

ORIGINAL

**UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**

FIELD NOTES  
OF THE  
DEPENDANT RESURVEY  
OF  
A PORTION OF  
THE ARIZONA AND NEW MEXICO STATE BOUNDARY  
FROM  
MILE CORNER 119 TO MILE CORNER 128

**EXECUTED BY**

**Geoffrey A. Graham, Cadastral Surveyor**

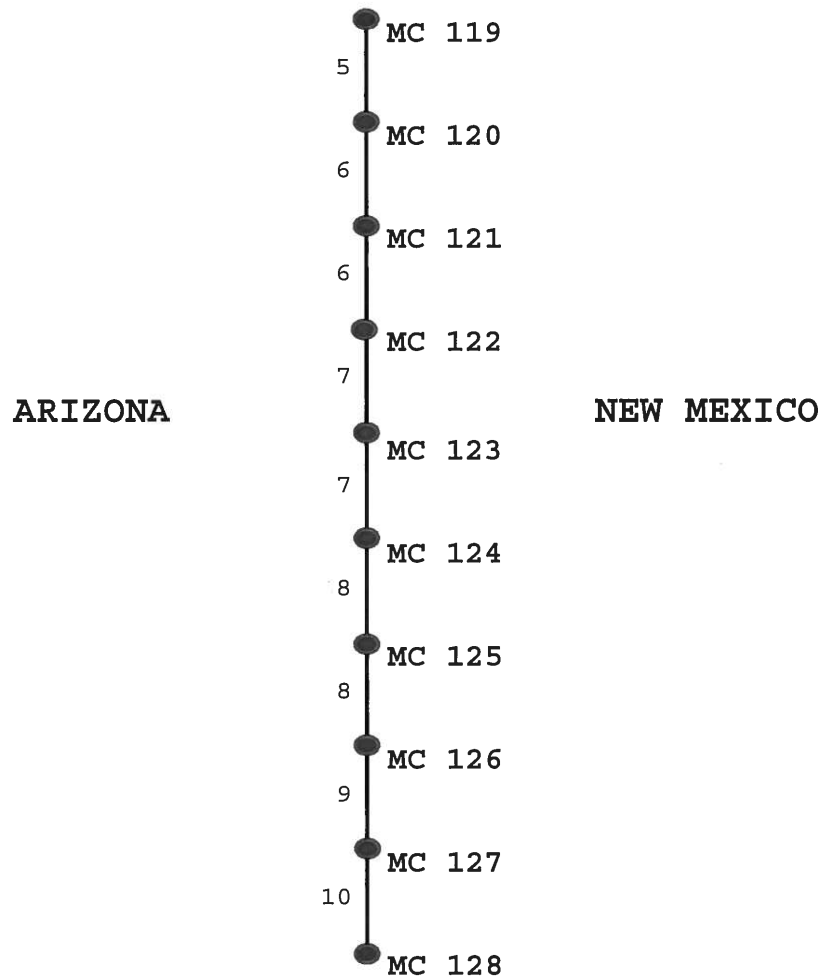
Under Special Instructions dated July 19, 2018, approved August 2, 2018, which provided for the surveys included under Group No. 1189, and assignment instructions dated July 18, 2018.

**Survey commenced August 13, 2018**

**Survey completed August 29, 2018**

# INDEX DIAGRAM

PORTION OF THE ARIZONA-NEW MEXICO STATE BOUNDARY  
FROM MILE CORNER 119 TO MILE CORNER 128



Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
from Mile Corner 119 to Mile Corner 128

## CHAINS

The following field notes describe the dependent resurvey of a portion of the Arizona and New Mexico State boundary, from mile corner 119 to mile corner 128.

The history of surveys pertaining to this survey is as follows:

Chandler Robbins, U.S. Astronomer and Surveyor, surveyed the western boundary of the New Mexico Territory in 1875. (AZ Book 2627)

W.R. Fitzgerald, Deputy Surveyor, surveyed the subdivisional lines of Township 20 North, Range 31 East, G&SRM, in 1882. (AZ Book 376)

W.R. Fitzgerald, Deputy Surveyor, surveyed the Fifth Standard Parallel North, the north boundary and the subdivisional lines of Township 21 North, Range 31 East, G&SRM, in 1882. (AZ Books 406, 1251, 1252, and 1306)

W.R. Fitzgerald, Deputy Surveyor, surveyed the subdivisional lines of Township 22 North, Range 31 East, G&SRM, in 1882. (AZ Book 441)

W.O. Secor surveyed the north boundary and the subdivisional lines of Township 11 North, Range 21 West, in 1893. (NM Vols. R627 and D2419)

W.O. Secor surveyed the subdivisional lines of Township 12 North, Range 21 West, in 1893. (NM Vol. D2437)

Willis W. Bandy, Surveyor, John W. Berberich, Public Land Surveyor, and Glenn R. Haste, Cadastral Engineer, resurveyed the Arizona-New Mexico State Boundary between the 111th and 119th Mile Corners, in 1940. (AZ Book 4236)

John W. Berberich, Public Land Surveyor, and Glenn R. Haste, Cadastral Engineer, resurveyed a portion of the subdivision of Township 12 North, Range 21 West, NMPM, in 1940. (NM Vol. O190)

Ty White, Cadastral Engineer, dependently resurveyed a portion of the Arizona-New Mexico State Boundary and the Fifth Standard Parallel North through Range 31 East, in 1947. (AZ Book 4383).

Gilbert V. Olson, Supervisory Cadastral Surveyor, retraced a portion of the Arizona and New Mexico State Boundary and dependently resurveyed a portion of the subdivisional lines, Township 11 North, Range 21 West, NMPM, in 1977. (NM Vol. O 245)

Stephen J. Malloy and Joe R. Salazar, Cadastral Surveyors, dependently resurveyed the Fifth Standard Parallel North (south boundary), through Township 21 North, Range 31 East, G&SRM, in 1988-93. (AZ Book 5390)

**Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
from Mile Corner 119 to Mile Corner 128**

CHAINS

Gary D. Knoff and Joe R. Salazar, Cadastral Surveyors, dependently resurveyed the Arizona-New Mexico State Boundary between the 127th and the 136th mile corners, Townships 19 and 20 North, Range 31 East, G&SRM, in 1989-93. (AZ Book 5472)

Dale C. Wilson, Cadastral Surveyor, dependently resurveyed a portion of the Arizona-New Mexico State Boundary between the witness corner to the 120th and the 127th Mile Corners, and a portion of the Fifth Standard Parallel North (south boundary) and the north boundary and the subdivisional lines, Township 21 North, Range 31 East, G&SRM, in 2002-03. (AZ Book 5749)

W. William Foster, Cadastral Surveyor, dependently resurveyed a portion of the Arizona-New Mexico State Boundary between the 115th and the witness corner to the 120th Mile Corners, and the subdivisional lines, Township 22 North, Range 31 East, G&SRM, in 2003-06. (AZ Book 5787)

Preliminary to the resurvey, the lines of the prior surveys were retraced and search was made for all corners and other calls of record. It has been determined that in 1947, Ty White made a blunder by being 4.34 chains short in his retracement between Mile Corners 121 and 125, resulting in some of the corners he reestablished by single proportion being out of position. In 2003, Dale C. Wilson did not recover mile corners 122 and 123, and reestablished them by single proportion. In a meeting on August 16, 2018, described in a letter to this group, dated September 10, 2018, it was determined to hold the 1947 mile corners 121 and 125 as the limits of the blunder, and re-establish the intervening mile corners by single proportion to correct the blunder in the 1947 resurvey. The 2003 corners were removed. Cardinal ties to existing closing corners for both states were made. The retracement data were thoroughly verified and only the true line field notes are given herein.

The true meridian direction and length of all lines were determined by static and real time kinematic global positioning system observations using Trimble Navigation R10 and R8s model receivers.

Geodetic control was derived from Global Positioning System (GPS) static observations post processed by National Geodetic Survey, Online Positioning User Service (OPUS), utilizing Continuously Operating Reference Stations (CORS) AF9512 PIETOWN, D12266 GRANTS\_NM2006, and DH4513 DUECECLUBSAZ2005. The NAD 83 (2011) (EPOCH: 2010), geographic position of Mile Corner 119 is as follows:

Latitude: 35°16'39.795" N.                      Longitude: 109°02'46.143" W.

The NAD 83 (2011) (EPOCH: 2010), geographic positions of Mile Corner 128 is as follows:

Latitude: 35°08'51.218" N.                      Longitude: 109°02'45.489" W.

Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
from Mile Corner 119 to Mile Corner 128

CHAINS	
	<p>The mean magnetic declination is <math>9\ 1/2^\circ</math> E.</p> <hr/> <p style="text-align: center;">Restoring the survey executed by Ty White, in 1947</p> <hr/> <p>Beginning at mile cor. 119, monumented with an iron post, 2 ins. diam., firmly set, projecting 9 ins. above the ground, with brass cap mkd. 119M ARIZ NMEX 1940.</p> <p>From which the 1940 bearing trees</p> <p style="padding-left: 40px;">A juniper, 8 ins. diam., bears N. <math>33\ 3/4^\circ</math> E., 46 lks. dist., with scribe marks 119 M NM BT visible on partially open blaze.</p> <p style="padding-left: 40px;">A juniper, 7 ins. diam., bears S. <math>41\ 1/2^\circ</math> W., 89 lks. dist., with scribe marks 119 M ARIZ BT visible on partially open blaze.</p> <p>Add the marks 2018 to the brass cap.</p> <p>S. <math>0^\circ 03'</math> E., on the 120th mile of the Arizona and New Mexico state boundary.</p> <p>The Navajo Indian Reservation is on both sides of the state boundary.</p>
0.20	<p>The closing cor. of secs. 10 and 15, T. 12 N., R. 21 W., NMPM, monumented with an iron post, 2 ins. diam., firmly set, projecting 9 ins. above the ground, with brass cap mkd. T12N S10 ARIZ CC S15 R21W 1940.</p>
44.82	<p>The closing cor. of secs. 27 and 34, T. 22 N., R. 31 E., GSRM, monumented with a stainless steel post, <math>2\ 1/2</math> ins. diam., firmly set, projecting 5 ins. above the ground, with brass cap mkd. T22N R31E S27 CC S34 2003. An accessory mound of stone, 2 ft. base, 1 ft. high is N. of the cor.</p>
79.22	<p>True point for mile cor. 120. Point falls on steep S. bank of a gulch draining W., were it is impracticable to establish a permanent monument.</p>
80.22	<p>The witness cor. to mile cor. 120, monumented with an iron post, 3 ins. diam., firmly set, projecting 7 ins. above the ground, with brass cap mkd. WC 120M ARIZ N MEX 1947.</p> <p>from which the 1947 bearing trees</p> <p style="padding-left: 40px;">A juniper, 15 ins. diam., bears S. <math>33\ 1/2^\circ</math> E., 1.65 chs. dist., with scribe marks WC 120M N MEX BT visible on open blaze.</p>

Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
from Mile Corner 119 to Mile Corner 128

CHAINS	
	<p style="text-align: center;">A juniper, 8 ins. diam., bears S. 7 3/4° W., 1.97 chs. dist., with scribe marks 120M ARIZ BT visible on open blaze.</p> <hr/> <p>S. 0°02' E., on the 121st mile of the Arizona and New Mexico State Boundary.</p>
0.34	<p>From this point, a sandstone, 17 X 13 X 4 ins., laying loose on the ground, mkd. 3 grooves on the N. and S. edges, and CC NM on a face, bears E., 17 lks. dist. Set a 60d nail at the stone position, located at a cor. of fences extending N. 60° E., S. and N. 30° W.</p>
44.53	<p>The closing cor. of secs. 3 and 34, Tps. 21 and 22 N., R. 31 E., GSRM, monumented with a stainless steel post, 2 1/2 ins. diam., firmly set, projecting 5 ins. above the ground, with brass cap mkd. T22N R31E S3 CC S34 T21N R31E 2003. Located 58 lks. W. of a fence cor., with fences extending N., S., and W.</p>
78.47	<p>Mile cor. 121, monumented with an iron post, 3 ins., diam., firmly set, projecting 10 ins. above the ground, with brass cap mkd. 121M ARIZ N.MEX 1947.</p> <p>from which the 1947 bearing trees</p> <p style="padding-left: 40px;">A juniper, 8 ins. diam., bears N. 46 1/2° E., 29 lks. dist., with scribe marks 121M N MEX BT visible on partially open blaze.</p> <p style="padding-left: 40px;">A juniper, 8 ins. diam., bears N. 81 1/2° W., 86 lks. dist., with scribe marks 121M ARIZ BT visible on partially open blaze.</p> <hr/> <p>S. 0°04' E., on the 122nd mile of the Arizona and New Mexico State Boundary.</p>
46.27	<p>From this point, the closing cor. of secs. 3 and 10, T. 21 N., R. 31 E., GSRM, monumented with a stainless steel post, 2 1/2 ins. diam., firmly set, projecting 6 ins. above the ground, with brass cap mkd. T21N R31E S3 CC S10 2003, bears E., 9 lks. dist.</p>
80.36	<p>Point for mile cor. 122, determined by single proportion. Reset the 1947 iron post, 3 ins. diam., 29 ins. long, 24 ins. in the ground, remark the brass cap to read.</p> <p style="text-align: center;">122M ARIZ   N MEX</p> <p style="text-align: center;">2018</p> <p>Deposit a magnet, in a white plastic case, at the base of the iron post.</p>

Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
from Mile Corner 119 to Mile Corner 128

CHAINS	
	<p>From this cor. the position of the monument established in 1947 bears S. 0°04' E., 3.031 chs. dist. Destroy all evidence of the 1947 cor. accessories.</p> <p>Destroy all evidence of the 2003 cor. and accessories.</p> <p>Cor. is located 1.24 chs. W. of fence, bears N. and S.</p> <hr/> <p>S. 0°04' E., on the 123rd mile of the Arizona and New Mexico State Boundary.</p>
46.12	<p>From this point, the closing cor. of secs. 10 and 15, T. 21 N., R. 31 E., GSRM, monumented with a stainless steel post, 2 1/2 ins. diam., firmly set, projecting 14 ins. above the ground, in a mound of stone, 2 ft. base, to top, with brass cap mkd. T21N R31E S10 CC S15 2003, bears E., 26 lks. dist.</p>
80.36	<p>True point for mile cor. 123, determined by single proportion, falls in a wash, drains N., where it is impracticable to establish a permanent monument.</p> <p>From the true point, the 1947 position is utilized as a witness cor. to the 123rd mile cor., bears S. 0°26' W., 2.03 chs. dist., monumented with an iron post, 3 ins. diam., firmly set, projecting 4 ins. above the ground, remark the brass cap to read</p> <p style="text-align: center;">WC 123M</p> <p style="text-align: center;">ARIZ   N MEX</p> <p style="text-align: center;">2018</p> <p>from which the 1947 accessories</p> <p style="padding-left: 40px;">A piñon, 8 ins. diam., bears S. 51 1/2° E., 165 lks. dist., with scribe marks 123M N MEX BT visible on open blaze. Add sign S-9 to the tree.</p> <p style="padding-left: 40px;">A point, 4 ft. above ground, on a sandstone bluff, 20 ft. high, bears N. 84° W., 16 lks. dist., mkd. 123M B+O ARIZ. Add the marks WC to the sandstone bluff.</p> <p>Destroy all evidence of the 2003 cor. and accessories.</p> <hr/> <p>S. 0°04' E., on the 124th mile of the Arizona and New Mexico State Boundary.</p>

Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
from Mile Corner 119 to Mile Corner 128

CHAINS	
45.99	From this point, the closing cor. of secs. 15 and 22, T. 21 N., R. 31 E., GSRM, monumented with a stainless steel post, 2 1/2 ins. diam., firmly set, projecting 4 ins. above the ground, with brass cap mkd. T21N R31E S15 CC S22 2003, bears E., 44 lks. dist. Located 49 lks. W. of fence extending N. and S.
80.36	Point for mile cor. 124, determined by single proportion. Set the 1947 iron post, 3 ins. diam., 36 ins. long, 27 ins. in the ground, with brass cap remarked to read  <div style="text-align: center;">124M ARIZ   N MEX  2018</div> Deposit a magnet, in a white plastic case, at the base of the iron post.  From this point, the position of the monument established in 1947 bears N. 35°06' E., 89 lks. dist. Destroy all evidence of the 1947 cor. accessories.
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	S. 0°04' E., on the 125th mile of the Arizona and New Mexico State Boundary.
45.85	From this point, the closing cor. of secs. 22 and 27, T. 21 N., R. 31 E., GSRM, monumented with a stainless steel post, 2 1/2 ins. diam., firmly set, projecting 4 ins. above the ground, with brass cap mkd. T21N R31E S22 CC S27 2003, bears E., 22 lks. dist. Located 81 lks. W. of fence extending N. and S.
80.36	Mile cor. 125, monumented with an iron post, 3 ins. diam., firmly set, projecting 9 ins. above the ground, with brass cap mkd. 125M ARIZ N.MEX 1977 1947.  -----
	S. 0°03' E., on the 126th mile of the Arizona and New Mexico State Boundary.
5.14	The closing cor. of secs. 10 and 15, T. 11 N., R. 21 W., NMPM, New Mexico, monumented with an iron post, 2 1/2 ins. diam., firmly set, projecting 6 ins. above the ground, with brass cap mkd. T11N R21W S10 CC S15 R21W 1977.
45.71	The closing cor. of secs. 27 and 34, T. 21 N., R. 31 E., GSRM, monumented with a stainless steel post, 2 1/2 ins. diam., firmly set, projecting 4 ins. above the ground, with brass cap mkd. T21N R31E S27 CC S34 2003.  Cor. is located 10 lks. E. of a fence extending N. and S., and 11 lks. W. of a 2 track road roughly following fence and power line.



Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
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CHAINS	
79.19	<p>Mile cor. 126, monumented with an iron post, 3 ins. diam., firmly set flush with ground, with brass cap mkd. 126M ARIZ N.MEX 1993 1977 1947.</p> <p>from which the 1947 bearing tree</p> <p style="padding-left: 40px;">A juniper, 12 ins. diam., bears N. 81° W., 68 lks. dist., with scribe marks 126M ARIZ BT visible on open blaze. (Record: N. 79° W., 69 lks.) Add sign S-9 to the tree.</p> <hr/> <p>S. 0°05' E., on the 127th mile of the Arizona and New Mexico State Boundary.</p>
5.66	<p>The closing cor. of secs. 15 and 22, T. 11 N., R. 21 W., NMPM, New Mexico, monumented with an iron post, 2 1/2 ins. diam., firmly set, projecting 5 ins. above the ground, with brass cap mkd. T11N R21W S15 CC S22 R21W 1977.</p> <p>Cor. is located 2.95 chs. W., of fence extending N. and S.</p> <p>Continuing, bet. the Navajo and Zuni Indian Reservations.</p>
53.60	<p>From this point, the standard closing cor. of Tps. 20 and 21 N., R. 31 E., GSRM, monumented with an iron post, 3 ins. diam., firmly set, projecting 3 ins. above the ground with brass cap mkd. T21N R31E S34 CC N.MEX 2003 1947, bears W., 2 lks. dist.</p> <p>from which the 1947 bearing trees</p> <p style="padding-left: 40px;">A juniper, 16 ins. diam., bears N. 40° W., 66 lks. dist., with scribe marks T21NR31E S34 CC BT visible on open blaze.</p> <p style="padding-left: 40px;">A juniper, 14 ins. diam., bears N. 16 1/2° W., 76 lks. dist., with scribe marks T21NR31E S34 CC BT visible on open blaze. Add sign S-9 to the tree.</p> <p>Cor. is located at cor. of fences extending S. and W., and 13 lks. E. of cor. of fences extending N. and W.</p>
79.40	<p>Mile cor. 127, monumented with an iron post, 3 ins. diam., firmly set, projecting 1 in. above ground, with brass cap mkd. M127 ARIZ N.MEX 1991 1977 1947.</p> <p>from which the remaining 1991 bearing tree</p> <p style="padding-left: 40px;">A juniper, 9 ins. diam., bears S. 16 1/4° E., 1.57 chs. dist., with scribe marks 127M ARIZ BT visible on partially open blaze.</p> <p>Cor. is located in fence extending N. and S.</p> <hr/>

Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
from Mile Corner 119 to Mile Corner 128

CHAINS	
	<p>S. 0°05' E., on the 128th mile of the Arizona and New Mexico State Boundary.</p>
5.77	<p>The closing cor. of secs. 22 and 27, T. 11 N., R. 21 W., NMPM, New Mexico, monumented with an iron post, 2 1/2 ins. diam., firmly set, projecting 4 ins. above the ground, with brass cap mkd. T11N R21W S22 CC S27 R21W 1977.</p> <p>Cor. is located in fence extending N. and S.</p>
79.34	<p>Mile cor. 128, monumented by an alligator juniper, 36 ins. diam., mkd. with a blaze on the N. face, with no visible mks., a blaze on the E. face mkd. NNMeX, a blaze on the S. face mkd. 32 W, and a partially healed blaze on the W. face mkd. ARIZ.</p> <p>from which the remaining 1991 bearing tree</p> <p style="padding-left: 40px;">A juniper, 10 ins. diam., bears N. 79 1/4° E., 1.57 chs. dist., with scribe marks 128M ARIZ BT visible on partially healed blaze. Add sign S-9 to the tree.</p> <p>and the 1991 reference monuments</p> <p style="padding-left: 40px;">An iron post, 2 1/2 ins. diam., firmly set, projecting 5 ins. above the ground, with brass cap mkd. RM 128M NM 146.2 FT. TO COR. with an arrow pointing to the cor. Bears S. 31°28' E., 146.2 ft. dist. (Record: S. 31°29' E.) A steel guard post is alongside. Add the marks 2018 to the brass cap.</p> <p style="padding-left: 40px;">An iron post, 2 1/2 ins. diam., firmly set, projecting 4 ins. above the ground, with brass cap mkd. RM 128M AZ 155.3 FT. TO COR. with an arrow pointing to the cor. Bears S. 57°25' W., 155.3 ft. dist. (Record: S. 57°23' W.) A steel guard post is alongside. Add the marks 2018 to the brass cap.</p> <p>Add land survey monument signs to E. and W. faces of the corner tree.</p> <p>Cor. is serving as an anchor for fence extending N. and S.</p> <hr style="width: 60%; margin-left: 0;"/>

Dependent Resurvey of a  
Portion of the Arizona and New Mexico State Boundary,  
from Mile Corner 119 to Mile Corner 128

CHAINS

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GENERAL DESCRIPTION

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This portion of the state boundary is accessed from graded dirt roads, primarily Jones Ranch Rd., which makes a loop from Arizona, off of I-40, into New Mexico, off of NM-602. There is a power line service road that provides access to the southern portion of the survey.

Elevation ranges between 6330 and 6930 ft. above sea level. The vegetation is typical piñon and juniper scrub. The southern portions of this survey have been destructively cleared on the Arizona side by a method known as railing. The right of way under the power line has also been destructively cleared with a masticator.

The mean magnetic declination of  $9 \frac{1}{2}^{\circ}$  E. was derived from the United States Geological Survey computer program GEOMAG v. 7.0, utilizing the World Magnetic Model for Epoch 2015 for the dates of survey.

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## CERTIFICATE OF SURVEY

I, Geoffrey A. Graham, Cadastral Surveyor, HEREBY CERTIFY upon honor, that in pursuance of special instructions bearing date of the 19th day of July, 2018, I have dependently resurveyed a portion of the Arizona and New Mexico State Boundary, from mile corner 119 to mile corner 128, which are represented in the foregoing field notes as having been executed by me and under my direction. Said survey has been made in strict conformity with said special instructions, the Manual of Surveying Instructions, 2009, and in specific manner described in the foregoing field notes.

11/15/2018  
 \_\_\_\_\_  
 (Date)

Geoffrey A. Graham  
 \_\_\_\_\_  
 (Cadastral Surveyor)

## CERTIFICATE OF APPROVAL

BUREAU OF LAND MANAGEMENT  
 Washington, DC

The foregoing field notes of the Dependent Resurvey of a portion of the Arizona and New Mexico State Boundary, from mile corner 119 to mile corner 128, executed by Geoffrey A. Graham, Cadastral Surveyor, having been critically examined and found correct, are hereby approved.

12/18/2018  
 \_\_\_\_\_  
 (Date)

Janet M. Wilkins  
 \_\_\_\_\_  
 (Acting, Chief Cadastral Surveyor, Washington Office)

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 CERTIFICATE OF TRANSCRIPT

I CERTIFY That the foregoing transcript of the field notes of the above described survey of a portion of the Arizona and New Mexico State Boundary, is a true copy of the original field notes.

\_\_\_\_\_  
 (Date)

\_\_\_\_\_  
 (Acting, Chief Cadastral Surveyor, Washington Office)