

Back to the Basics - The Public Land Survey System

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PLS System Presentation Goals

- You will know what it is.
- You will know why it is important.
- You will know how to research the records.
- You will know what you are looking for.
- you will believe you can find the corners.

Why do we (you) care?

- ORS92.600
- ORS209.200
- ORS209.250 (3) d
- Page 11, ODOT Survey Filing Map Standards

RULES

- For any survey that involves a stamped filed map, or transfer of land we must tie a PLS corner either directly or by tying a subdivision etc. corner.
- At a minimum, legally we need one such corner per Township.

Brief History of the System



- THE LAND ORDINANCE OF 1785.
- 9 Statute 496, Sept. 27, 1850
 - Willamette Meridian
 - Donation Land Claims
 - 1st Manual of Surveying Instructions

How the survey was done:

- Starting in 1851:
- Survey the Will. Meridian & Baseline
- Run additional E-W Standard Parallels
- Layout Townships
- Subdivide townships.
- Survey previously settled areas first.
- Gaps and Misalignments

Township Subdivision:

6	63	5	4	7	4	34	3	23	2	12	1
-62	-61	-60	-59	-58	-57	-56	-55	-54	-53	-52	-51
7	66	8	45	9	32	10	21	11	9	32	
-54	-53	-52	-51	-50	-49	-48	-47	-46	-45	-44	-43
10	57	17	43	16	54	15	19	21	7	33	
-44	-43	-42	-41	-40	-39	-38	-37	-36	-35	-34	-33
19	54	20	34	21	28	22	17	23	54	21	
-33	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22
30	51	29	37	28	26	27	15	26	17	25	
-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11
31	48	32	35	33	34	34	13	35	2	36	

A Note on Accuracy:

- Equipment was a solar compass or transit, and a 66' Gunter's chain
- Rate was a few \$\$ per mile on the contract.
- Townships typically were complete in less than 2 weeks (60 miles of line, 85 corners m/l).
- Don't expect modern survey accuracy - 1 in 5000 was an acceptable closure for a rural chained survey in Oregon up into the 1960's.

Survey Method

- Line was run with a solar instrument and flagmen
- A chaining crew would follow. The rear chainman keeping the head chainman on line
 - Chainmen were expected to memorize topo calls
- A corner crew would follow everyone else, setting corners

Monuments and accessories



What was set

- 1851 and subsequently
 - If a tree occupies the corner position, mark it.
 - Squared, marked post where available.
 - Marked stones in rocky country.
 - Pits and mounds where nothing else is available.

What was set

- There is often a combination of types
 - *Get and Read the original notes!!!!*
- Original stones are often still there. Pits, posts and mounds are very obscure, usually not obvious.
- This all happened 100+ years ago. Be ready to evaluate unrecorded evidence.

Bearing Trees & Objects

- Bearing trees, when available, were to be set
- They will be in the notes.
- Other objects occasionally are noted, rock outcrops, etc.
- Manual of Instructions, Chapter 4 covers B.T.s

Line Trees, Topography Calls

- Line trees were to be marked and noted.
 - If found, they are considered monuments.
- Topographic features on line were to be called.
 - Exercise discretion before using topo calls.

Preserve the evidence



- This upper face was opened with an axe.
- The face has been destroyed.
- Faces will pop out if done correctly.

Research sources

- County Surveyor
- Local BLM offices
- BLM Public Room, Portland Office
 - (503)952-6001
- Bonneville Power Admin.
 - (360) 619-6475
- Other Gov't Agencies
 - USFS, USBR, Corps of Engineers, BIA, etc.

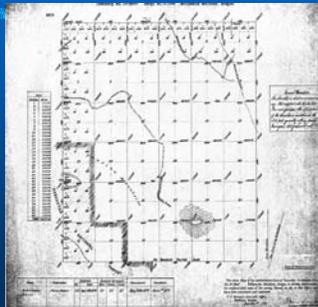
Case Study

- BLM Right of Way Grant Borrow Source
- NE1/4 NW1/4, Sec. 12, T20S, R16E, Deschutes Co.
- No ODOT record of any surveys.
- We need the four 1/4 corners plus the NW Sec. Corner located for the boundary.

Research

- ODOT Dwg. 2B-28-19 indicates NW & NE Sec. Cor. Found in 1938.
- County Surveyor -
 - No record surveys, no Corner Restoration notes.
 - Do get copies of the GLO notes.
- BLM Portland office will send a floppy w/ GCDB Coordinates.
- Terra-server web-site shows no physical improvements.

GLO Plat of Township



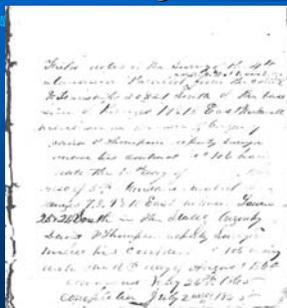
- Official survey returned
- Shows distance, direction & gov't lots.
- Chart at the bottom
 - surveys performed to date
 - contract number
 - deputy surveyor
 - date

Rectangular Survey Index

SECTION	CONTRACT	ISSUED IN	DATE	DEPT. SURVEYOR	DATE OF SURVEY
1	100	1850	10/10	DAVID THOMPSON	1850
2	100	1850	10/10	DAVID THOMPSON	1850
3	100	1850	10/10	DAVID THOMPSON	1850
4	100	1850	10/10	DAVID THOMPSON	1850
5	100	1850	10/10	DAVID THOMPSON	1850
6	100	1850	10/10	DAVID THOMPSON	1850
7	100	1850	10/10	DAVID THOMPSON	1850
8	100	1850	10/10	DAVID THOMPSON	1850
9	100	1850	10/10	DAVID THOMPSON	1850
10	100	1850	10/10	DAVID THOMPSON	1850

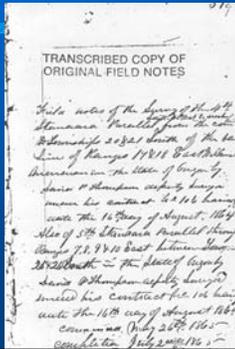
- This is photo 1 on sheet 1 of the microfilm records.
- Lists all official surveys of the Township.
- Shows what notes are in what volume.
- You must check all the notes for resurveys. You might be surveying a superseded record or looking for a wrong monument.

Title Page, 1865 survey



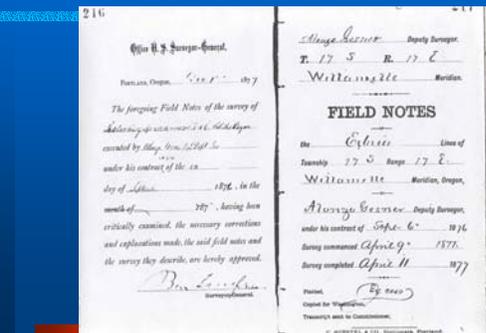
- A very good example of the quality of copy you will be dealing with.
- David Thompson, deputy surveyor, 1865

Transcription of the same page



- When the originals are extremely poor, a clerk will often transcribe them.
- Use the transcription to enable you to read the original. You will sometimes find errors.

First Page, Gesner survey



How to read the notes.

- Notes use a standard format and language - a narrative style of survey.
- The surveyor runs North, sets a 1/4 corner, North, sets a section corner, East on a random setting a temporary 1/4 corner, West on a true line setting the corrected 1/4 corner.
- Out on a random, back on a true for closing miles.
- Topo calls, etc. are noted where they fall
- Corners are described when they are first set.
- The index shows what line is noted on what page. Use the original page numbers.

Search



- Take the right tools
- Hand Held GPs
- Wire Brush
- Shovel
- Handyman Jack
- Someone to use the shovel and jack if you get stuck.

Number one rule

- When you get where you think you're close - **STOP AND LOOK FIRST!!**
- An undisturbed corner will look artificial in an undisturbed area if you are looking for it.
- Quite often they have an accessory of some type, a rock ring, a mound, maybe a cruiser's mark on a tree.
- If you run around flipping rocks out of the ground and tearing stumps apart, when you can't find the corner its already too late to stop and just look.

Initial GPS Search

- What should have been found wasn't.
- Went North on Range line, found likely corner 500' out of position.
- Quit for the day.
- Colleague suggested wrong map datum.

Regroup and Re-search

- 1938 highway map had corner ties.
- Crew found two pins, computed position.
- Found E1/4 and NE corner within 10'.
- Calculated rest of section @ GLO record.
- Found west line.
- N 1/4 destroyed by ODOT quarry.

East 1/4 corner, Section 12



West 1/4 corner, Section 12



Bibliography/References

- Manual of Surveying Instructions, 1973
- Restoration of Lost or Obliterated Corners & Subdivision of Sections
- A History of the Rectangular Survey System

The more things change, the more they stay the same. USC&G crew - No. Carolina, 1935.....

