



PLINES & POINTS

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A tract of land approximately six feet by seventy feet in Lot 4, Sec. 7, Twp. 43 N. R. 98 W. 6th P.M. described as follows: There is on the north bank of Owl Creek, Hot Springs County, Wyoming, a marked boulder stone 2x6x12 with cross on top and "SWC" cut on the North side and 76 ft. from which stone there stands a meander witness tree "T 43 N R 98 W S 7 MC B T" bearing W. 76 ft. from which stone there stands a marked "T 43 N R 99 W MC".

Commencing N. 2° E., boulder 22.4 ft. 2° S. marked NE of Woodruff chain at which top a distance West with beginning.

Commenced described to a point, S. 2° W. 1 chain bank of Owl Creek marked with a cross stands a witness tree 6 ft. distant NE on which there is marked a cross; thence West with the meandering of Owl Creek to the place of beginning.

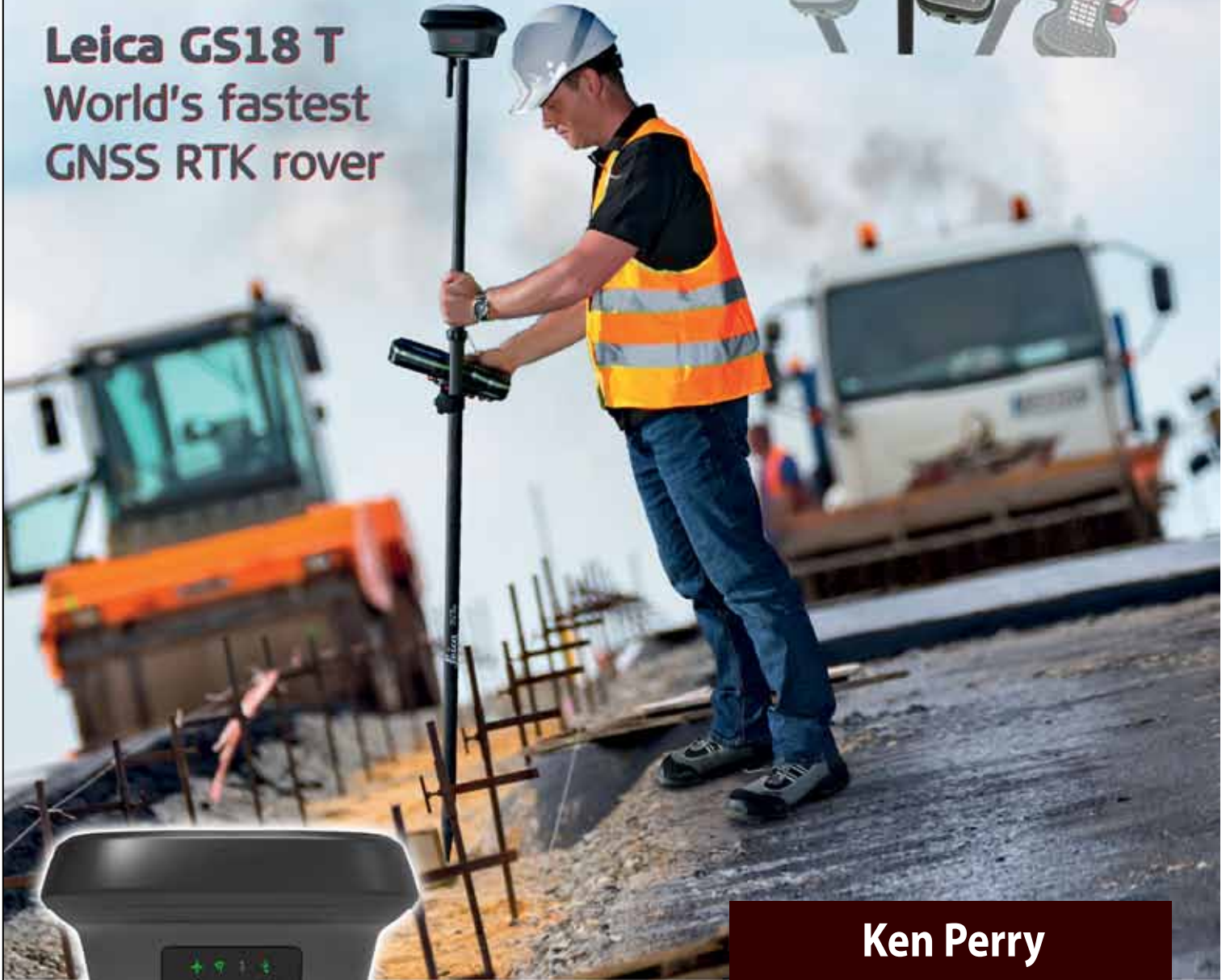




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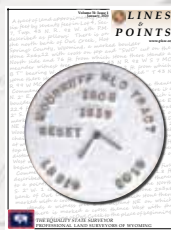
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On The Cover

Rebar with aluminum cap marking the northwest corner of the Woodruff Cabin Tract.

Photo by Rick Hudson

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For more information please contact Jack Studley.

PLSW (Professional Land Surveyors of Wyoming; PO Box 8, Cheyenne, WY 82003) is a statewide organization of Land Surveyors registered to practice in the Equality State of Wyoming. PLSW is dedicated to improving the technical, legal, and business aspects of surveying in the State of Wyoming. PLSW is affiliated with the National Society of Professional Surveyors (NSPS) and the Western Federation of Professional Land Surveyors (WestFed).

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PRESIDENT'S MESSAGE

I would like to thank you all for the vote of confidence to sit as the President of this organization. It is truly an honor and privilege to serve in this capacity for the PLSW. I will do my best to assist the membership in any way that I can. Just let me know if there is something I can do to help you all out across the state. I would like to congratulate Matt Gotham for being elected as President-Elect and to Jack Studley for being the Secretary/Treasurer again.

For those that had the ability to attend the WES convention this year, it was nice seeing you. It was the 100 year anniversary and it appeared well attended. They are talking of adding the surveyors to the name and are asking for input on classes you might want to see. If there are suggestions for this please get them to your BOD to submit at the board meeting or send me an email so we can pass it on. We are a vital part of the WES convention and need to give our input so we can make sure we are reaching the topics and desires of the membership there as well as at the fall technical session.

At the meeting we heard that Dennis Dawson was having poor leg circulation and looking at surgery, so I ask that you all keep him in your thoughts and prayers. Past President Suzie Sparks is now in charge of the Scholarship

committee and doing a great job. She has been able to get all new applicants, once approved, the gift of a new BLM manual! Thank you Suzie! President-Elect Matt Gotham has finished the sand box project! and we are searching for a trailer to haul it around, and be able to utilize this in the Survey outreach programs around the State. We are still looking for some banners to go with this setup, but it should be available here shortly if you need it for presentations. The Southeast Chapter is in possession of a high resolution scanner and are scanning field books so they can be accessed at one location. If you wish to assist or want more information on this project please contact that Chapter at this point. This should be a benefit for all of Wyoming and will need some assistance from several of the members before its completed. Also, the board of directors are looking into a system to accept credit card payments for dues and fall tech session fees. We feel this would improve dues coming in and assist in the ease of Fall tech payments.

I hope that due to all the current events surrounding the Coronavirus that everyone is taking the proper precautions to stay safe. As they say, we should be practicing social distancing; all I think of is summer will be upon us soon and hopefully we will all be out hiking the hills looking for corners. After all this is the dream of all Land Surveyors that I know! Take care my friends and enjoy what we do, as we are truly blessed.

Brad Neumiller, PLS

President - Prefessional Land Surveyors of Wyoming

P.S. I hope all your stones are clearly scribed and the trees are straight and alive!



ANNOUNCEMENTS

CONGRATULATIONS!

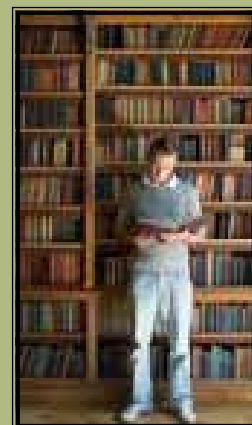
The members of the Professional Land Surveyors of Wyoming would like to recognize the achievement of the following new Wyoming registrants:

| | | |
|--------------------|---------------|----------|
| Michael Harding | Littleton, CO | LS 17647 |
| James Powers | Okl. City, OK | LS 17689 |
| Timothy B. Wiswell | K.C., MO | LS 17690 |
| Timothy S. Ellis | Lexington, KY | LS 17692 |
| Zane R. Flowers | Powell, WY | LS 17698 |
| Patrick W. Gilroy | Victor, ID | LS 17730 |
| Kevin Martin | Denver, CO | LS 17742 |
| Gary Ollie | Douglas, WY | LS 17763 |

APPLY NOW FOR A PLSW SCHOLARSHIP

If you are attending college with the intent of pursuing a career in Land Surveying in Wyoming, we want to give you money!

A Scholarship Application is available on our website
<http://www.plsw.org>



Wyoming State Parks Unveils New Monuments and Markers Map

Wondering what those historic markers along the highway are all about? Never have time to stop as you drive by at highway speeds? Wyoming State Parks and Cultural Resources announces a new and searchable Monuments and Markers Interactive Map at <https://wyoparks.wyo.gov/index.php/home-mm>.

The GIS-based database contains a profile for each of the 1,000-plus monuments and markers, including the name, longitude/latitude and a description of the significance to Wyoming history or prehistory.

In addition, approximately half of the markers also contain a photograph of the monument or marker. The program will greatly aid the public searching for information on geological features, historical events and people who have shared Wyoming's rich history, be it for educational, tourism or other purposes.

Wyoming's Monuments and Markers Program operates through a partnership between State Parks and Cultural Resources, Wyoming Department of Transportation, Wyoming

Office of Tourism, local governments, tribes, and private individuals and organizations.

The program is one of the oldest in the nation.

At a time when thought to mark history, interested and concerned residents of Wyoming realized the need to commemorate the past and began placing monuments and markers that served to preserve a piece of the state's heritage.

For more information, contact Wyoming State Parks Monuments and Markers Coordinator Dan Bach at 307-777-6314 or email him at dan.bach@wyo.gov.

Source: Wyoming Tribune Eagle; Friday 14 February 2020; page A-4.

LINES AND POINTS ARTICLE ROTATION SUBMISSION SCHEDULE BY CHAPTER

| Responsible Chapter | First Call Date | Last Call Date | Publication Date |
|-----------------------|--|-------------------|------------------|
| Northwest Chapter | THANK YOU!! (SEE "WOODRUFF CABIN TRACT RETRACEMENT" IN THIS ISSUE) | | |
| West Chapter | June 1 | June 15 | July 1, 2020 |
| Central Chapter | September 1 | September 15 | October 1, 2020 |
| South Central Chapter | December 1 | December 15, 2020 | January 1, 2021 |
| Southeast Chapter | March 1 | March 15 | April 1, 2021 |
| Upper Platte Chapter | June 1 | June 15 | July 1, 2021 |
| Southwest Chapter | September 1 | September 15 | October 1, 2021 |
| Northeast Chapter | December 1 | December 15, 2021 | January 1, 2022 |

WHERE ARE THE PROFESSIONALS?

by Curtis Clabaugh

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Are the epic battles between the engineering surveying and planning/GIS professions beginning to resurface with emerging technologies fueling the fire? I believe they are with changes in technology being the driving force.

The new tools allowing for the capture of data are likely to bring about changes to all the disciplines. I believe educational requirements, industry regulation, statutory requirements and registration of qualified individuals need to be advanced to resolve issues amongst the professions.

The technologies used in data collection today have allowed for almost magical black box solutions in surveying and mapping to flourish. Drones, or unmanned aerial systems, handheld devices providing both ranging and imagery capabilities, software developments providing solutions for photogrammetry and lidar, and changes in the speed of collection with advancements in lidar and photogrammetry have opened several new opportunities. These same advancements have also given non-professionals a pathway to encroach on areas requiring direct supervision by a qualified professional.

Quality issues, or in my world precision and accuracy, are becoming more complicated as new digital data capture technologies develop. Quantity issues derived from speed of collection using drones, mobile lidar, and improved camera systems allow pixel and point data to be at millions of points per second.

At the same time these systems have become more user-friendly. In doing so they provide opportunities to a host of new users that can generate results without the education and training that once were required with the more traditional tools of the trade.

I believe there is a growing disconnect between being able to produce black box results and ensuring professional responsibility for the work. Having the skill set to understand the details of the project, being able to resolve issues, make recommendations and being in compliance with regulatory requirements should be paramount.

The requirements to be a licensed professional were established to protect the public, not to protect the profession. Professional licensure is the standard recognized by the public as an assurance of the minimum skills and ability to provide the accepted quality and responsibility for the work.

So, here are a few of my opinions and observations about problematic conflicts.

I believe that the land surveying community has at times been too focused on boundary work and not as much about being the geospatial measurements and data collection experts. Legally and professionally they are the recognized people licensed to perform those activities.

It is completely understandable when the end user of GIS products finds data in public records which may be construed to represent property boundaries. We have seen that argument made repeatedly in point – counterpoint articles.

Where I see the growing problem is when the creation of maps and georeferenced databases representing the location of assets such as buildings, roads and other man-made features, along with topographic features are not collected under the supervision of recognized and legally responsible professionals. These 3D georeferenced databases may have been collected by non-professionals and then the derived products provided to the public or used internally within organizations can appear to be survey grade products.

The collection and associated metadata should support the preparation and perpetuation of field note records and maps depicting these features to allow for certification of positional accuracy of maps and/or measured survey data. A disclaimer statement should provide product users a clear distinction concerning the quality of the measurements used to create survey grade products, versus general mapping/GIS products.

With the desire to establish viable asset management solutions, many agencies have turned to the planning groups who use GIS as the mechanism to catalog and inventory data. When used for general planning purposes, this is typically the proper approach. The problem arises when the information is extracted and used for a higher accuracy application that it was not intended for and most likely it wasn't collected by a professional capable of signing and certifying the work.

A stronger relationship between the surveying and mapping community and the GIS community would be the first step in addressing this long-standing problem. Each group truly has an important role that they play in the use of geospatial data.

The next step would be the collaborative effort of both the surveying and GIS groups to have their deliverable products for planning or engineering indicate the differences. To use information derived from the GIS world to perform engineering project development, designers need to know the quantitative quality of the data and the level of professional involvement that was used such that one application is building on the professionalism of the other.

The adage about “collect once and use many times” is becoming much more prevalent with today's technologies. Aerial platforms have multiple sensors capable of collecting lidar and imagery simultaneously. Mobile lidar systems also use these same sensors but may also include sensors used for pavement analysis or sensing of underground features. The advantage to these multiple sensor solutions is to not only support asset management applications, but to also support engineering solutions if properly controlled. A substantial reduction in survey costs can be obtained by using survey grade equipment and professional involvement up front.

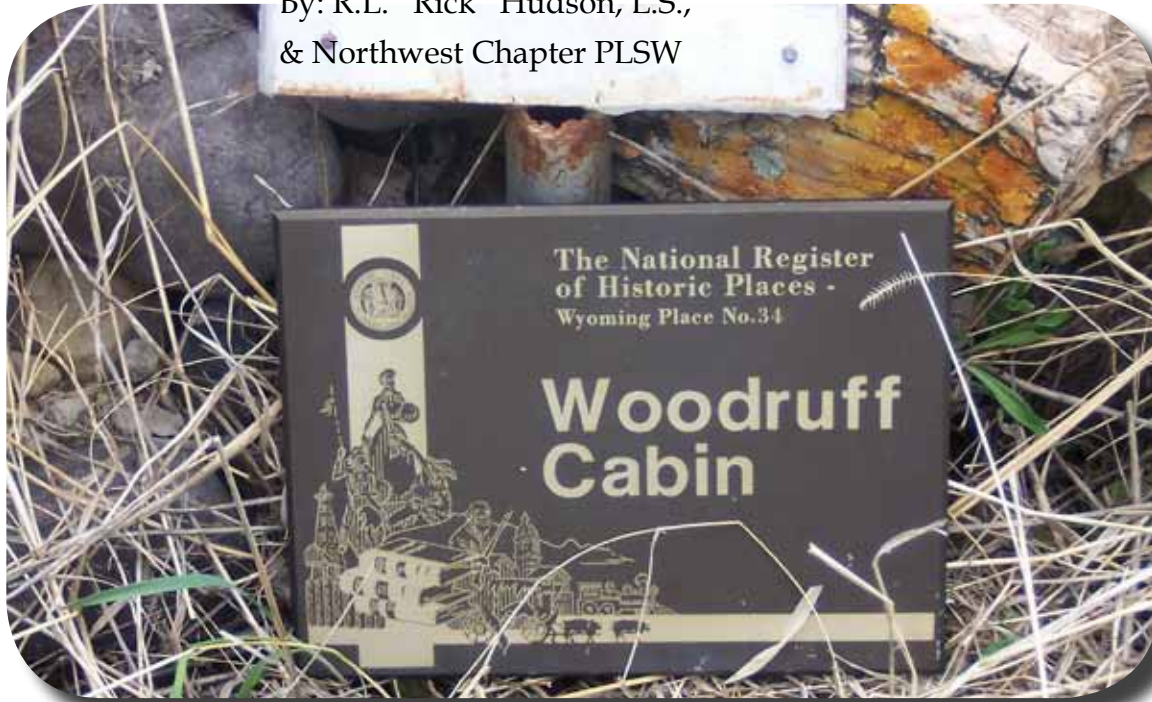
There is an ongoing effort throughout the nation for agencies to become more compliant with the requirements of the American Disabilities Act. Remote sensing technologies are providing not only rapid asset collection for use in a prioritization strategy, but by using the point cloud and imagery a large amount of the needed survey data can be rapidly collected. Once again, the key is to use qualified professionals at the beginning to avoid conflicts and ensure compliance.

My recommendation is that now is the time to establish model laws and regulations, so that the planning/GIS and surveying engineering professions can work collaboratively to optimize the value of each profession, and ultimately be adaptive to the new technologies and procedures that not only benefit the professions but the general public.

Curtis Clabaugh, PE, PPS, was previously with the Wyoming Department of Transportation for nearly 43 years, including 25 years as State Photogrammetry and Surveys Engineer. Curtis is now with ESP Associates where he is doing business development, project support, remote sensing, mobile scanning and asset mapping.

WOODRUFF CABIN TRACT RETRACEMENT

By: R.L. "Rick" Hudson, L.S.,
& Northwest Chapter PLSW



Plaque set
in 1970,
Wyoming
Place No. 34

AN HISTORICAL INTRODUCTION

A small tract of land located approximately 26 miles west of Thermopolis, historically significant because a cabin was built by J. D. Woodruff in 1871, reportedly being the first documented permanent residence in the Big Horn Basin of Wyoming. U.S. Army Colonel Jay L. Torrey recognized the importance of perpetuating the location by setting forth a surveyed description of the tract as an exception in the deed from him to the Rocky Mountain Cattle Company, dated March 20, 1906, and recorded in Big Horn County on September 29, 1906. Efforts to save the cabin, constructed of Cottonwood logs with sod roof and dirt floor, from the ravages of Wyoming weather were spearheaded by Dora McGrath, President of the Hot Springs County Pioneer Association, with an on-site visit by state dignitaries and local pioneers on June 3, 1938, as reported in the local newspaper. The tract was retraced by Edward L. Crabb, Wyoming L.S. No. 3, on June 15, 1938; the recorded map depicting recovery of two of the original corners and the 16-foot by 30-foot cabin situate thereon. The northern 56-foot by 70-foot tract was conveyed by the Torrey heirs to the Historical Landmark Commission of Wyoming by quit claim deed, dated 2 December

1939 and recorded, in now Hot Springs County, on 2 February 1940. Most unfortunately, the cabin was reportedly destroyed by fire prior to the dedication of the stone memorial on September 26, 1941, which was attended by former Governor B. B. Brooks, then Governor Nels Smith, and other dignitaries. That memorial, a smooth boulder base topped by local petrified wood, still exists in 2019, albeit damaged but fortunately not displaced. Ray Shaffer, president of our local Pioneer Association and Historical Society, accepted my offer in April to "put the tract back on the ground" via the second retracement survey which is the subject of this writing.

RESEARCH AND RECONNAISSANCE

Ray and I visited the site on Saturday, June 15, 2019; that being the 81st anniversary of surveyor Crabb's retracement survey; he having been 75 years of age, me too being that age and attempting to follow his footsteps. Standing at the stone memorial, we re-read the original deed, perused the 1909 photograph, and came to the realization that "something doesn't look right", then commenced a cursory search for evidence of corners, accessories, and improvements in the vicinity using computed waypoints pre-loaded in a

Stone
memorial
during
reference
monument
observation



"hand-held" GNSS receiver. Having no recovered corner evidence, I planted a reference monument near the stone memorial and, disappointed but ever optimistic, observed a two-hour session for post-processing via the NGS OPUS website. The positional result of that observation confirmed that not only didn't it look right but that "it didn't fit", neither the original surveyed description nor the

1938 retracement; and that a substantial amount of additional field work, and further analysis, would be required for this local 'veyor to "put it on the ground". The record description in both conveyances is identical, with the exception of "Big Horn" having been changed to "Hot Springs" County in the latter. A verbatim transcription of the tract description is appended to this writing.

Cabin site,
viewed
easterly
toward
southeast
corner



State of Wyoming Corner Record

(In compliance with the CORNER PERPETUATION AND FILING ACT, Wyoming Statutes, 1997, Section 33-29-901, et seq., and the Rules and Regulations of the Wyoming Board of Professional Engineers and Professional Land Surveyors)

Reverse side of this form may be used if more space is needed.

Record of original survey and citation of source of historical information (if corner is lost or obliterated). Description of corner monumentation evidence found and/or monument and accessories established to perpetuate the location of this corner. Sketch of relative location of monument, accessories, and reference points with course and distance to adjacent corner(s) (if determined in this survey). Method and rationale for reestablishment of lost or obliterated corner.

LOCATION: The J. D. Woodruff Cabin Site Reference Monument, situate in Lot 4 of Section 7, Township 43 North, Range 98 West of the Sixth Principal Meridian, Hot Springs County, Wyoming. The general vicinity is north of the South Fork of Owl Creek at the Mill Iron/Embar Ranch, approximately 28 miles northwesterly from Thermopolis.

G.L.O. RECORD: 1) The General Land Office original survey of the exterior, subdivision and meander of the creek was performed by J. Frank Warner, Deputy Surveyor (under joint contract with Howard B. Carpenter), Contract No. 241 dated April 1, 1891, surveyed during September and October, 1891, state: "N 66° 17' W, 4.60 chains Cap. Torrey's house 2 chs N field notes of the left bank meander of Owl Creek, on October 10, 1891, state: "N 66° 17' W, 4.60 chains Cap. Torrey's house 2 chs N field notes of the left bank meander of Owl Creek, on October 10, 1891, state: "N 66° 17' W, 4.60 chains Cap. Torrey's house 2 chs N to the Meander cor. to fractional Secs 7 and 12 on Tp line. . . . 3) The Patent for Lot 4 (with other lands), from the United States of America to Jacob Price, was dated October 10, 1894, at the City of Washington, by President Grover Cleveland. **HISTORICAL INFORMATION:** 4) According to Dorothy Mielek, in her 1985 book "Hot Springs: A Wyoming County History" (pages 24 - 26): "Bozeman Trail veteran John D. Woodruff had fought and lived with the Indians; he had been a trapper, a prospector and a guide and was at the Bates battle and with Jim Lysaught when he was killed. On the South Fork of Owl Creek, he built the first cabin of history in the Big Horn Basin in 1871. Large, about 12 x 20 foot, it had a sod roof, a dirt floor which he covered with buffalo hides, and tiny two pane windows. . . . On June 3, 1938, a historical monument was dedicated at the site. . . . Vandals ruined the original monument. . . . Before 1940 plans to move the cabin to Thermopolis. . . . the building burned. . . . A second marker . . . was dedicated on September 26, 1941. A base of cobblestones was capped by petrified wood. On top of the monument are a bronze plaque telling about the cabin and a replica of it done in colored tile. . . . 5) The Warranty Deed, from Jay L. Torrey to Rocky Mountain Cattle Company, recorded on September 29, 1906, reception No. 23812, in then Big Horn County, contains a surveyed description of a parcel encompassing . . . a log cabin erected by the Honorable John D. Woodruff more than twenty years ago. . . . 6) The Quit Claim Deed, from Sarah Frances Torrey, et al, to The Historical Landmark Commission of the State of Wyoming, recorded in Book 24 of Deeds at page 63 on February 2, 1940, (dated December 2, 1939), reception No. 90609, at the Office of the Hot Springs County Clerk and Ex-Officio Edward L. Crabb, Land Surveyor No. 3, on June 15, 1938, and is now filed in Plat Cabinet B at page 17 at aforementioned office of the County Clerk. The map depicts three bearing trees and two corner stones (the northwest and southeast). Mr. Crabb, of Shoshoni, 16 foot by 30 foot cabin near the north end of the parcel; labeling the entire parcel as "Brush and Trees". Mr. Crabb, of Shoshoni, performed numerous surveys in Hot Springs County during the 1930s and 1940s.

PURPOSE OF THIS SURVEY AND REPORT: 8) The survey during which this site was visited, the remains of the second historical monument recovered, and the reference monument set, was on behalf of the Hot Springs County Historical Society. 9) This report provides public documentation of the metal reference monument and the stone monument and plaques; with georeferenced positioning and digital photographs.

RECONNAISSANCE VISITATION: 10) On 15 June 2019 myself and Ray Shaffer, President of said Historical Society, visited the site to ascertain the condition of the stone monument and search for remaining evidence of Mr. Crabb's retracement survey, performed exactly four score and one years previously. Plotting of the calls of the original and retracement surveys indicated discrepancies and the absence of standing bearing trees (Narrowleaf Cottonwoods *Populus angustifolia*) was disappointing. Not knowing the spatial relationship of the stone monument to the burned cabin offered limited incentive to continue the search at the present time. We both agreed additional research, and recollection of eyewitnesses, would be necessary to limit the search areas for remaining evidence.

STONE MONUMENT WITH METAL PLAQUES: 11) The base of the monument is generally intact, consisting of large boulders and measures approximately 4 1/2 ft. square. The top of the base projects about 1 1/2 ft. above the surrounding ground surface. The upper portion, primarily of petrified wood, has been substantially damaged although the four metal plaques are still in good condition, albeit not firmly attached to the masonry. The orientation of the base is approximately N 20° E and N 70° W from the southeast corner, bearing approximately S 20° E 2 ft. distant therefrom. I set a rebar, 5/8 in. dia. by 24 ins. long, with an aluminum cap, 2 1/2 ins. dia., flush with the existing ground surface, as a reference monument for future surveying purposes. The cap is stamped "WOODRUFF REF MON LS 519 - 2019", as depicted in the photograph on the reverse side. 13) To enhance visibility and afford limited protection, I set a painted wooden post, 2 ins. sq., alongside the metal monument.

REFERENCE MONUMENT ESTABLISHMENT: 12) Near said southeast corner of the base of the stone monument, bearing approximately S 20° E 2 ft. distant therefrom, I set a rebar, 5/8 in. dia. by 24 ins. long, with an aluminum cap, 2 1/2 ins. dia., flush with the existing ground surface, as a reference monument for future surveying purposes. The cap is stamped "WOODRUFF REF MON LS 519 - 2019", as depicted in the photograph on the reverse side. 13) To enhance visibility and afford limited protection, I set a painted wooden post, 2 ins. sq., alongside the metal monument.

ADDITIONAL INFORMATION: See reverse side for positioning and photographs.

Office Reference: Job No. WCL; Loc. 439807EF12; CR; WCL
Date of Field Work: 15 June 2019
CR1

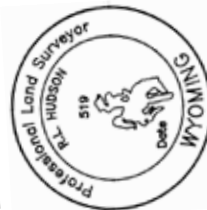
CROSS INDEX DIAGRAM

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| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | AA | AB | AC | AD | AE | AF | AG | AH | AI | AJ | AK | AL | AM | AN | AO | AP | AQ | AR | AS | AT | AU | AV | AW | AX | AY | AZ | BA | BB | BC | BD | BE | BF | BG | BH | BI | BJ | BK | BL | BM | BN | BO | BP | BQ | BR | BS | BT | BU | BV | BW | BX | BY | BZ | CA | CB | CC | CD | CE | CF | CG | CH | CI | CJ | CK | CL | CM | CN | CO | CP | CQ | CR | CS | CT | CU | CV | CW | CX | CY | CZ | DA | DB | DC | DD | DE | DF | DG | DH | DI | DJ | DK | DL | DM | DN | DO | DP | DQ | DR | DS | DT | DU | DV | DW | DX | DY | DZ | EA | EB | EC | ED | EE | EF | EG | EH | EI | EJ | EK | EL | EM | EN | EO | EP | EQ | ER | ES | ET | EU | EV | EW | EX | EY | EZ | FA | FB | FC | FD | FE | FF | FG | FH | FI | FJ | FK | FL | FM | FN | FO | FP | FQ | FR | FS | FT | FU | FV | FW | FX | FY | FZ | GA | GB | GC | GD | GE | GF | GG | GH | GI | GJ | GK | GL | GM | GN | GO | GP | GQ | GR | GS | GT | GU | GV | GW | GX | GY | GZ | HA | HB | HC | HD | HE | HF | HG | HH | HI | HJ | HK | HL | HM | HN | HO | HP | HQ | HR | HS | HT | HU | HV | HW | HX | HY | HZ | IA | IB | IC | ID | IE | IF | IG | IH | II | IJ | IK | IL | IM | IN | IO | IP | IQ | IR | IS | IT | IU | IV | IW | IX | IY | IZ | JA | JB | JC | JD | JE | JF | JG | JH | JI | JJ | JK | JL | JM | JN | JO | JP | JQ | JR | JS | JT | JU | JV | JW | JX | JY | JZ | KA | KB | KC | KD | KE | KF | KG | KH | KI | KJ | KL | KM | KN | KO | KP | KQ | KR | KS | KT | KU | KV | KW | KX | KY | KZ | LA | LB | LC | LD | LE | LF | LG | LH | LI | LJ | LK | LM | LN | LO | LP | LQ | LR | LS | LT | LU | LV | LW | LX | LY | LZ | MA | MB | MC | MD | ME | MF | MG | MH | MI | MJ | MK | ML | MM | MN | MO | MP | MQ | MR | MS | MT | MU | MV | MW | MX | MY | MZ | NA | NB | NC | ND | NE | NF | NG | NH | NI | NJ | NK | NL | NM | NN | NO | NP | NQ | NR | NS | NT | NU | NV | NW | NX | NY | NZ | OA | OB | OC | OD | OE | OF | OG | OH | OI | OJ | OK | OL | OM | ON | OO | OP | OQ | OR | OS | OT | OU | OV | OW | OX | OY | OZ | PA | PB | PC | PD | PE | PF | PG | PH | PI | PJ | PK | PL | PM | PN | PO | PP | PQ | PR | PS | PT | PU | PV | PW | PX | PY | PZ | QA | QB | QC | QD | QE | QF | QG | QH | QI | QJ | QK | QL | QM | QN | QO | QP | QQ | QR | QS | QT | QU | QV | QW | QX | QY | QZ | RA | RB | RC | RD | RE | RF | RG | RH | RI | RJ | RK | RL | RM | RN | RO | RP | RQ | RR | RS | RT | RU | RV | RW | RX | RY | RZ | SA | SB | SC | SD | SE | SF | SG | SH | SI | SJ | SK | SL | SM | SN | SO | SP | SQ | SR | SS | ST | SU | SV | SW | SX | SY | SZ | TA | TB | TC | TD | TE | TF | TG | TH | TI | TJ | TK | TL | TM | TN | TO | TP | TQ | TR | TS | TT | TU | TV | TW | TX | TY | TZ | UA | UB | UC | UD | UE | UF | UG | UH | UI | UJ | UK | UL | UM | UN | UO | UP | UQ | UR | US | UT | UU | UV | UW | UX | UY | UZ | VA | VB | VC | VD | VE | VF | VG | VH | VI | VJ | VK | VL | VM | VN | VO | VP | VQ | VR | VS | VT | VU | VV | VW | VX | VY | VZ | WA | WB | WC | WD | WE | WF | WG | WH | WI | WJ | WK | WL | WM | WN | WO | WP | WQ | WR | WS | WT | WU | WV | WW | WX | WY | WZ | XA | XB | XC | XD | XE | XF | XG | XH | XI | XJ | XK | XL | XM | XN | XO | XP | XQ | XR | XS | XT | XU | XV | XW | XX | XY | XZ | YA | YB | YC | YD | YE | YF | YG | YH | YI | YJ | YK | YL | YM | YN | YO | YP | YQ | YR | YS | YT | YU | YV | YW | YX | YY | YZ | ZA | ZB | ZC | ZD | ZE | ZF | ZG | ZH | ZI | ZJ | ZK | ZL | ZM | ZN | ZO | ZP | ZQ | ZR | ZS | ZT | ZU | ZV | ZW | ZX | ZY | ZZ |

Land Surveyor / Firm / Address

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R.L. Hudson - Land Surveyor
P.O. Box 784, 419 Broadway
Thermopolis, Wyoming 82443-0784
Telephone: (307) 864-9389

This corner record was prepared
by me, the date shown below.
SEAL & SIGNATURE



STATE OF WYOMING CORNER RECORD

Cross-Index No. "EF-1-2", Twp. 43 North, Rge. 98 West

GEOREFERENCED (STATE PLANE COORDINATES AND GEOGRAPHIC) POSITION: 14) The surveyed state plane coordinates of this reference monument are: a) N = 1,171,298.94 sft, E = 1,988,963.34 sft, [Zone 4903, NAD83(2011)], per GNSS observation and NGS OPUS report; b) the convergence angle (γ), at said reference monument, is +0°03'13" (grid to geodetic) and; c) the combined factor is 0.9967136 (surface to grid distance); 15) The corresponding geodetic position of said monument is: Lat. (φ) = 43°42'51.5574" N, Long. (λ) = 108°40'21.3618" W. 16) The observed ellipsoid height (h) of the cap is approximately 5580 sft; and the orthometric elevation (H) of the cap is approximately 5618 sft. [NAVD 88, per Geoid 12B].



REFERENCE MONUMENT CAP AND SETTING



STONE MONUMENT AS RECOVERED; VIEWED SOUTHERLY



TOP PLAQUE (LEFT) AND WEST SIDE PLAQUE (RIGHT)




RE-READ AND RE-ANALYZE

The General Land Office original survey of the controlling PLSS survey, being the line common to Township 43 North, Ranges 98 and 99 West of the Sixth Principal Meridian, for our tract in Lot 4 of (Fractional) Section 7, T. 43 N., R. 98 W., was executed by J. Frank Warner, Deputy Surveyor, in 1891. This line extended south and terminated at a meander corner on the left bank of (later the South Fork of) Owl Creek which was the northern boundary of the Shoshone (now Wind River) Indian Reservation. A large marked stone was planted, a pit dug, an earth mound raised, and two Cottonwood bearing trees blazed and scribed. These two bearing trees were called in the original survey of our 1906 tract and appear to have been recovered and used in the 1938 retracement survey.

The line was retraced by the Bureau of Land Management Dependent Resurvey, by Carl W. Enix in 1964, which monumented the northwest corner of Section 7 and the aforementioned meander corner; and additionally established two new bearing trees at each location. On my second trip, in July, the section corner monument and one bearing tree were recovered, but no monumentation or accessories were recovered at the meander corner. Both corners were perpetuated and reported via State of Wyoming Corner Record reports for the current retracement survey. With those corner and bearing tree locations confirmed (and georeferenced by additional OPUS RS methodology); I re-read the description and re-analyzed the calls. The two bearing trees were obviously the GLO trees. My first conclusion was that the ties were based on the magnetic meridian rather than the astronomic meridian; the variation of the 1891 survey being returned as "Va. 17°28' E." rounded to 17½° for the tract survey returns given to the nearest

degree, and most likely surveyed using compass instrumentation. This is substantiated by line of sight visibility and agreement with the call for the southwest corner to be "... on the north bank of Owl Creek" which coincides with the GLO meander call. My second conclusion involved the distance returns being expressed in chains, feet and decimals thereof. Most likely distances were measured directly in chains and links, using a chain rather than a steel tape which were not in common use by local surveyors at that time. My third conclusion pertains to the dimensions of the cabin and the tract; and that all returns expressed in feet and decimals there of convert very nearly to links; albeit in an attempt to provide a perimeter extending a nominal twenty feet at right angles from the four walls of the cabin. This is partially confirmed by the return for the north line of the tract, per the 1938 retracement, as "N 72°30' W 70 (feet)" but at odds with the graphic location of the cabin. The orientation of the north line, and the cabin, is confirmed by the location and orientation of the stone memorial as set forth on the State of Wyoming Corner Record report titled "J. D. Woodruff Reference Monument", cross-index no. EF-1-2, T43N, R98W, per the current retracement survey. Having reached those conclusions, my third trip to the site concentrated



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MONUMENTATION, DOCUMENTATION, PERPETUATION

Since the meander corner falls in the creek I opt to establish a witness corner, on the range line and at a safe distance from the top of the existing bank; choosing 45 links in keeping with PLSS measurements. I plant a standard iron post with brass cap, leaving the cap project 3 ins. above the ground surface, accessorize the site with a steel "T" post and my customary 2 in. square painted wooden post, and document such reestablishment with a State of Wyoming Corner Record. The four corners of the Historical Landmark Commission tract, temporarily marked by "whiskered" pole spikes, are then replaced using 24-inch long rebar with 2½ in. dia. aluminum caps, set flush with the ground surface. Alongside each monument I drive a two-piece, 6 ft. long, aluminum rod and (of course) a painted wooden post. Photographs of the monumentation and the site, in an attempt to duplicate old views through repeat photography, completed the field work on August 24, 2019. A large format map, has been compiled and was recorded with the office of the Hot Springs County Clerk and Ex-Officio Register of Deeds the day following the 78th anniversary of the memorial monument

dedication, to complete the documentation and perpetuation process. Restoration of the stone monument, and construction of a fence enclosing the tract, are proposed projects to be undertaken by the Hot Springs County Pioneer Association and the Hot Springs County Historical Society according to President Ray Shaffer.

RETRACEMENT MIND-SET

Since each retracement survey presents unique circumstances each must be researched, analyzed, and executed on an individual basis; but with general guidelines. Our role, as retracement land surveyors, is to perpetuate the location of the original survey on the ground. In an ideal situation we would gather all documentation, proceed to the site where we recover all the original, undisturbed monumentation (which would coincide with all the improvements), and be taken to lunch by our grateful client who insists on adding a gratuity to our invoice. Realistically we obtain available documentation, recover deteriorated monumentation, disclose measurement discrepancies, and donate considerable time and effort to justify our findings; primarily for the sake of an accurate, secondarily a precise, retracement

BLM
bearing tree
southwesterly
of section
corner



Witness
corner to
meander
corner,
viewed to
south



of the original survey. Durable and identifiable monumentation, followed by comprehensive documentation containing adequate metadata within the local public land records, is the essence of corner perpetuation resulting in boundary location stability. Replacing cryptic notations such as "Basis of bearing by GPS", "Survey based on NAD 83 grid", and "Found rebar with cap" with adequate statements of basis of bearing and reference frame positioning, and complete monument descriptions, are appropriate for all types of surveys and are absolutely essential for boundary surveys, be they original or retracement. With monuments in the ground, and documents filed in the court house, we can fulfill our obligation to leave "footsteps" that can be followed more easily than those of some of our predecessors.

WOODRUFF CABIN LOT RECORD LAND DESCRIPTION

Per Quitclaim Deed recorded in Book 24 of Deeds at page 63 on February 2, 1940, reception no. 90609, at the office of the Hot Springs County Clerk and Ex-Officio Register of Deeds; originally filed in Big Horn County on September 29, 1906.

A tract of land approximately fifty six feet by seventy feet in Lot 4, Sec. 7, Twp. 43 N. R. 98 W. 6th P.M. described as follows: There is on the north bank of Owl Creek, Hot Springs County, Wyoming, a marked boulder stone 2x6x12 with cross on top and "SWC" cut on the North side and 76 ft. from which stone there stands a meander witness tree marked "T 43 N R 98 W S 7 MC B T" bearing W. 10° 30' North and 95.2 ft. from which stone there stands another witness tree marked "T 43 N R 99 W MC BT" bearing W. 7° 30' N.

Commencing at the above marked boulder stone thence N. 2° E., 2 chains 57.8 ft. to a point (at which there is a boulder 2x4x6 marked with a cross on top and which is 22.4 feet NW from NW corner of a log cabin, thence E. 2° S. 70 feet to a point at which there is a stone 6x6x8 marked with a cross on top and which is 23.7 ft. NE of NE corner of a log cabin erected by the Honorable J.D. Woodruff more than 25 years ago) thence S. 2° W. 2 chains and 42 ft. to a point on the N. bank of Owl Creek at which there is a stone 2x3x8 marked with a cross on top and from which stone there stands a witness tree 6 ft. distant NE on which there is marked a cross; and thence West with the meandering of Owl Creek to the place of beginning, except the following described land:

Commencing at the marked boulder stone 2x6x12 first described above; thence N. 2° E., 2 chains and 1.8 ft. to a point; thence E. 2° S. 70 feet to a point; thence S. 2° W. 1 chain and 52 ft. to a point on the North bank of Owl Creek at which there is a stone 2x3x8 marked with a cross on top and from which stone there stands a witness tree 6 ft. distant NE on which there is marked a cross; thence West with the meandering of Owl Creek to the place of beginning.

BLM NEWS

This letter is to inform you of the official cadastral surveys that were approved in Wyoming in 2019 and have been published to BLM Wyoming's Cadastral Survey website. Copies of the surveys can be viewed and/or printed from this website: <http://www.wy.blm.gov/cadastral/plats19.htm>

| <u>Township and Range</u> | <u>Type of Survey</u> | <u>Meridian</u> | <u>Accepted</u> |
|---------------------------|-----------------------|-----------------|-----------------|
| T. 44 N., R. 81 W. | Dep. Res. & Survey | 6 P.M. | 04/01/2019 |
| T. 33 N., R. 108 W. | Dependent Resurvey | 6 P.M. | 04/01/2019 |
| T. 50 N., R. 90 W. | Dep. Res. & Survey | 6 P.M. | 04/01/2019 |
| T. 23 N., R. 81 W. | Corr. Dep. Resurvey | 6 P.M. | 04/01/2019 |
| T. 45 N., R. 79 W. | Supplemental Plat | 6 P.M. | 04/01/2019 |
| T. 43 N., R. 79 W. | Supplemental Plat | 6 P.M. | 04/01/2019 |
| T. 13 N., R. 101 W. | Supplemental Plat | 6 P.M. | 04/01/2019 |
| T. 19 N., R. 79 W. | Dep. Res. & Survey | 6 P.M. | 05/31/2019 |
| T. 19 N., R. 105 W. | Dep. Res. & Survey | 6 P.M. | 05/31/2019 |
| T. 32 N., R. 71 W. | Dep. Res. & Survey | 6 P.M. | 05/31/2019 |
| T. 16 N., R. 87 W. | Dep. Res. & Survey | 6 P.M. | 05/31/2019 |
| T. 18 N., R. 78 W. | Dep. Res. & Survey | 6 P.M. | 05/31/2019 |
| T. 15 N., R. 81 W. | Dep. Res. & Survey | 6 P.M. | 05/31/2019 |
| T. 21 N., R. 108 W. | Corr. Dep. Resurvey | 6 P.M. | 05/31/2019 |
| T. 42 N., R. 70 W. | Supplemental Plat | 6 P.M. | 07/18/2019 |
| T. 42 N., R. 70 W. | Supplemental Plat | 6 P.M. | 07/31/2019 |

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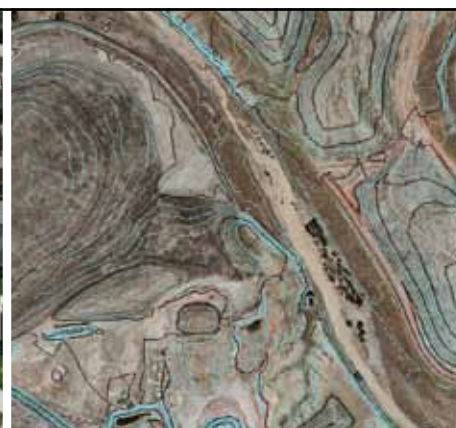
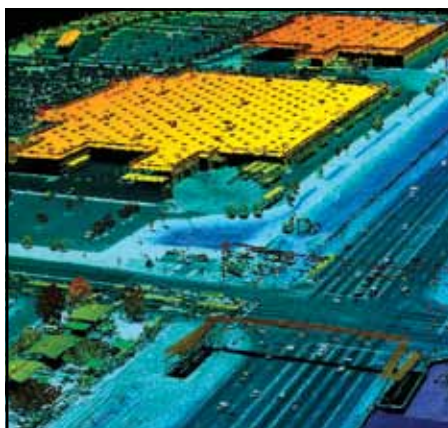
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PLS COMMUNITY INVOLVEMENT



Dan Kricken and Randy Stelzner participated in the Low Angle Rescue Training at the Mid-Winter Fire School held in Riverton every January. Although this is not survey related, it does show community involvement by land surveyors as Dan is a member of the Laramie Volunteer Fire Department and Randy is a member of Fremont County Search and Rescue-Riverton Division.



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The WRD team has over 20 years of experience providing construction inspection services.



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