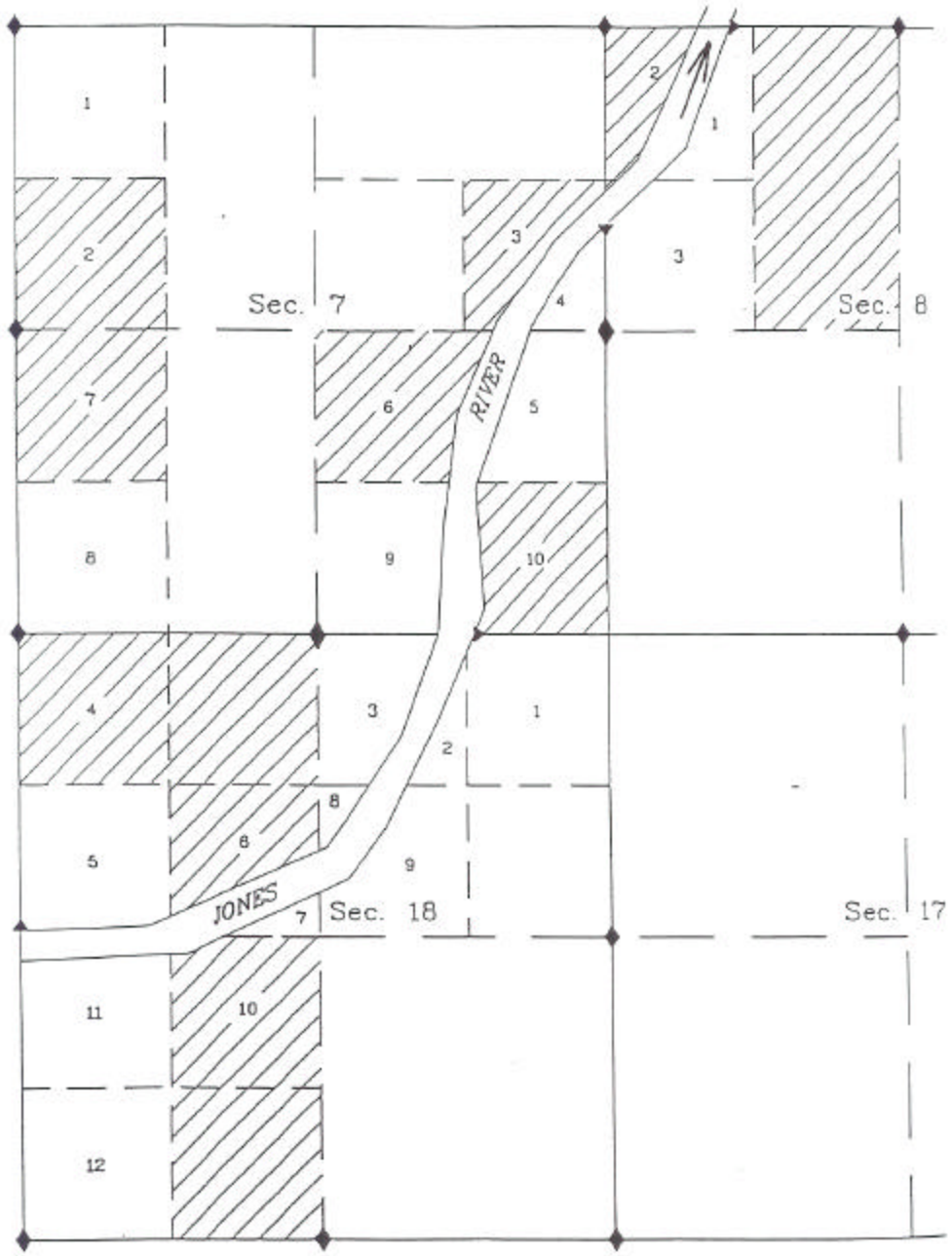
Control _____

_____

ORIGINAL PLAT



STATUS and RETRACEMENT



PROBLEM #1

Proper Procedure for Reestablishing/Establishing Corners

1) **Corner of Sections 7, 8, 17, and 18:**

Method - Double proportionate measurement
Control - ¼ sec. cor. of secs. 17 and 18
¼ sec. cor. of secs. 7 and 8
¼ sec. cor. of secs. 8 and 17
M.C. right bank secs. 7 and 18

2) **M.C. Left Bank Sections 7 and 18:**

Method - Single proportion
Control - M.C. right bank secs. 7 and 18
¼ sec. cor. of secs. 7 and 18

3) **M.C. Left Bank Sections 7 and 8:**

Method - Single proportion
Control - M.C. right bank secs. 7 and 8
Corner of secs. 5, 6, 7, and 8

4) **N 1/16 Section Corner of Sections 7 and 8:**

Method - Single proportion
Control - M.C. right bank secs. 7 and 8
Corner of secs. 5, 6, 7, and 8

5) **W 1/16 Section Corner of Sections 5 and 8:**

Method - Single proportion
Control - ¼ sec. cor. of secs. 5 and 8
M.C. right bank secs. 5 and 8

6) **M.C. Left Bank Sections 5 and 8:**

Method - Single proportion
Control - M.C. right bank secs. 5 and 8
Corner of secs. 5, 6, 7, and 8

7) **S 1/16 Section Corner of Sections 7 and 8:**

Method - Single proportion (midpoint)
Control - ¼ sec. cor. of secs. 7 and 8
Reestablished cor. of secs. 7, 8, 17, and 18

8) **N 1/16 Section Corner of Sections 17 and 18:**

Method - Single proportion (midpoint)
Control - ¼ sec. cor. of secs. 17 and 18
Reestablished cor. of secs. 7, 8, 17, and 18

9) **W 1/16 Section Corner of Sections 7 and 18:**

Method - Single proportion (use parenthetical distances 20.00 and 20.60)
Control - ¼ sec. cor. of secs. 7 and 18
Corner of secs. 7, 12, 13, and 18

PROBLEM #4

Corner of Sections 4, 5, 8, and 9:

Method _____

Control _____

_____

_____

_____

¼ Section Corner of Sections 4 and 5:

Method _____

Control _____

_____

N 1/16 Section Corner of Sections 4 and 5:

Method _____

Control _____

_____

¼ Section Corner of Sections 8 and 9:

Method _____

Control _____

_____

_____

_____

S 1/16 Section 8 Only:

Method _____

S 1/16 Section 9 Only:

Method _____

Control _____

_____

_____

_____

¼ Section Corner of Sections 5 and 8, and

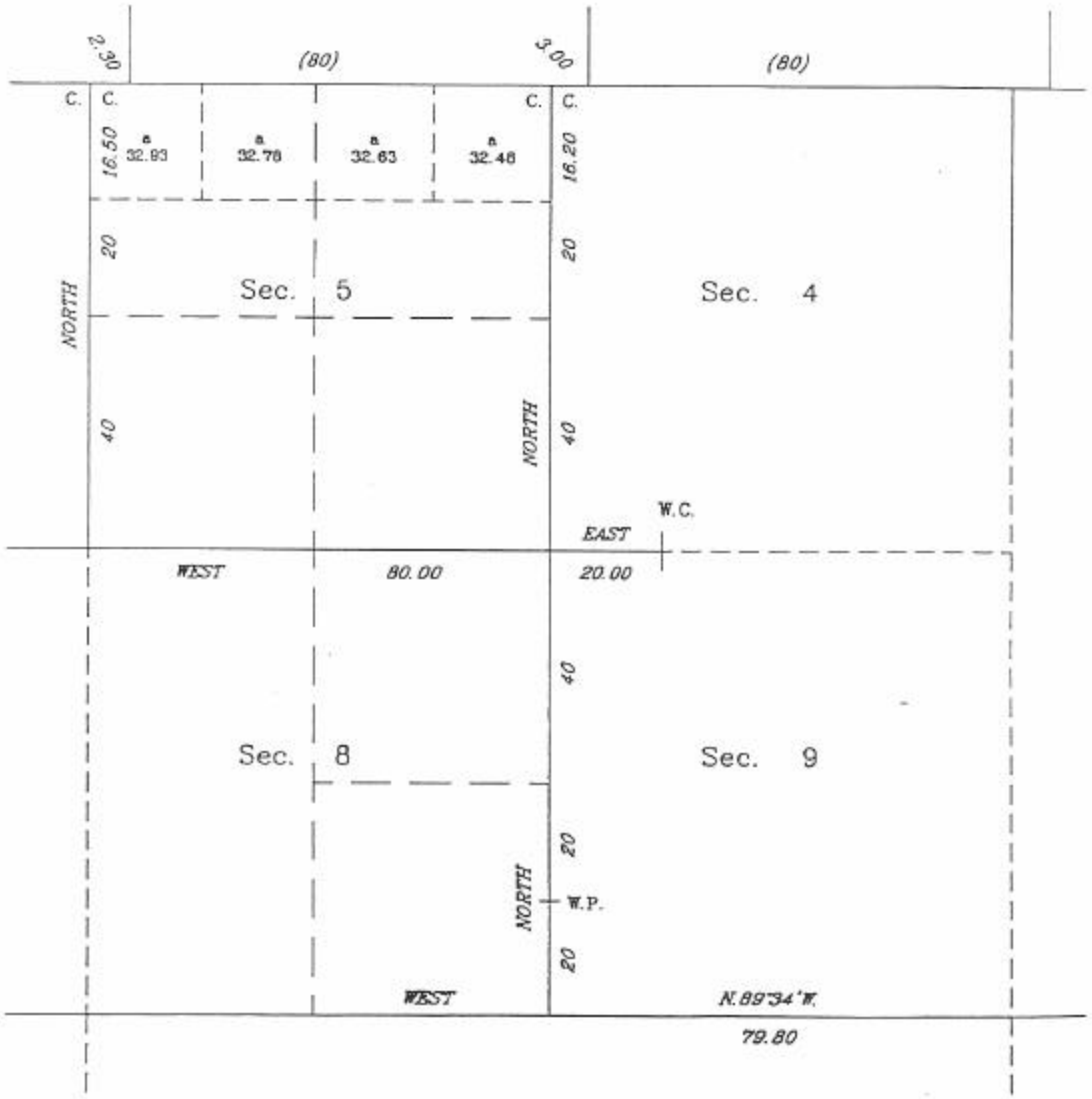
E 1/16 Section Corner of Sections 5 and 8:

Method _____

Control _____

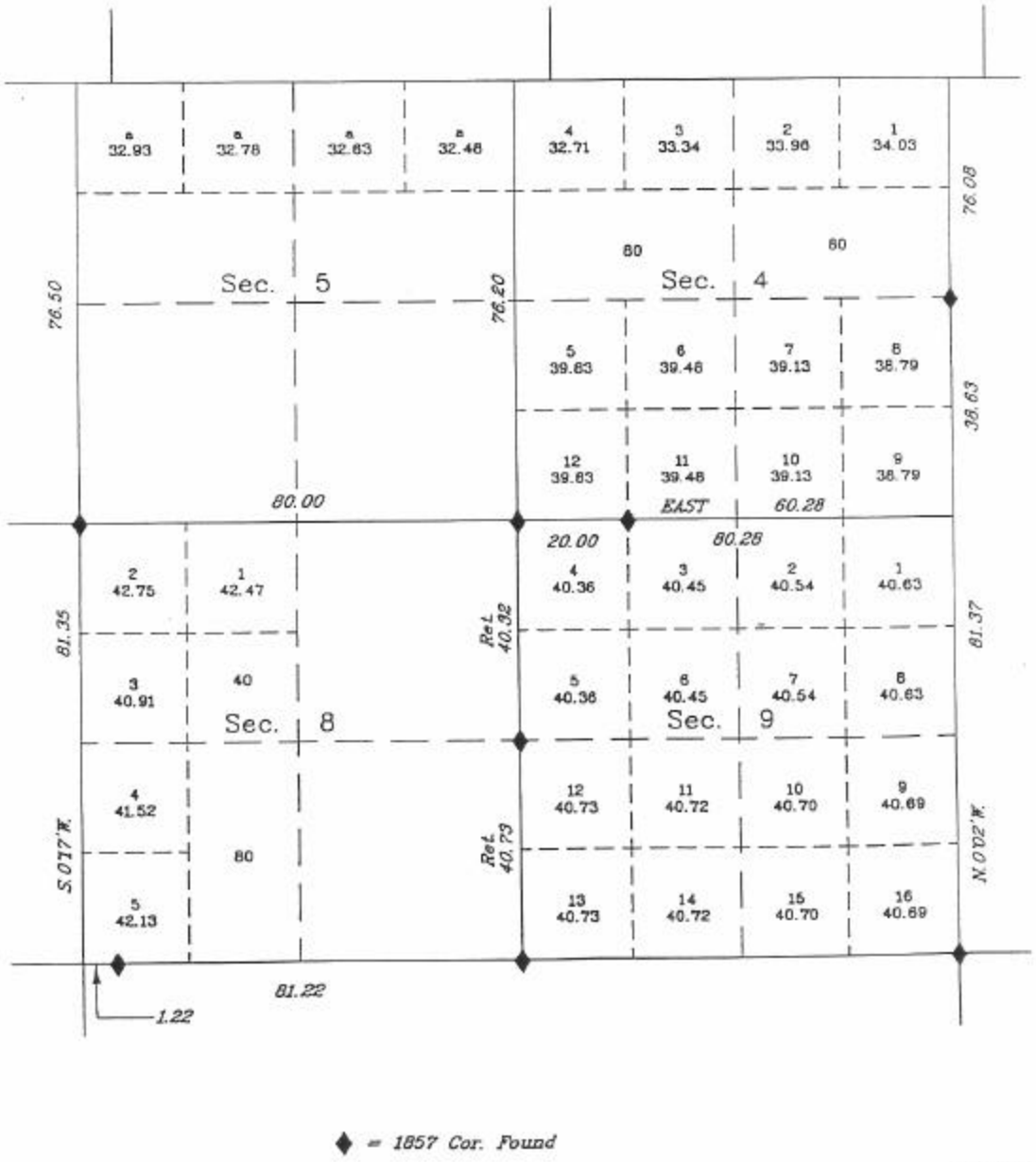
_____

ORIGINAL 1857 SURVEY



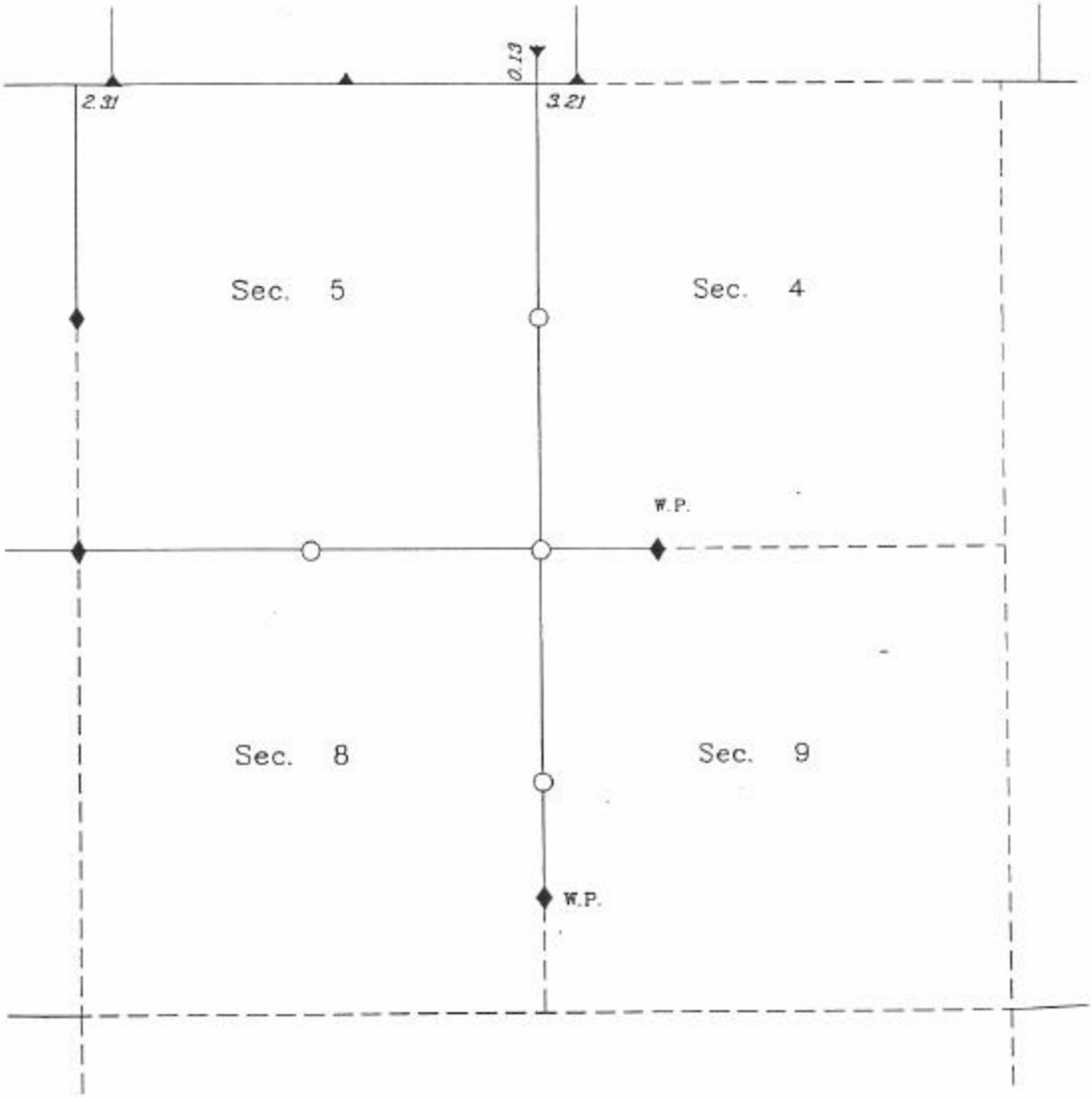
PROBLEM 4-1

COMPLETION SURVEY 1893



♦ = 1857 Cor. Found

RETRACEMENT DATA



PROBLEM #4

Proper Procedure for Reestablishing/Establishing Corners

1) Corner of Sections 4, 5, 8, and 9:

Method - Double proportion
Control - W.P. secs. 8 and 9 or
- Cor. of secs. 8, 9, 16, and 17
- CC secs. 4 and 5 (original position)
- W.P. secs. 4 and 9
- Cor. of secs. 5, 6, 7 and 8

2) ¼ Section Corner of Sections 4 and 5:

Method - Single proportion
Control - Reestablished cor. of secs. 4, 5, 8, and 9
- CC secs. 4 and 5 (original position)

3) N 1/16 Section Corner of Sections 4 and 5:

Method - Single proportion (use parenthetical distances of 20.00 and 16.20)
Control - Reestablished ¼ sec. cor. of secs. 4 and 5
- CC secs. 4 and 5 (original position)

4) ¼ Section Corner of Sections 8 and 9:

Method - Single proportion
Control (latitude) - Cor. of secs. 8, 9, 16, and 17
- Reestablished cor. of secs. 4, 5, 8, and 9
Control (line) - W.P. secs. 8 and 9
- Reestablished cor. of secs. 4, 5, 8, and 9

5) S 1/16 Section 8 Only:

Method - At the W.P. because it was originally located at 20.00 chs.

6) S 1/16 Section 9 Only:

Method - Single proportion (midpoint)
Control (latitude) - Cor. of secs. 8, 9, 16, and 17
- Reestablished ¼ sec. cor. of secs. 8 and 9
Control (line) - W.P. secs. 8 and 9
- Cor. of secs. 4, 5, 8, and 9

7) ¼ Section Corner of Sections 5 and 8, and E 1/16 Section Corner of Sections 5 and 8:

Method - Single proportion
Control - Reestablished cor. of secs. 4, 5, 8, and 9
- Cor. of secs. 5, 6, 7 and 8

NOTE: The closing corner of sections 4 and 5 must be moved southerly onto the controlling line.