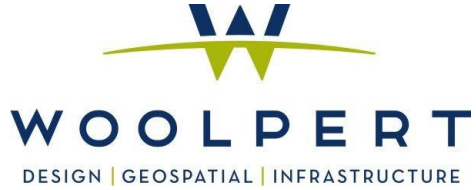
GROUND CONTROL SURVEY REPORT



MISSISSIPPI QL2 LIDAR COLLECTION AND TUPELO QL3 PROCESSING

12/18/2015

WOOLPERT

DESIGN | GEOSPATIAL | INFRASTRUCTURE

QUALITY

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Table of Contents

SECTION 1: SURVEY REPORT

INTRODUCTION

Report Date:	12/18/2015
Project Name:	Mississippi QL2 LiDAR Collection and Tupelo QL3 Processing
Client Information:	USGS / NGTOC
Contract Number:	G10PC00057
Requisition/Reference Number:	G14PD01046
Date of Contract:	1/25/2015
Delivery Date:	12/19/2015
Prepared By:	Daniel W. Venable, PLS
Woolpert Project Number:	74835

This report contains a comprehensive outline of the LiDAR Ground Control Survey that supported the Mississippi QL2 LiDAR. All surveys were performed in such a way as to achieve ground control accuracies that meet or exceed the National Mapping Accuracy Standards.

PROJECT AREA

The project area consists of approximately 4385 square miles of V.1.0 lidar, for the AOI in Southern Mississippi.

PURPOSE

The purpose of this survey was to establish three-dimensional coordinates for 31 ground control points (GCPs) and 180 quality control (QC) points spread over 6 land cover classifications Bare Earth, Brush, Forest, Swamp, Tall Grass, and Urban.

The QC points were collected uniformly dispersed over the project area in the appropriate land cover categories to verify fundamental, supplemental, and consolidated vertical accuracies throughout the task order AOI.

DATE OF SURVEY

Ground control field operations took place on December 5, 2014 thru December 17, 2014.

MONUMENTATION

Prior to aerial imagery acquisition, Woolpert field crews performed a field reconnaissance to verify the existence and suitability of pre-selected existing National Geodetic Survey (NGS) control stations. These existing bench marks were utilized as checks to ensure that quality *x, y,* and *z* coordinate values were computed for each of the newly established photogrammetric control stations. Recovery information sheets for the existing NGS control stations can be found in Section 5 of this report. A control diagram showing the ground control stations used to support this LiDAR mapping project can be found in Section 6 of this report.

ACCURACY STANDARDS

The data collected under this task order shall meet the National Standard for spatial Database Accuracy (NSSDA) standards. The NSSDA standards specify that vertical accuracy be reported at the 95 percent confidence level for data tested by an independent source of higher accuracy.

The Fundamental Vertical Accuracy (FVA): 18.13 cm at a 95% confidence level, derived according to NSSDA, i.e., based on $RMSE_Z$ of 9.25 cm in the "open terrain" land cover category.

The Supplemental Vertical Accuracy (SVA): The SVA will be reported for each of the land cover classes within the task order AOI. The target SVA is 26.9 cm at a 95^{th} percentile level, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for Lidar Data, i.e., based on the 95^{th} percentile error for each required land cover class.

The Consolidated Vertical Accuracy (CVA): 26.9 cm at a 95^{th} percentile level, derived according to ASPRS Guidelines, Vertical Accuracy Reporting for Lidar Data, i.e., based on the 95^{th} percentile error in all land cover categories combined.

Automated and manual filtering for lidar products shall use the following minimum performance for artifact/feature removal from the bare earth model: The bare earth surface model shall have a minimum of 95% of surface canopy artifacts, including buildings, vegetation, bridges or overpass structures removed.

GPS EQUIPMENT

Woolpert utilized 2 Trimble Navigation R8 Model 4 GNSS dual-frequency GPS receivers, 2 Trimble Navigation Model R10 GNSS dual-frequency GPS receivers, and 2 TSC3 data collectors for this project.

METHODOLOGY

REAL-TIME KINEMATIC (RTK) GPS

The field crew utilized Real-Time Kinematic (RTK) GPS surveying throughout most of the ground control data collection process. Using RTK GPS techniques, observations were performed on a total of 31 LiDAR control points and 180 ground control quality check points. The survey was conducted using a 1-second epoch rate, in a fixed solution RTK mode, with each observation lasting between 60 to 180 seconds. Each station was occupied twice to insure the necessary horizontal and vertical accuracies were being met for this photogrammetric project.

VRS VIRTUAL REFERENCE SYSTEM OR RTN REAL TIME NETWORK.

The “Virtual Reference Station” (VRS) concept is based on having a network (spaced at 50-60kms) of GNSS (GPS or GPS/GLONASS) reference stations permanently connected to the control center via the Internet. The networked stations collectively and precisely, model Ionospheric errors for the individual GNSS rover in the network coverage area. The rover interprets and uses the VRS network-correction data as if it is operating with a single physical base station on a very short baseline which increases the RTK performance. Corrections (vectors) are from the closest base, but because the ionospheric error (which is traditionally baseline dependent) is practically negated, the rover's degradation in accuracy due to baseline length starts when the rover is first initialized, that is, at the work site. Thus accuracies are increased and more consistent throughout the working region

GPS DATA ANALYSIS AND PROCESSING

The field crew chief processed all session baselines each day using Trimble Navigation’s Trimble Business Center (TBC) Version 3.51 baseline processor with the accompanying broadcast ephemeris. Daily processing ensured the integrity of the network as it was constructed, and allowed the field crews to immediately reschedule observations of poor baselines.

DATUM REFERENCE AND FINAL COORDINATES

The spatial reference system UTM Zone 16 North, NAD83(2011), US Survey Feet, horizontal and NAVD88 US Survey Feet vertical using the geoid model of 2012 (GEOID12A). Units for both the horizontal and vertical datums will be expressed in US Survey Feet to two (2) decimal places.

QUALITY ASSURANCE

Existing NGS published bench marks were surveyed to assure that there were no discrepancies in the field observation data. Close examinations of the residuals showed no distortions in orientation or scale.

The ground control data meets positional accuracies necessary to support 1.0 point per 0.7 meters squared (1' GSD) data at 95% confidence level as outlined in the *Geospatial Positioning Accuracy Standards, Part 3: National Standard for Spatial Data Accuracy (NSSDA),* published by the Federal Geographic Data Committee (FGDC-STD-007.3-1998).

SECTION 2: GROUND/GEODETIC CONTROL COORDINATE LISTINGS

COORDINATE SYSTEM: GRID

Southern MS Region

HORIZONTAL DATUM: NAD83 2011 Mississippi State Plane East Zone
VERTICAL DATUM: NAVD88
GEOID MODEL: GEOID 12A
UNITS: Meters

LiDAR GROUND CONTROL

Points	State Plane Mississippi East Geoid 12A			Description
	Northing (m)	Easting (m)	Elevation (m)	
1001	3445185.465	189291.232	83.098	CONTROL
1002	3495806.509	204089.326	62.28	CONTROL
1003	3516937.493	248561.924	100.822	CONTROL
1004	3497481.454	291357.447	69.743	CONTROL
1005	3526538.604	351822.934	87.27	CONTROL
1006	3480109.48	361354.33	85.493	CONTROL
1007	3429656.956	358253.982	91.409	CONTROL
1008	3449640.098	346908.001	73.001	CONTROL
1009	3469555.315	315914.804	47.294	CONTROL
1010	3491421.051	332967.299	103.972	CONTROL
1011	3506491.126	343885.089	57.812	CONTROL
1012	3494076.998	261565.706	75.945	CONTROL
1013	3479427.413	212559.51	60.547	CONTROL
1014	3476023.866	233286.399	101.036	CONTROL
1015	3434153.544	239782.682	34.652	CONTROL
1016	3474415.867	197077.987	142.025	CONTROL
1017	3453843.342	219938.082	122.208	CONTROL
1018	3494011.733	245785.76	96.014	CONTROL
1019	3515811.862	274557.028	96.635	CONTROL
1020	3518786.78	307770.72	87.425	CONTROL
1021	3464446.195	209615.154	120.18	CONTROL
1022	3467945.689	222069.417	49.988	CONTROL
1023	3460995.97	234558.871	70.644	CONTROL
1024	3461107.313	229832.584	44.313	CONTROL
1025	3459187.28	226368.832	48.766	CONTROL
1026	3512116.065	221175.953	142.26	CONTROL
1027	3499077.763	227662.935	104.973	CONTROL
1028	3502660.942	257596.384	95.545	CONTROL
1029	3509218.888	318036.601	96.338	CONTROL

1030	3508477.55	297470.914	81.027	CONTROL
1031	3448053.837	351153.264	34.569	CONTROL

QUALITY CONTROL POINTS

Point	State Plane Mississippi East Geoid 12A			Description
	Northing (m)	Easting (m)	Elevation (m)	
2001	3445385.293	189881.925	73.910	BARE EARTH
2002	3495756.795	204158.115	62.019	BARE EARTH
2003	3517005.413	248360.184	101.119	BARE EARTH
2004	3497428.827	291407.794	69.945	BARE EARTH
2005	3526400.996	352108.303	84.694	BARE EARTH
2006	3480164.728	361342.522	85.565	BARE EARTH
2007	3431219.779	355725.953	99.169	BARE EARTH
2008	3448531.505	347454.455	63.889	BARE EARTH
2009	3469562.068	316051.397	47.554	BARE EARTH
2010	3491539.558	332901.624	102.170	BARE EARTH
2011	3506824.940	345197.927	72.582	BARE EARTH
2012	3494225.584	262636.451	78.798	BARE EARTH
2013	3479427.398	212590.046	59.703	BARE EARTH
2014	3476109.099	233425.987	96.492	BARE EARTH
2015	3434155.031	239493.065	33.234	BARE EARTH
2016	3474416.033	197097.678	141.665	BARE EARTH
2017	3453840.011	219751.841	117.450	BARE EARTH
2018	3494182.160	241661.963	137.360	BARE EARTH
2019	3516027.394	273995.149	98.022	BARE EARTH
2020	3518701.315	307569.727	86.892	BARE EARTH
2021	3505393.573	293818.112	70.773	BARE EARTH
2022	3498577.938	227125.810	98.063	BARE EARTH
2023	3510765.143	273634.932	73.902	BARE EARTH
2025	3431171.268	354143.818	94.92	BARE EARTH
3001	3446783.111	200155.704	92.363	URBAN
3002	3495862.151	203864.468	62.566	URBAN
3003	3517007.676	248575.212	100.130	URBAN
3004	3497539.491	291302.343	70.415	URBAN
3005	3526366.189	352059.420	84.889	URBAN
3006	3478710.153	360011.433	77.884	URBAN
3007	3447574.144	351990.773	31.240	URBAN
3008	3450188.292	347710.327	74.478	URBAN
3009	3469850.073	315828.237	49.507	URBAN
3010	3491431.603	332961.410	103.805	URBAN
3011	3506799.819	343903.276	61.489	URBAN

Point	State Plane Mississippi East Geoid 12A			Description
	Northing (m)	Easting (m)	Elevation (m)	
3012	3494588.159	262808.578	80.791	URBAN
3013	3467942.935	222155.284	49.916	URBAN
3014	3461108.774	229851.008	44.178	URBAN
3015	3461135.624	234482.462	71.448	URBAN
3016	3474225.121	195094.075	135.675	URBAN
3017	3459149.855	226635.471	47.764	URBAN
3018	3503403.735	257569.981	96.266	URBAN
3019	3515787.617	274480.015	97.707	URBAN
3020	3518493.753	307481.881	87.245	URBAN
3021	3504919.475	294090.772	68.593	URBAN
3022	3498528.095	227143.168	97.195	URBAN
4001	3446971.275	189558.006	73.546	TALL GRASS
4002	3495846.720	203427.745	68.607	TALL GRASS
4003	3517709.510	246648.761	118.649	TALL GRASS
4004	3497304.113	292593.486	88.462	TALL GRASS
4005	3526702.385	351585.463	86.635	TALL GRASS
4006	3478786.012	361002.846	81.316	TALL GRASS
4008	3449637.029	346938.028	75.120	TALL GRASS
4009	3469599.172	316034.392	47.676	TALL GRASS
4010	3491488.768	332861.997	99.500	TALL GRASS
4011	3500931.838	342390.301	86.057	TALL GRASS
4012	3494110.006	261325.083	79.420	TALL GRASS
4013	3479818.578	212279.777	74.483	TALL GRASS
4014	3478268.673	234456.980	111.293	TALL GRASS
4015	3434987.748	238710.327	32.641	TALL GRASS
4016	3474164.261	196344.956	140.447	TALL GRASS
4017	3453796.981	219933.231	121.869	TALL GRASS
4018	3495798.311	240539.210	140.852	TALL GRASS
4019	3515920.290	274446.080	93.702	TALL GRASS
4020	3517696.273	306677.732	85.754	TALL GRASS
4021	3504828.676	294693.835	66.252	TALL GRASS
4022	3503885.255	224676.882	155.564	TALL GRASS
4023	3504027.688	344344.012	51.059	TALL GRASS
5001	3445448.589	189900.889	72.851	BRUSH
5002	3492181.395	205172.326	70.387	BRUSH
5003	3516771.255	247678.736	107.917	BRUSH
5004	3497566.248	289577.064	62.480	BRUSH
5005	3523360.788	352065.055	80.816	BRUSH
5006	3479859.386	361502.852	81.912	BRUSH

Point	State Plane Mississippi East Geoid 12A			Description
	Northing (m)	Easting (m)	Elevation (m)	
5007	3433025.575	356480.449	86.668	BRUSH
5008	3449724.812	348027.815	66.840	BRUSH
5009	3470643.200	315498.745	56.376	BRUSH
5010	3490924.548	333250.614	102.186	BRUSH
5011	3501033.130	342515.789	79.930	BRUSH
5012	3493995.900	261104.671	80.933	BRUSH
5013	3481815.929	209872.882	67.127	BRUSH
5014	3476639.688	234225.458	88.491	BRUSH
5015	3438456.660	238851.045	38.397	BRUSH
5016	3474139.517	195680.147	143.049	BRUSH
5017	3453824.012	219740.654	117.374	BRUSH
5018	3494098.501	244864.480	101.193	BRUSH
5019	3514484.633	273448.763	96.184	BRUSH
5020	3516322.658	305621.394	84.293	BRUSH
5021	3505001.708	295128.377	66.078	BRUSH
5022	3498518.717	228974.759	106.283	BRUSH
5023	3513720.515	274957.337	79.062	BRUSH
6001	3445391.120	189798.770	73.740	FOREST
6002	3495322.620	203260.312	65.932	FOREST
6004	3497093.186	290680.892	60.912	FOREST
6005	3526320.523	352060.797	84.403	FOREST
6006	3480006.769	361587.987	84.620	FOREST
6007	3431027.090	353865.963	94.436	FOREST
6007A	3431030.304	353887.841	94.109	FOREST
6008	3449659.984	346896.133	72.300	FOREST
6008A	3449673.679	346880.481	69.236	FOREST
6009	3469648.255	316296.356	45.244	FOREST
6009A	3469577.206	316281.467	45.028	FOREST
6010	3491485.024	332916.037	100.719	FOREST
6010A	3491482.810	332943.203	101.424	FOREST
6011	3501095.020	342475.250	83.072	FOREST
6011A	3501070.342	342447.407	81.741	FOREST
6012	3494232.716	261561.532	74.452	FOREST
6012A	3494194.767	261552.549	74.514	FOREST
6013	3479815.872	212257.432	73.489	FOREST
6013A	3479796.159	212270.286	72.692	FOREST
6014	3477132.448	234248.065	86.468	FOREST
6014A	3476928.840	234223.927	91.312	FOREST
6015	3434061.158	239525.934	33.387	FOREST
6016	3474464.654	197187.285	142.379	FOREST

Point	State Plane Mississippi East Geoid 12A			Description
	Northing (m)	Easting (m)	Elevation (m)	
6016A	3474510.634	197313.114	141.309	FOREST
6017	3453368.365	218405.371	121.057	FOREST
6017A	3453400.244	218375.464	119.761	FOREST
6018	3494078.804	245020.693	103.230	FOREST
6018A	3494075.836	244955.256	101.884	FOREST
6019	3515936.000	274257.221	97.190	FOREST
6019A	3515931.768	274282.398	96.737	FOREST
6020	3516500.765	305648.187	80.989	FOREST
6020A	3516527.913	305637.943	82.039	FOREST
6021	3504036.420	294785.532	63.514	FOREST
6021A	3504045.407	294820.778	63.758	FOREST
6022	3498481.390	227642.677	92.815	FOREST
6022A	3498481.170	227616.918	92.126	FOREST
7001	3445684.203	189967.975	72.080	SWAMP
7001A	3445713.938	189994.525	72.027	SWAMP
7002	3495300.349	203218.889	66.339	SWAMP
7002A	3495288.341	203204.715	66.594	SWAMP
7003	3516219.718	249315.330	98.716	SWAMP
7003A	3516253.622	249333.298	97.176	SWAMP
7004	3497080.302	290708.138	60.419	SWAMP
7004A	3497053.695	290613.091	60.511	SWAMP
7005	3523344.876	352001.991	79.901	SWAMP
7005A	3523303.044	352315.504	82.657	SWAMP
7006	3478879.785	358653.676	57.941	SWAMP
7006A	3478871.177	358675.685	58.469	SWAMP
7007	3431213.509	355629.926	100.588	SWAMP
7007A	3431217.697	355593.108	99.849	SWAMP
7008	3449541.666	343936.591	33.352	SWAMP
7008A	3449604.894	343882.342	32.470	SWAMP
7009	3470181.826	316283.410	44.542	SWAMP
7009A	3470175.615	316268.093	44.801	SWAMP
7010	3494782.531	338867.921	58.201	SWAMP
7010A	3494766.750	338844.044	57.926	SWAMP
7011	3501921.053	343582.788	47.638	SWAMP
7011A	3501873.936	343451.076	43.810	SWAMP
7012	3494182.209	261543.888	74.573	SWAMP
7012A	3494147.036	261522.079	74.945	SWAMP
7013	3479414.213	212607.980	59.286	SWAMP
7013A	3479434.572	212639.688	58.500	SWAMP
7014	3475119.922	233975.931	69.428	SWAMP

Point	State Plane Mississippi East Geoid 12A			Description
	Northing (m)	Easting (m)	Elevation (m)	
7014A	3475108.138	233938.106	69.415	SWAMP
7015	3434072.285	239497.136	33.555	SWAMP
7015A	3434094.796	239520.423	33.607	SWAMP
7016	3475813.500	191701.772	112.345	SWAMP
7016A	3475782.062	191686.747	111.808	SWAMP
7017	3454769.615	221077.274	98.507	SWAMP
7017A	3454739.389	221074.869	97.247	SWAMP
7018	3494284.028	244115.957	100.465	SWAMP
7018A	3494307.551	244138.355	100.975	SWAMP
7019	3510675.253	269958.910	75.946	SWAMP
7019A	3510696.060	269940.864	76.080	SWAMP
7020	3516023.911	307094.306	75.623	SWAMP
7020A	3515985.821	307082.697	76.219	SWAMP
7021	3504070.676	294788.265	63.798	SWAMP
7021A	3504075.568	294741.516	63.721	SWAMP
7022	3498469.273	227547.960	92.437	SWAMP
7022A	3498465.671	227517.295	92.427	SWAMP

NGS STATION CHECK POINTS

Point	Grid Deltas Published vs. Surveyed		
	Δ Northing (m)	Δ Easting (m)	Δ Elev. (m)
15 V 57	0.01	0.01	0.10
15 V 81	-0.02	-0.01	-0.06
45 V 16	0.01	0.02	-0.01
45 V 103	0.02	0.00	-0.10
98 V 104	N/A	N/A	-0.13
AP 40	N/A	N/A	0.01
C 1 41 2 RM 4	0.00	0.00	-0.11
N 110	N/A	N/A	-0.09

COORDINATE SYSTEM: GEODETIC

HORIZONTAL DATUM: NAD83 (2011) Epoch 2010.00
VERTICAL DATUM: NAVD88
GEOID MODEL: GEOOID 12A
UNITS: Meters

LiDAR GROUND CONTROL

Point	NAD 83 (2011) Epoch 2010.00		Ellipsoid Ht. (m)	Description
	N Latitude	W Longitude		
1001	31°05'57.92273"	-90°15'25.96444"	56.19	CONTROL
1002	31°33'33.53531"	-90°07'02.24020"	36.23	CONTROL
1003	31°45'37.17227"	-89°39'16.80533"	74.93	CONTROL
1004	31°35'36.71580"	-89°11'56.43388"	43.57	CONTROL
1005	31°51'53.90381"	-88°33'58.94731"	60.21	CONTROL
1006	31°26'50.68941"	-88°27'32.71664"	58.31	CONTROL
1007	30°59'31.06712"	-88°29'04.47373"	63.16	CONTROL
1008	31°10'14.81477"	-88°36'23.03717"	45.35	CONTROL
1009	31°20'45.25346"	-88°56'06.46730"	20.43	CONTROL
1010	31°32'44.42661"	-88°45'34.66586"	77.29	CONTROL
1011	31°40'59.21847"	-88°38'49.37427"	31.04	CONTROL
1012	31°33'25.40628"	-89°30'42.97635"	49.93	CONTROL
1013	31°24'49.98659"	-90°01'24.28425"	34.29	CONTROL
1014	31°23'17.41042"	-89°48'16.97956"	74.69	CONTROL
1015	31°00'44.21639"	-89°43'32.23543"	7.01	CONTROL
1016	31°21'53.26071"	-90°11'04.26867"	115.76	CONTROL
1017	31°11'06.56635"	-89°56'19.39443"	95.29	CONTROL
1018	31°33'11.14460"	-89°40'40.85432"	70.03	GCP
1019	31°45'20.16657"	-89°22'48.60273"	70.58	GCP
1020	31°47'18.57587"	-89°01'49.06613"	61.04	GCP
1021	31°16'41.41886"	-90°02'59.93717"	93.63	GCP
1022	31°18'45.87848"	-89°55'13.05396"	23.44	GCP
1023	31°15'10.90574"	-89°47'14.47207"	43.84	GCP
1024	31°15'10.61029"	-89°50'13.06379"	17.52	GCP
1025	31°14'05.41415"	-89°52'21.97709"	21.93	GCP
1026	31°42'37.91805"	-89°56'31.64460"	116.39	GCP
1027	31°35'40.58237"	-89°52'12.47488"	79.03	GCP
1028	31°38'00.95808"	-89°33'20.99948"	69.61	GCP
1029	31°42'14.04464"	-88°55'12.50848"	69.92	GCP
1030	31°41'37.55710"	-89°08'12.77532"	54.8	GCP
1031	31°09'25.28098"	-88°33'41.87884"	6.83	GCP

QUALITY CONTROL POINTS

Point	NAD 83 (2011) Epoch 2010.00		Ellipsoid Ht. (sFT)	Description
	N Latitude	W Longitude		
2001	31°06'04.96588"	-90°15'03.92345"	47.01	BARE EARTH

Point	NAD 83 (2011) Epoch 2010.00		Ellipsoid Ht. (sFT)	Description
	N Latitude	W Longitude		
2002	31°06'04.96588"	-90°15'03.92345"	48.01	BARE EARTH
2003	31°06'04.96588"	-90°15'03.92345"	49.01	BARE EARTH
2004	31°06'04.96588"	-90°15'03.92345"	50.01	BARE EARTH
2005	31°06'04.96588"	-90°15'03.92345"	51.01	BARE EARTH
2006	31°06'04.96588"	-90°15'03.92345"	52.01	BARE EARTH
2007	31°06'04.96588"	-90°15'03.92345"	53.01	BARE EARTH
2008	31°06'04.96588"	-90°15'03.92345"	54.01	BARE EARTH
2009	31°06'04.96588"	-90°15'03.92345"	55.01	BARE EARTH
2010	31°06'04.96588"	-90°15'03.92345"	56.01	BARE EARTH
2011	31°06'04.96588"	-90°15'03.92345"	57.01	BARE EARTH
2012	31°06'04.96588"	-90°15'03.92345"	58.01	BARE EARTH
2013	31°06'04.96588"	-90°15'03.92345"	59.01	BARE EARTH
2014	31°06'04.96588"	-90°15'03.92345"	60.01	BARE EARTH
2015	31°06'04.96588"	-90°15'03.92345"	61.01	BARE EARTH
2016	31°06'04.96588"	-90°15'03.92345"	62.01	BARE EARTH
2017	31°06'04.96588"	-90°15'03.92345"	63.01	BARE EARTH
2018	31°06'04.96588"	-90°15'03.92345"	64.01	BARE EARTH
2019	31°45'26.76154"	-89°23'10.12228"	71.97	BARE EARTH
2020	31°47'15.67986"	-89°01'56.64360"	60.51	BARE EARTH
2021	31°39'55.11633"	-89°10'29.10250"	44.59	BARE EARTH
2022	31°35'23.91017"	-89°52'32.33312"	72.11	BARE EARTH
2023	31°42'35.73673"	-89°23'19.41821"	47.88	BARE EARTH
2025	31°00'18.43300"	-88°31'40.18386"	66.72	BARE EARTH
3001	31°06'59.91791"	-90°08'38.18689"	65.41	URBAN
3002	31°33'35.13197"	-90°07'10.81718"	36.51	URBAN
3003	31°45'39.45988"	-89°39'16.36577"	74.24	URBAN
3004	31°35'38.56351"	-89°11'58.56762"	44.25	URBAN
3005	31°51'48.41676"	-88°33'49.85608"	57.83	URBAN
3006	31°26'04.67015"	-88°28'22.86839"	50.7	URBAN
3007	31°09'10.08743"	-88°33'10.00235"	3.48	URBAN
3008	31°10'32.99182"	-88°35'53.03834"	46.83	URBAN
3009	31°20'54.77285"	-88°56'09.93777"	22.65	URBAN
3010	31°32'44.76611"	-88°45'34.89554"	77.12	URBAN
3011	31°41'09.24964"	-88°38'48.86078"	34.71	URBAN
3012	31°33'42.91691"	-89°29'56.31931"	54.78	URBAN
3013	31°18'45.86296"	-89°55'09.80673"	23.36	URBAN

Point	NAD 83 (2011) Epoch 2010.00		Ellipsoid Ht. (sFT)	Description
	N Latitude	W Longitude		
3014	31°15'10.67306"	-89°50'12.36946"	17.38	URBAN
3015	31°15'15.37401"	-89°47'17.49090"	44.64	URBAN
3016	31°21'45.20534"	-90°12'19.04139"	109.41	URBAN
3017	31°14'04.42503"	-89°52'11.87336"	20.93	URBAN
3018	31°38'25.04013"	-89°33'22.66053"	70.34	URBAN
3019	31°45'19.32510"	-89°22'51.50749"	71.65	URBAN
3020	31°47'08.88927"	-89°01'59.83441"	60.87	URBAN
3021	31°39'39.90490"	-89°10'18.39728"	42.4	URBAN
3022	31°35'22.30809"	-89°52'31.62558"	71.24	URBAN
4001	31°06'56.09163"	-90°15'17.88786"	46.68	TALL GRASS
4002	31°33'34.22715"	-90°07'27.34204"	42.56	TALL GRASS
4003	31°46'00.69911"	-89°40'30.17559"	92.76	TALL GRASS
4004	31°35'31.76452"	-89°11'09.43007"	62.28	TALL GRASS
4005	31°51'59.10990"	-88°34'08.07159"	59.58	TALL GRASS
4006	31°26'07.56353"	-88°27'45.36164"	54.12	TALL GRASS
4008	31°10'14.72928"	-88°36'21.90160"	47.47	TALL GRASS
4009	31°20'46.74540"	-88°56'01.97296"	20.81	TALL GRASS
4010	31°32'46.57010"	-88°45'38.69908"	72.82	TALL GRASS
4011	31°37'57.99108"	-88°39'42.91310"	59.31	TALL GRASS
4012	31°33'26.29801"	-89°30'52.12360"	53.41	TALL GRASS
4013	31°25'02.42452"	-90°01'35.27187"	48.23	TALL GRASS
4014	31°24'31.20535"	-89°47'34.86749"	85.01	TALL GRASS
4015	31°01'10.42806"	-89°44'13.40680"	5.03	TALL GRASS
4016	31°21'44.41155"	-90°11'31.69810"	114.17	TALL GRASS
4017	31°11'05.05823"	-89°56'19.53097"	94.95	TALL GRASS
4018	31°34'04.89837"	-89°44'01.32591"	114.89	TALL GRASS
4019	31°45'23.60647"	-89°22'52.90665"	67.64	TALL GRASS
4020	31°46'42.51473"	-89°02'29.82386"	59.39	TALL GRASS
4021	31°39'37.34689"	-89°09'55.44449"	40.06	TALL GRASS
4022	31°38'13.97287"	-89°54'10.48592"	129.67	TALL GRASS
4023	31°39'39.46316"	-88°38'30.54250"	24.28	TALL GRASS
5001	31°06'07.03665"	-90°15'03.27872"	45.95	BRUSH
5002	31°31'36.96135"	-90°06'17.32316"	44.3	BRUSH
5003	31°45'31.07820"	-89°39'50.18854"	82.03	BRUSH
5004	31°35'38.30047"	-89°13'04.00847"	36.33	BRUSH

Point	NAD 83 (2011) Epoch 2010.00		Ellipsoid Ht. (sFT)	Description
	N Latitude	W Longitude		
5005	31°50'10.84253"	-88°33'47.99506"	53.79	BRUSH
5006	31°26'42.63271"	-88°27'26.96556"	54.72	BRUSH
5007	31°01'19.68078"	-88°30'13.04168"	58.5	BRUSH
5008	31°10'18.09132"	-88°35'40.79635"	39.18	BRUSH
5009	31°21'20.33198"	-88°56'22.92992"	29.54	BRUSH
5010	31°32'28.45509"	-88°45'23.62356"	75.49	BRUSH
5011	31°38'01.34168"	-88°39'38.20969"	53.18	BRUSH
5012	31°33'22.43090"	-89°31'00.37673"	54.92	BRUSH
5013	31°26'05.04847"	-90°03'08.40602"	40.92	BRUSH
5014	31°23'38.16545"	-89°47'42.05785"	62.16	BRUSH
5015	31°03'03.09375"	-89°44'11.32587"	10.87	BRUSH
5016	31°21'42.98255"	-90°11'56.79700"	116.78	BRUSH
5017	31°11'05.76898"	-89°56'26.82459"	90.45	BRUSH
5018	31°33'13.22681"	-89°41'15.84114"	75.21	BRUSH
5019	31°44'36.30740"	-89°23'29.58644"	70.14	BRUSH
5020	31°45'57.28342"	-89°03'08.97739"	57.95	BRUSH
5021	31°39'43.24263"	-89°09'39.08506"	39.88	BRUSH
5022	31°35'23.56196"	-89°51'22.20329"	80.33	BRUSH
5023	31°44'12.58251"	-89°22'31.66531"	53.01	BRUSH
6001	31°06'06.01436"	-90°15'02.89971"	46.015	FOREST
6002	31°33'15.83323"	-90°07'32.50171"	39.853	FOREST
6004	31°35'23.14754"	-89°12'24.15570"	34.74	FOREST
6005	31°51'42.25263"	-88°33'51.80303"	56.862	FOREST
6006	31°26'47.63805"	-88°27'20.96843"	60.515	FOREST
6007	31°00'13.62718"	-88°31'50.58369"	66.228	FOREST
6008	31°10'15.45487"	-88°36'23.49624"	44.647	FOREST
6009	31°20'48.48807"	-88°55'52.09659"	18.378	FOREST
6010	31°32'46.47676"	-88°45'36.64817"	74.033	FOREST
6011	31°38'03.33103"	-88°39'39.78374"	56.32	FOREST
6012	31°33'30.45614"	-89°30'43.27001"	48.441	FOREST
6013	31°25'02.31677"	-90°01'36.11419"	47.24	FOREST
6014	31°23'54.17064"	-89°47'41.67680"	60.152	FOREST
6015	31°00'41.01434"	-89°43'41.82209"	5.749	FOREST
6016	31°21'54.94556"	-90°11'00.19101"	116.109	FOREST
6017	31°10'49.83313"	-89°57'16.74883"	94.136	FOREST
6018	31°33'12.71224"	-89°41'09.90409"	77.247	FOREST

Point	NAD 83 (2011) Epoch 2010.00		Ellipsoid Ht. (sFT)	Description
	N Latitude	W Longitude		
6019	31°45'23.98209"	-89°23'00.09259"	71.133	FOREST
6020	31°46'03.08097"	-89°03'08.08711"	54.644	FOREST
6021	31°39'11.69169"	-89°09'51.36860"	37.317	FOREST
6001A	31°06'05.07571"	-90°15'07.06388"	46.836	FOREST
6002A	31°33'17.07422"	-90°07'33.11644"	39.877	FOREST
6003A	31°45'31.32879"	-89°40'00.57442"	92.037	FOREST
6004A	31°35'23.67154"	-89°12'21.79084"	34.746	FOREST
6005A	31°51'46.93477"	-88°33'49.77862"	57.344	FOREST
6006A	31°26'47.45504"	-88°27'23.81515"	57.428	FOREST
6007A	31°00'13.74132"	-88°31'49.76060"	65.901	FOREST
6008A	31°10'15.89217"	-88°36'24.09483"	41.584	FOREST
6009A	31°20'46.17311"	-88°55'52.61262"	18.161	FOREST
6010A	31°32'46.41906"	-88°45'35.61695"	74.737	FOREST
6011A	31°38'02.51607"	-88°39'40.82607"	54.99	FOREST
6012A	31°33'29.21802"	-89°30'43.57739"	48.503	FOREST
6013A	31°25'01.68887"	-90°01'35.60747"	46.444	FOREST
6014A	31°23'47.54511"	-89°47'42.39391"	64.991	FOREST
6016A	31°21'56.55488"	-90°10'55.48543"	115.04	FOREST
6017A	31°10'50.84134"	-89°57'17.90940"	92.841	FOREST
6018A	31°33'12.56380"	-89°41'12.38066"	75.902	FOREST
6019A	31°45'23.86263"	-89°22'59.13284"	70.679	FOREST
6020A	31°46'03.95590"	-89°03'08.49577"	55.694	FOREST
6021A	31°39'12.00606"	-89°09'50.03801"	37.561	FOREST
6022A	31°35'21.18986"	-89°52'13.62501"	66.17	FOREST
7001	31°06'14.74157"	-90°15'01.01081"	45.181	SWAMP
7002	31°33'16.31353"	-90°07'34.66124"	40.284	SWAMP
7003	31°45'14.47975"	-89°38'47.53241"	72.824	SWAMP
7004	31°35'23.27122"	-89°12'20.74787"	34.252	SWAMP
7005	31°50'10.29646"	-88°33'50.38478"	52.873	SWAMP
7006	31°26'09.58407"	-88°29'14.37353"	30.774	SWAMP
7007	31°00'20.46429"	-88°30'44.18153"	72.382	SWAMP
7008	31°10'10.20471"	-88°38'15.18847"	5.721	SWAMP
7009	31°21'05.80219"	-88°55'52.94035"	17.686	SWAMP

Point	NAD 83 (2011) Epoch 2010.00		Ellipsoid Ht. (sFT)	Description
	N Latitude	W Longitude		
7010	31°34'36.58663"	-88°41'52.94907"	31.463	SWAMP
7011	31°38'30.69474"	-88°38'58.22900"	20.868	SWAMP
7012	31°33'28.80407"	-89°30'43.89467"	48.562	SWAMP
7013	31°24'49.60172"	-90°01'22.43731"	33.029	SWAMP
7014	31°22'48.65399"	-89°47'50.03256"	43.059	SWAMP
7015	31°00'41.35242"	-89°43'42.91726"	5.917	SWAMP
7016	31°22'33.49156"	-90°14'29.01788"	86.108	SWAMP
7017	31°11'37.59511"	-89°55'37.33443"	71.601	SWAMP
7018	31°33'18.64871"	-89°41'44.37487"	74.486	SWAMP
7019	31°42'30.18287"	-89°25'38.88509"	49.949	SWAMP
7020	31°45'48.48497"	-89°02'12.80490"	49.268	SWAMP
7021	31°39'12.80530"	-89°09'51.29068"	37.601	SWAMP
7022	31°35'20.74515"	-89°52'16.22647"	66.481	SWAMP
7001A	31°06'15.73118"	-90°15'00.04302"	45.128	SWAMP
7002A	31°33'15.91096"	-90°07'35.18504"	40.538	SWAMP
7003A	31°45'15.59394"	-89°38'46.88146"	71.284	SWAMP
7004A	31°35'22.34539"	-89°12'24.33140"	34.344	SWAMP
7005A	31°50'09.08473"	-88°33'38.43850"	55.625	SWAMP
7006A	31°26'09.31424"	-88°29'13.53562"	31.302	SWAMP
7007A	31°00'20.58402"	-88°30'45.57166"	71.643	SWAMP
7008A	31°10'12.23160"	-88°38'17.27229"	4.841	SWAMP
7009A	31°21'05.59186"	-88°55'53.51565"	17.945	SWAMP
7010A	31°34'36.06222"	-88°41'53.84530"	31.189	SWAMP
7011A	31°38'29.10037"	-88°39'03.20050"	17.042	SWAMP
7012A	31°33'27.64646"	-89°30'44.69055"	48.934	SWAMP
7013A	31°24'50.29039"	-90°01'21.25925"	32.242	SWAMP
7014A	31°22'48.24047"	-89°47'51.45158"	43.046	SWAMP
7015A	31°00'42.10139"	-89°43'42.06082"	5.969	SWAMP
7016A	31°22'32.45767"	-90°14'29.55073"	85.571	SWAMP
7017A	31°11'36.61251"	-89°55'37.39497"	70.339	SWAMP
7018A	31°33'19.42983"	-89°41'43.54817"	74.995	SWAMP
7019A	31°42'30.84501"	-89°25'39.58771"	50.083	SWAMP
7020A	31°45'47.24154"	-89°02'13.21887"	49.865	SWAMP
7021A	31°39'12.93396"	-89°09'53.06821"	37.524	SWAMP

SECTION 3: GROUND/GEODETIC CONTROL LOGS AND PHOTOS

This section contains the station recovery information sheets and photographs for the ground control stations established for the project. The stations appear as they are ordered in the final coordinate listing of Section 2.

The data is assembled on the following pages.

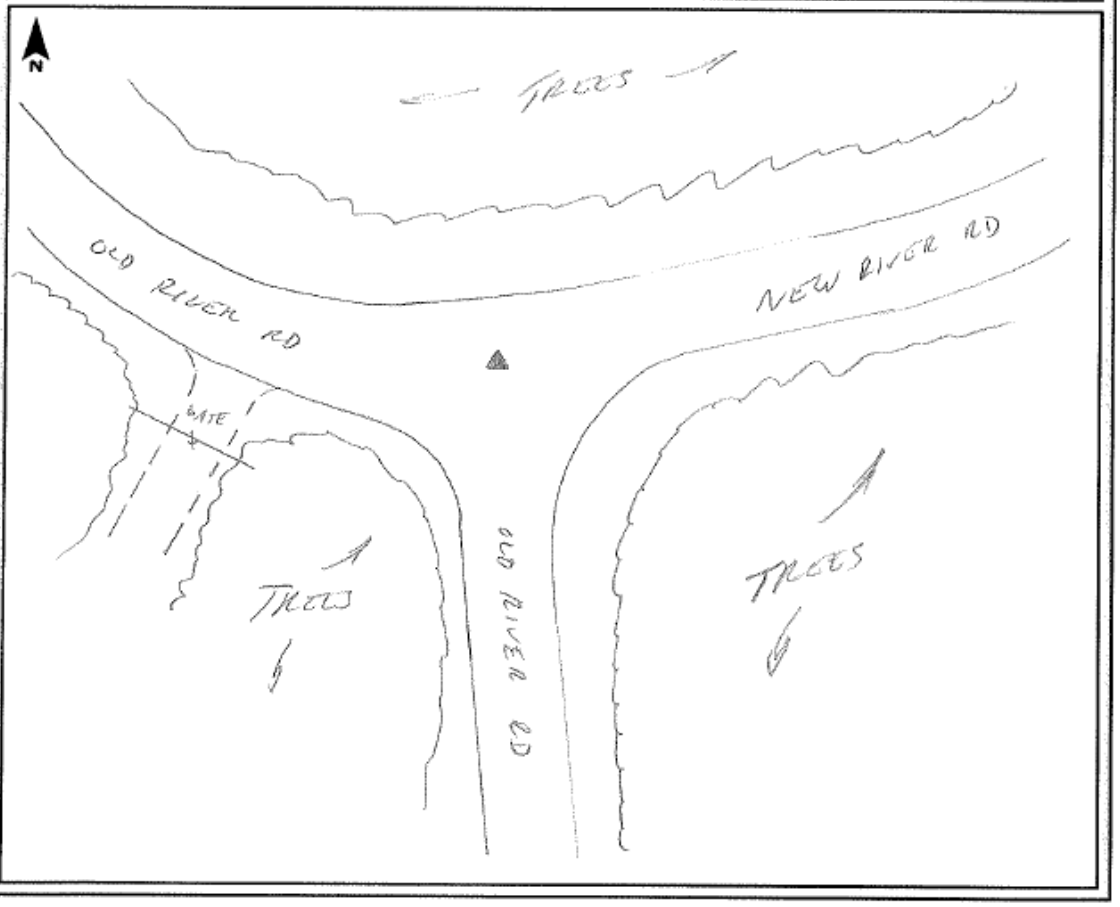
MS LIDAR Ground Control

LiDAR Control Points:

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-4-14
Station Name:	1001	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	31° 05' 57.9"	**Julian Day:** 338	**Session No.** 3
Longitude:	90° 15' 25.9"	**Start Time:** —	**End Time:** —
Ellip. Height:	52.2m	**Data File Name:**	MS CIDAR 12041 JS.RC
Type of Mark:	NAIL w/ WASHER	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	CLOUDY 60°	**Antenna Height:** 2.0M	to bottom of antenna mount

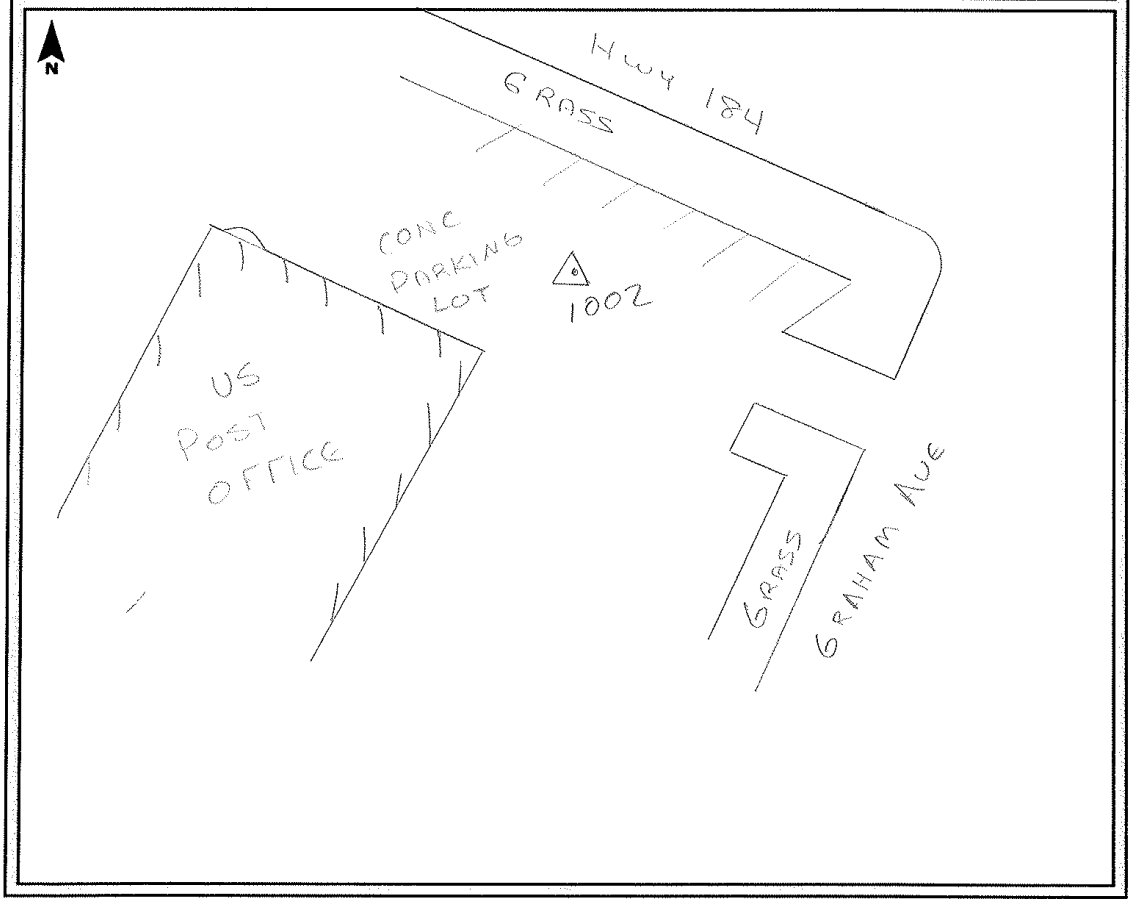


1001-3S-04DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-7-14
Station Name:	1002 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-33-33.5	**Julian Day:** 341	**Session No.**
Longitude:	90-07-02.2	**Start Time:**	**End Time:**
Ellip. Height:	118.9 mft	**Data File Name:**	MSLIDAR120714RC.dc
Type of Mark:	PK	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	55°/CLDY	**Antenna Height:** 2.0M	to bottom of antenna mount

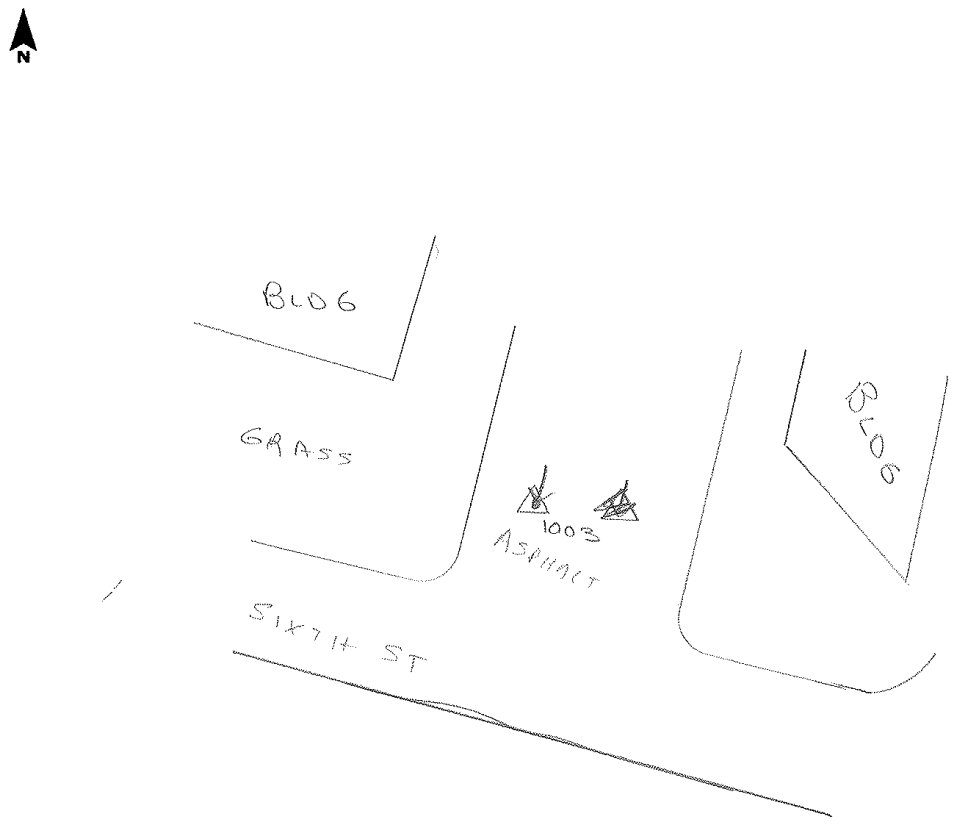


1002-3N-07DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-9-14
Station Name:	1003 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-45-37.2	**Julian Day:**	342 **Session No.**
Longitude:	89-39-16.8	**Start Time:**	**End Time:**
Ellip. Height:	245.7 sFt	**Data File Name:**	MSLIDAR120914RC.dc
Type of Mark:	S. Tip of WHITE ARROW	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	65°/CLR	**Antenna Height:**	2.0M to bottom of antenna mount

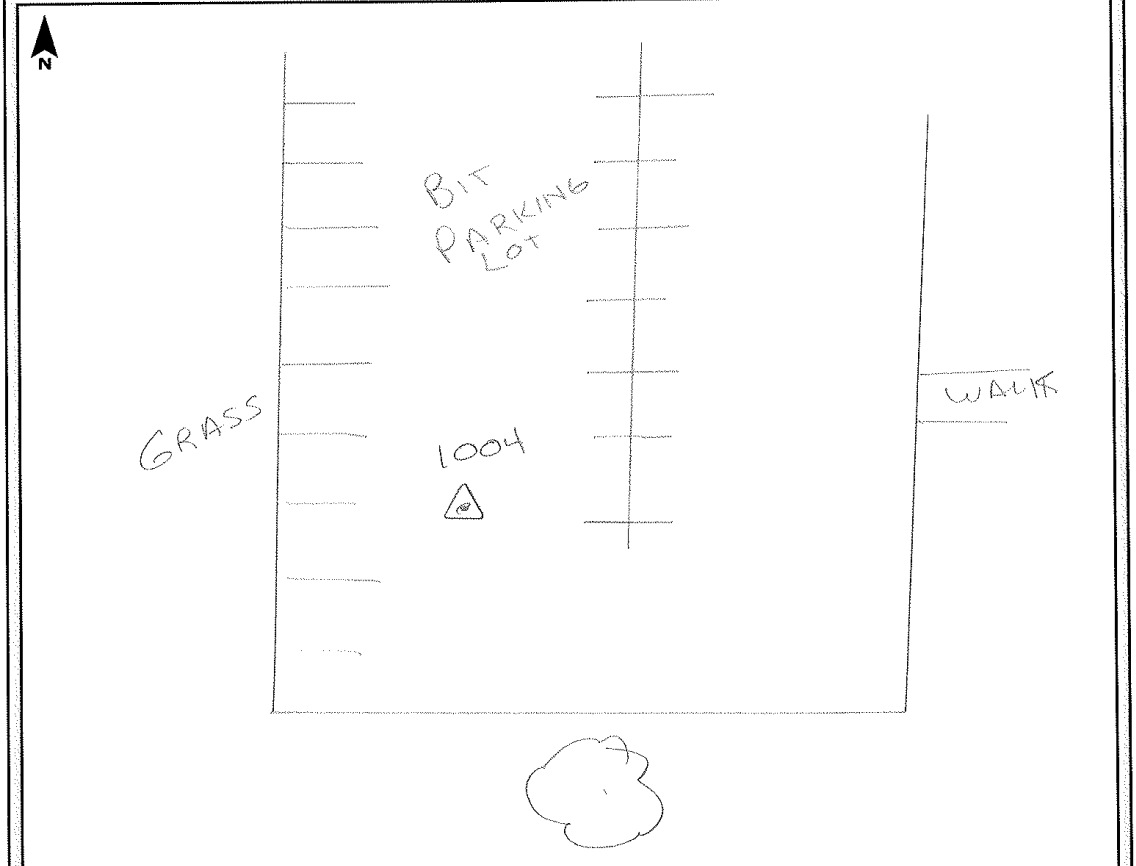


1003-3E-09DEC2014

GPS Observation Log Sheet

WOOLPERT

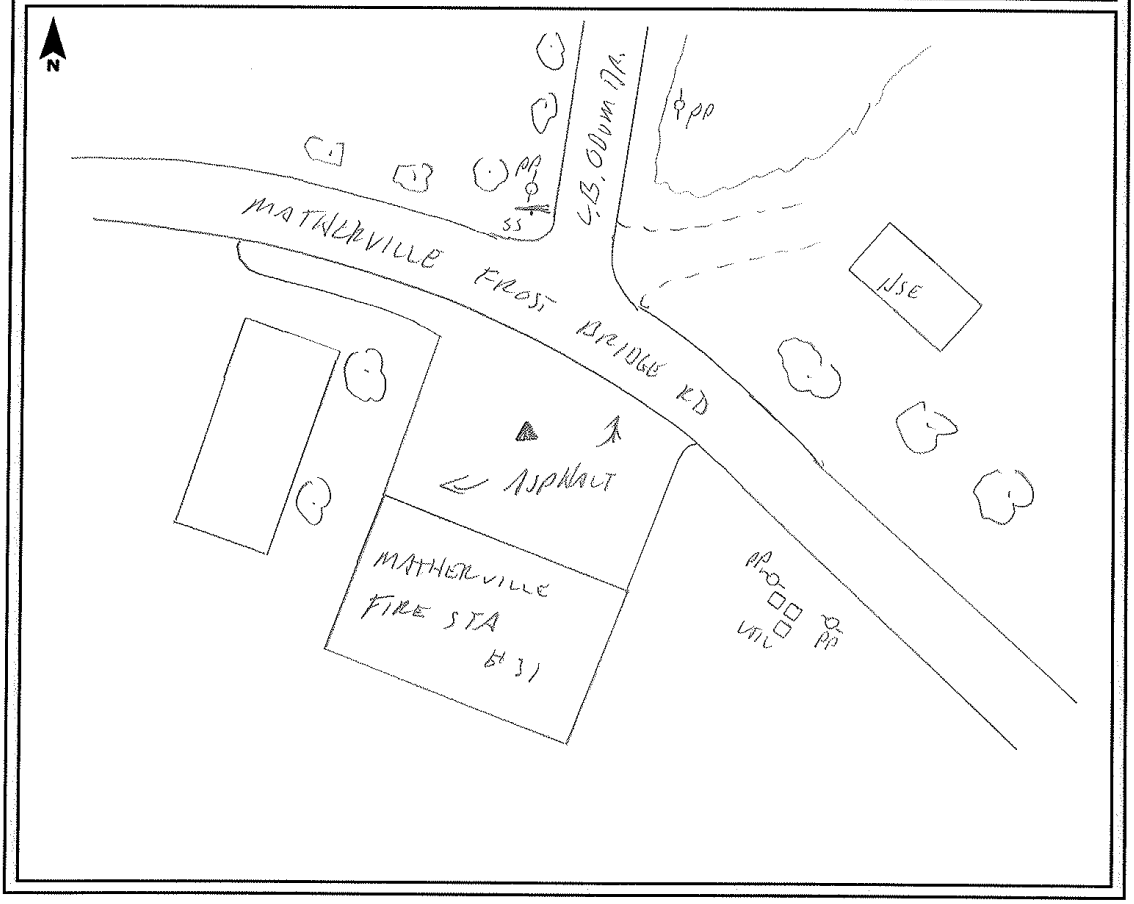
Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-10-14
Station Name:	1004	**Operator Name:**	JOHN YAEGER
Latitude:	31-35-36.7	**Julian Day:** 344	**Session No.**
Longitude:	89-11-56.4	**Start Time:**	**End Time:**
Ellip. Height:	43.5	**Data File Name:**	MSL10AR12101 4JS.dc
Type of Mark:	PK	**Type of Receiver:**	R8-2
Stamping on Mark:	–	**Type of Antenna:**	INTERNAL
Weather Condition:	CLOY 60	**Antenna Height:** 2.0	to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

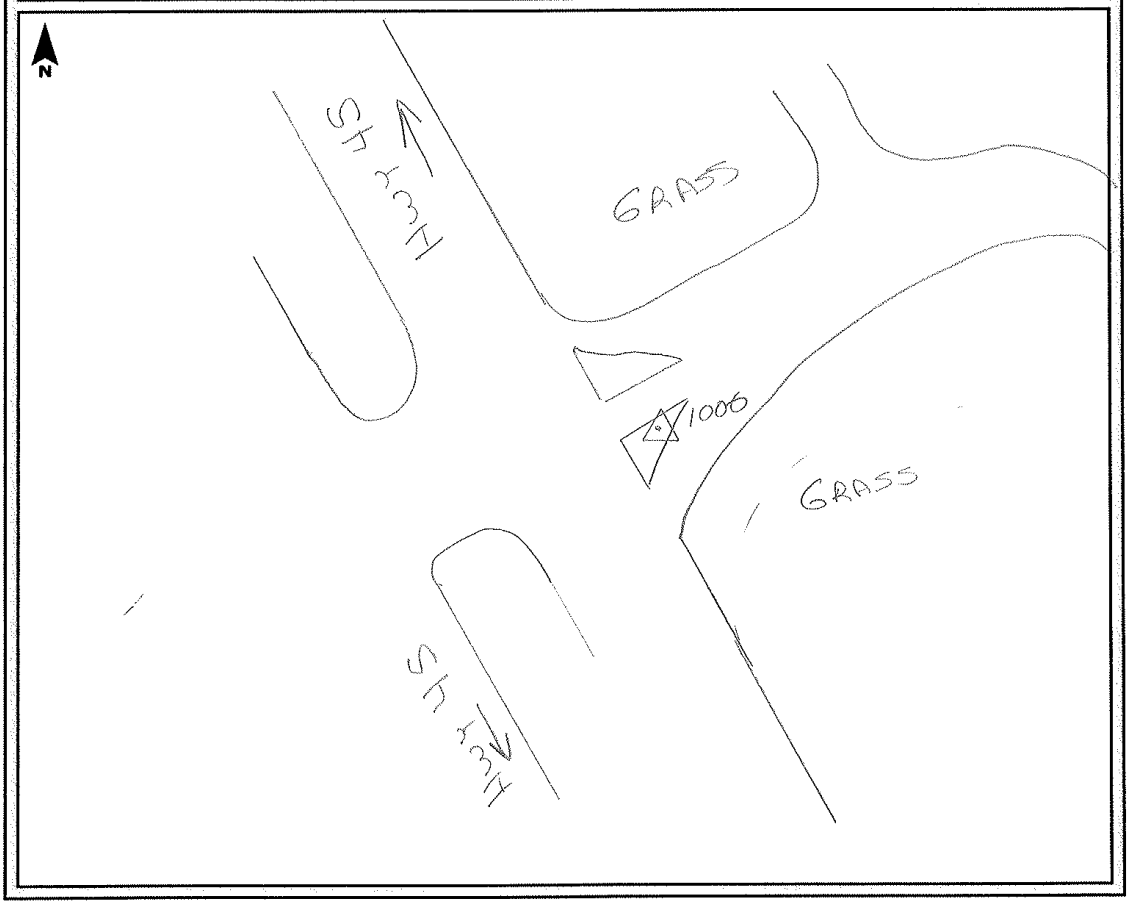
Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-11-14
Station Name:	1005 (CCR)	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	31° 51' 53.90"	**Julian Day:** 345	**Session No.**
Longitude:	88° 33' 53.94"	**Start Time:**	**End Time:**
Ellip. Height:	197.544	**Data File Name:**	
Type of Mark:	MAG NAIL	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	SUNNY 40°	**Antenna Height:** 2.00 ~~2.284~~	to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-11-14
Station Name:	1006 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-26-60.7	**Julian Day:**	**Session No.**
Longitude:	88-27-32.7	**Start Time:**	**End Time:**
Ellip. Height:	191.1 sft	**Data File Name:**	MSLIDAR121114RC.dc
Type of Mark:	GOD	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	55°/CLR	**Antenna Height:** 2.0M	to bottom of antenna mount

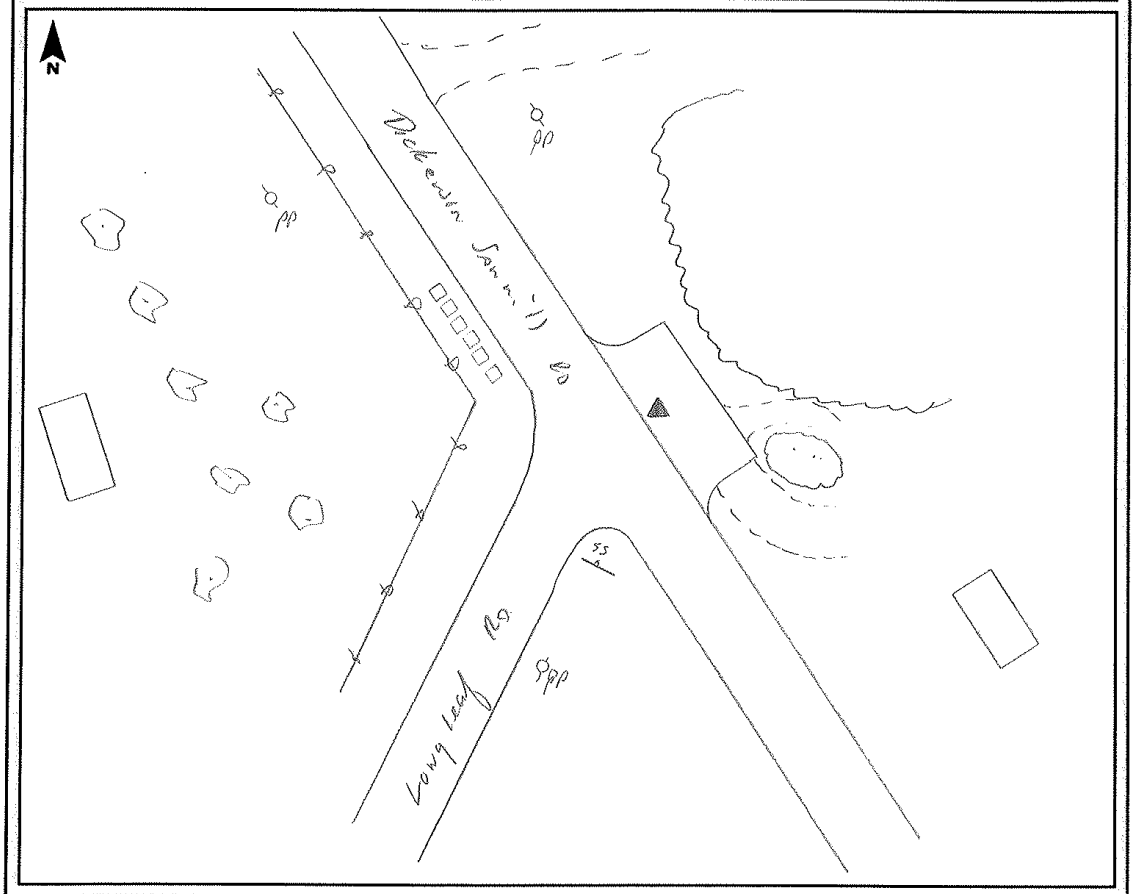


1006-3E-11DEC2014

GPS Observation Log Sheet

WOOLPERT

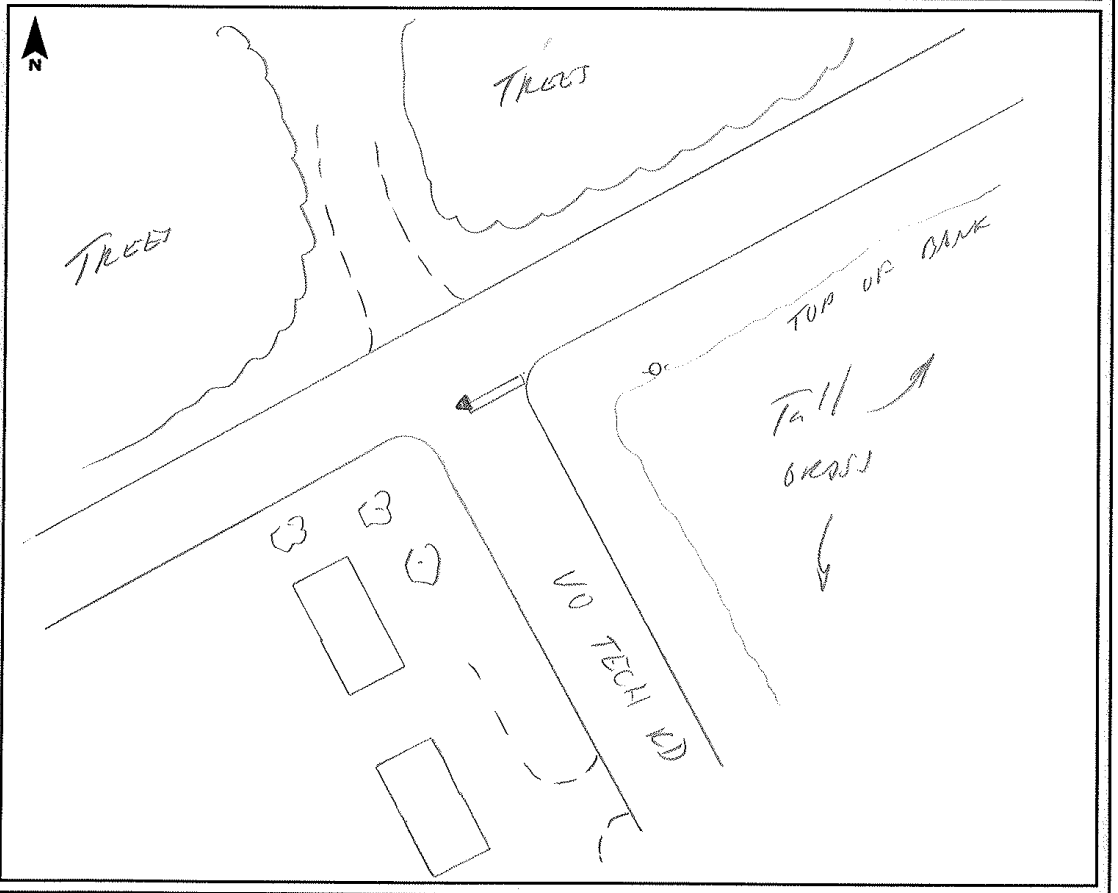
Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-12-14
Station Name:	1007 (GCP)	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	30° 59' 31.06"	**Julian Day:**	346 **Session No.**
Longitude:	88° 29' 04.47"	**Start Time:**	**End Time:**
Ellip. Height:	207.334'	**Data File Name:**	
Type of Mark:	MAG NAIL	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	SUNNY 50°	**Antenna Height:**	2.0M to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

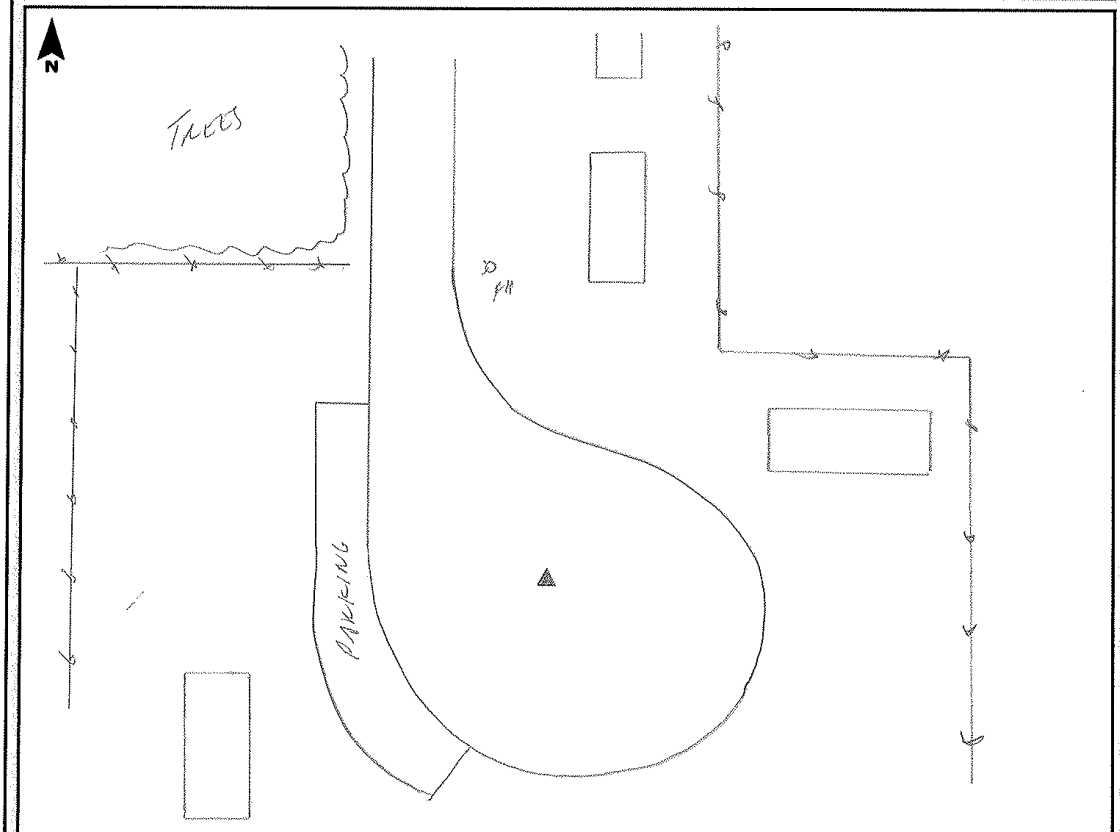
Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-12-10
Station Name:	1008 (GCP)	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	31° 10' 14.81"	**Julian Day:**	346 **Session No.**
Longitude:	88° 36' 23.03"	**Start Time:**	**End Time:**
Ellip. Height:	148.775'	**Data File Name:**	
Type of Mark:	MAG NAIL	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	PC 55°	**Antenna Height:**	2.0M to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-15-14
Station Name:	1009	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31° 20' 45.25"	**Julian Day:**	**Session No.**
Longitude:	88° 56' 06.46"	**Start Time:**	**End Time:**
Ellip. Height:	66.975'	**Data File Name:**	
Type of Mark:	MAG NAIL	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	SUNNY 45°	**Antenna Height:** 2.0M	to bottom of antenna mount

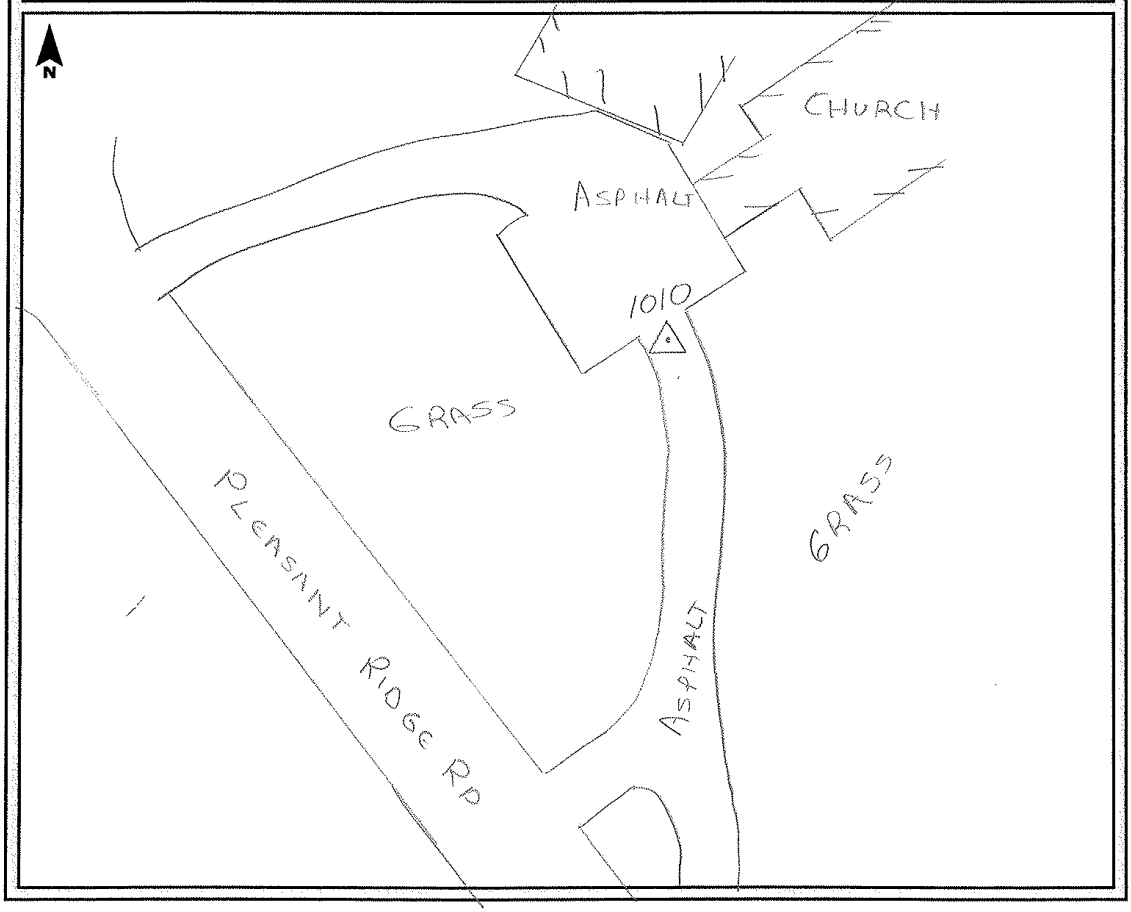


1009-3E-15DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-11-14
Station Name:	1010	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-32-44.4	**Julian Day:** 345	**Session No.**
Longitude:	88-45-34.7	**Start Time:**	**End Time:**
Ellip. Height:	77.3	**Data File Name:**	MSL1OAR121114RC.dc
Type of Mark:	PK	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	55°/CLR	**Antenna Height:** 2.0M	to bottom of antenna mount

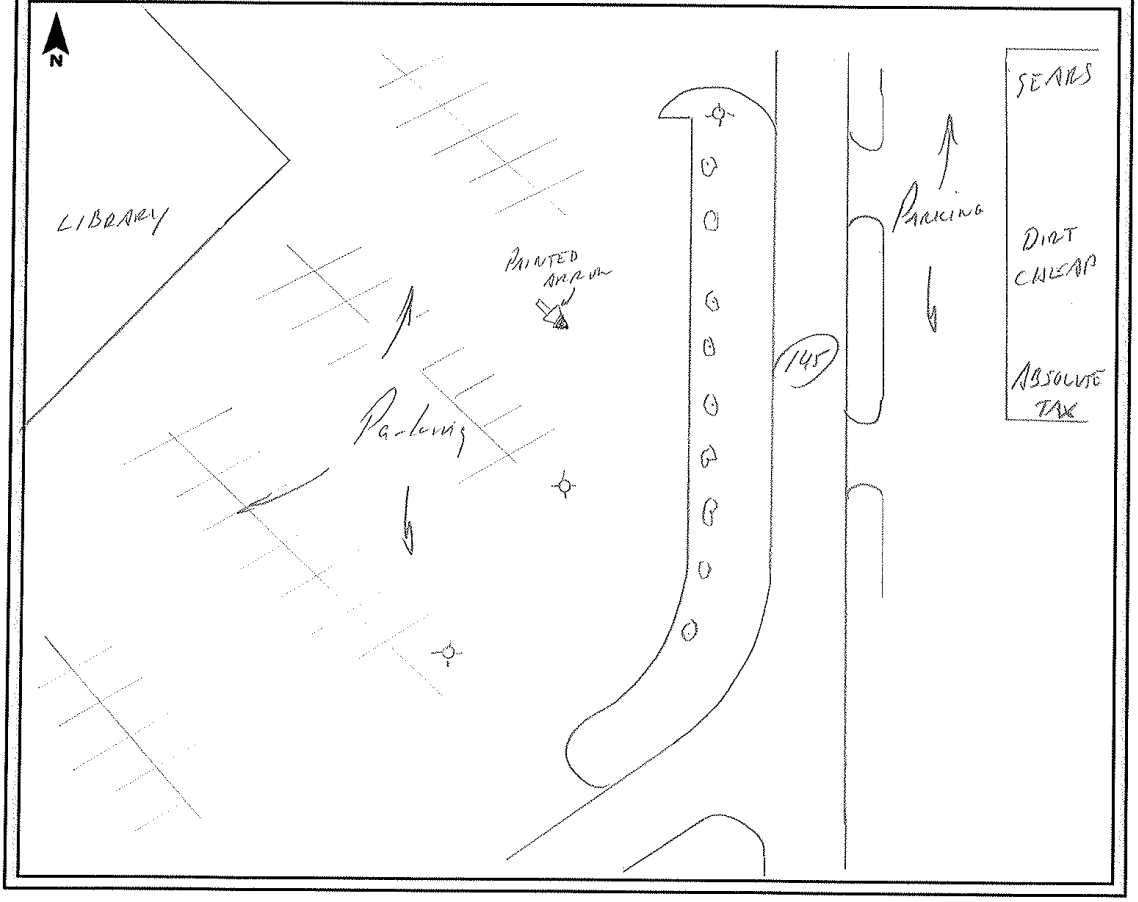


1010-3E-11DEC2014

GPS Observation Log Sheet

WOOLPERT

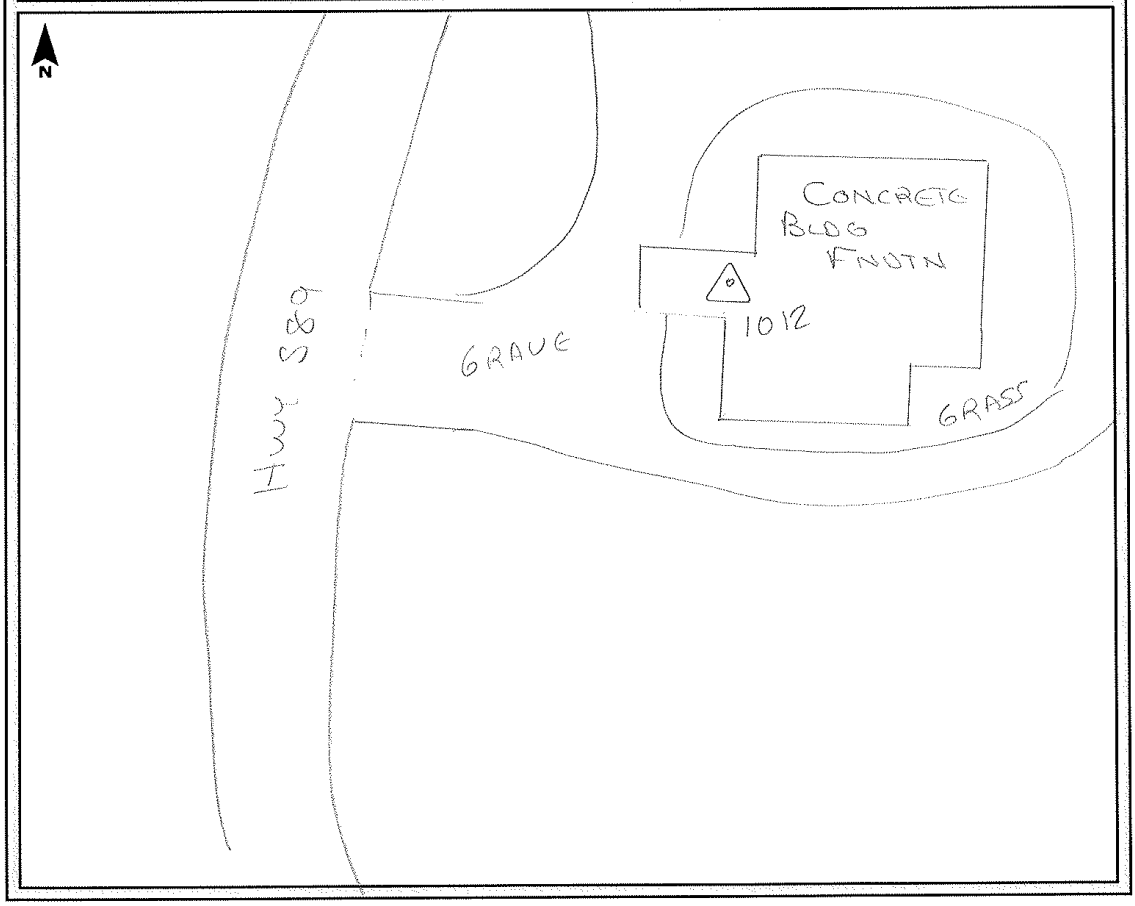
Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-11-14
Station Name:	1011 (GCP)	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	31° 40' 59.21"	**Julian Day:**	345 **Session No.**
Longitude:	88° 38' 49.37"	**Start Time:**	**End Time:**
Ellip. Height:	101.824'	**Data File Name:**	
Type of Mark:	BLACK DOT	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	SUNNY 50'	**Antenna Height:**	2.0M to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

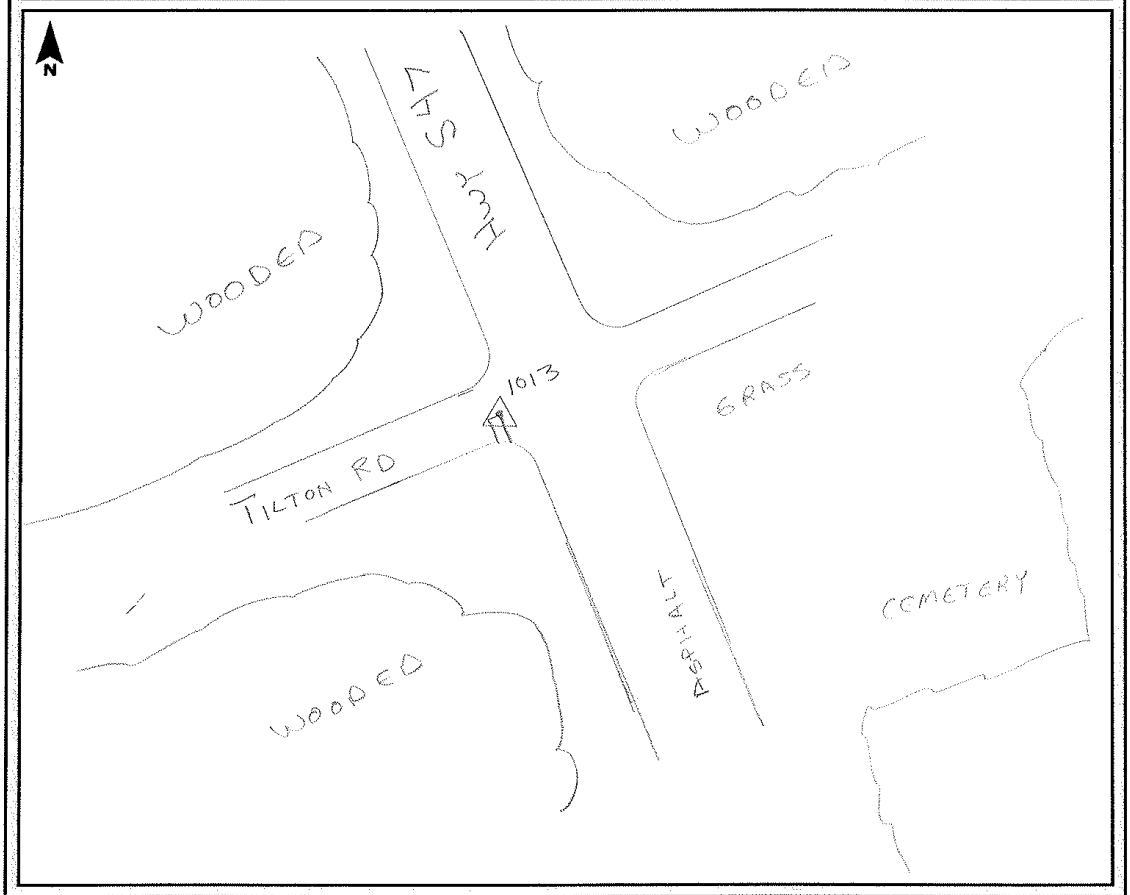
Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835
Survey Date:	12-10-14		
Station Name:	1012	**Operator Name:**	JOHN YAEGER
Latitude:	31-33-23.4	**Julian Day:**	344
Session No.			
Longitude:	89-30-42.9	**Start Time:**	
End Time:			
Ellip. Height:	49.9	**Data File Name:**	MSLIDAR121014JS.dc
Type of Mark:	DK	**Type of Receiver:**	R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	60°/CLDY	**Antenna Height:**	2.0 to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-7-14
Station Name:	1013 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-24-49.9	**Julian Day:**	341 **Session No.**
Longitude:	90-01-24.3	**Start Time:**	**End Time:**
Ellip. Height:	112.5 sft	**Data File Name:**	MSLIDAR120714RC.dc
Type of Mark:	RK@ NE TIP OF STRIPE WHITE	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	55°/CLOY	**Antenna Height:**	2.0M to bottom of antenna mount

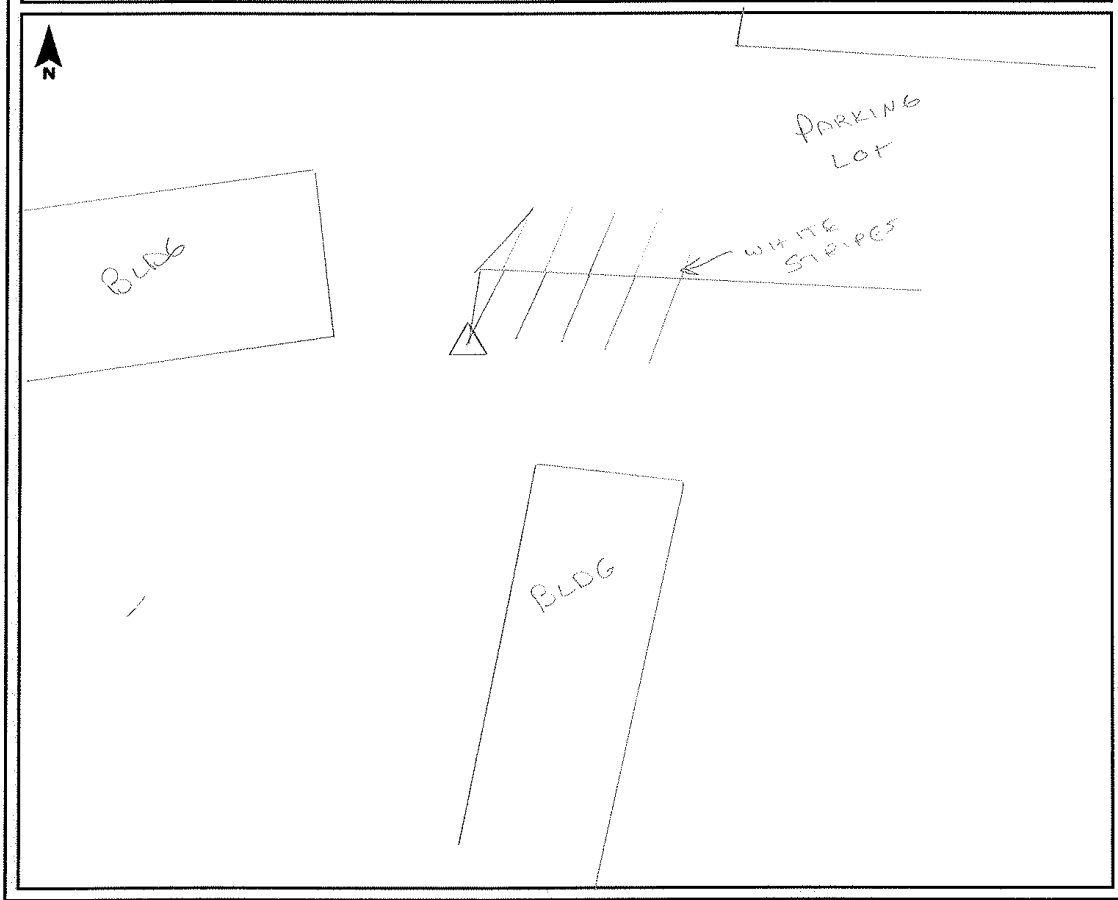


1013-3N-07DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-5-14
Station Name:	1014 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-23-17.4	**Julian Day:**	389 **Session No.** 3
Longitude:	89-48-17.0	**Start Time:**	**End Time:**
Ellip. Height:	244.9 -sft	**Data File Name:**	MSLIDARIZOSRC.dc
Type of Mark:	PK-1N1 OF STRIPES	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	70° / CLOY	**Antenna Height:**	2.0M to bottom of antenna mount

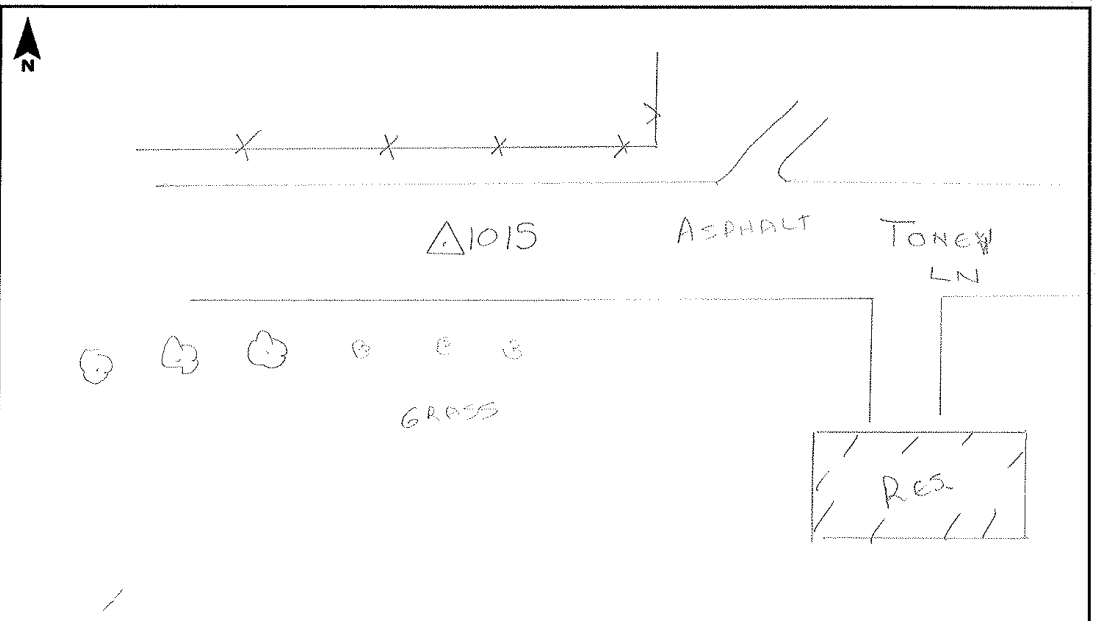


1014-3S-05DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-6-14
Station Name:	1015 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-00-44.2	**Julian Day:**	340 **Session No.** 1
Longitude:	89-44-32.2	**Start Time:**	**End Time:**
Ellip. Height:	23.0 ~~sft~~	**Data File Name:**	MSLIDAR1206RC
Type of Mark:	PK@℄ or Rod	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	65°/ DRIZZLE	**Antenna Height:**	2.0M to bottom of antenna mount

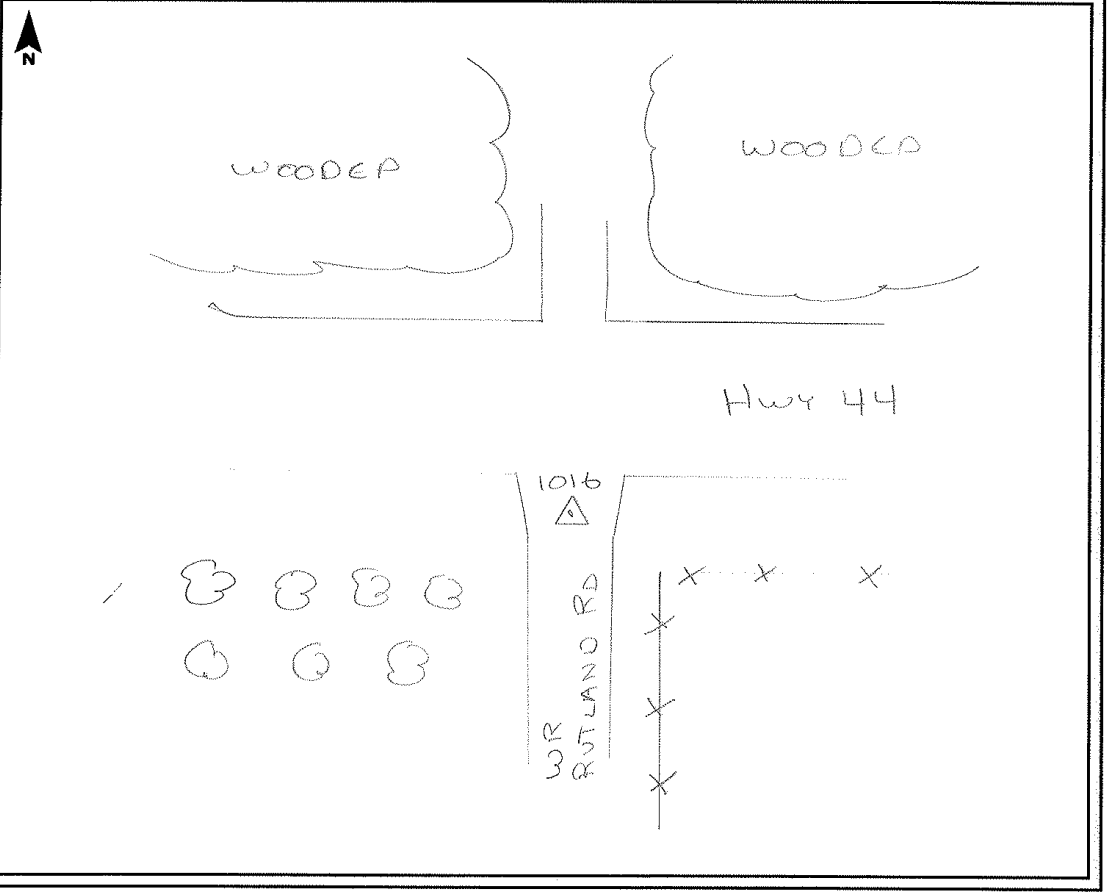


1015-3E-06DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-7-14
Station Name:	1016 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-21-53.3	**Julian Day:** 341	**Session No.** 1
Longitude:	90-11-04.3	**Start Time:**	**End Time:**
Ellip. Height:	379.8 sft	**Data File Name:**	MSLIDAR120714RC.dc
Type of Mark:	PK	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	-	**Type of Antenna:**	INTERNAL
Weather Condition:	55°/ CLDY	**Antenna Height:** 2.0M	to bottom of antenna mount

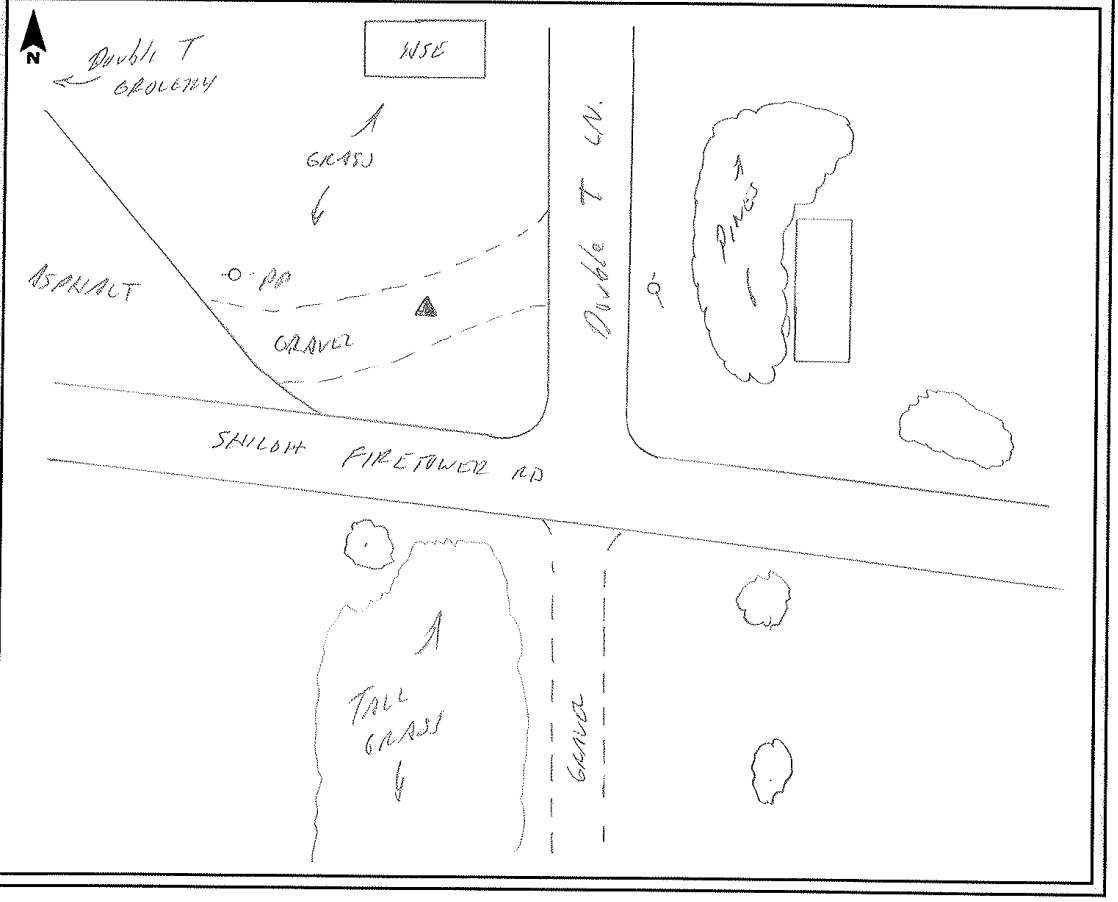


1016-3E-07DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-4-14
Station Name:	1017 GCP	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	31° 11' 06.6"	**Julian Day:**	338 **Session No.**
Longitude:	89° 58' 19.4"	**Start Time:**	**End Time:**
Ellip. Height:	312.61'	**Data File Name:**	MS LIDAR 12041455.DC
Type of Mark:	N/A	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	PT SUNNY 65°	**Antenna Height:**	2.0M to bottom of antenna mount



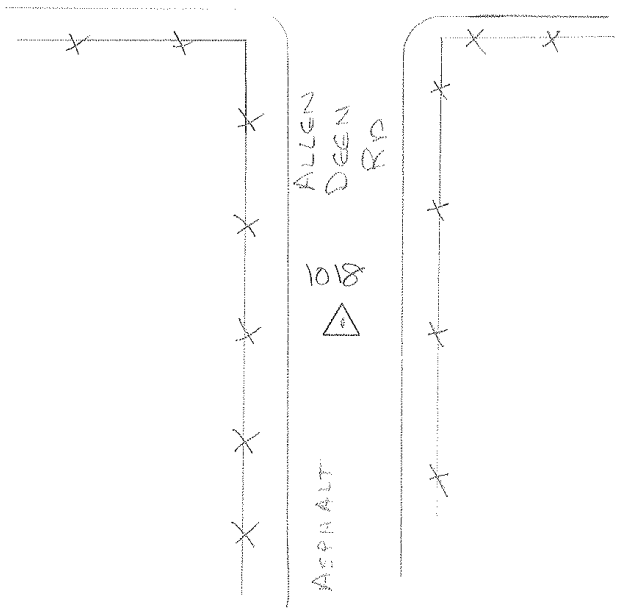
1017-3S-04DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-09-14
Station Name:	1018 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-33-11.1	**Julian Day:**	342 **Session No.**
Longitude:	89-40-40.9	**Start Time:**	**End Time:**
Ellip. Height:	70.0	**Data File Name:**	MSLIDAR120914RC.dc
Type of Mark:	PK	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	60°/CLR	**Antenna Height:**	2.0M to bottom of antenna mount

N

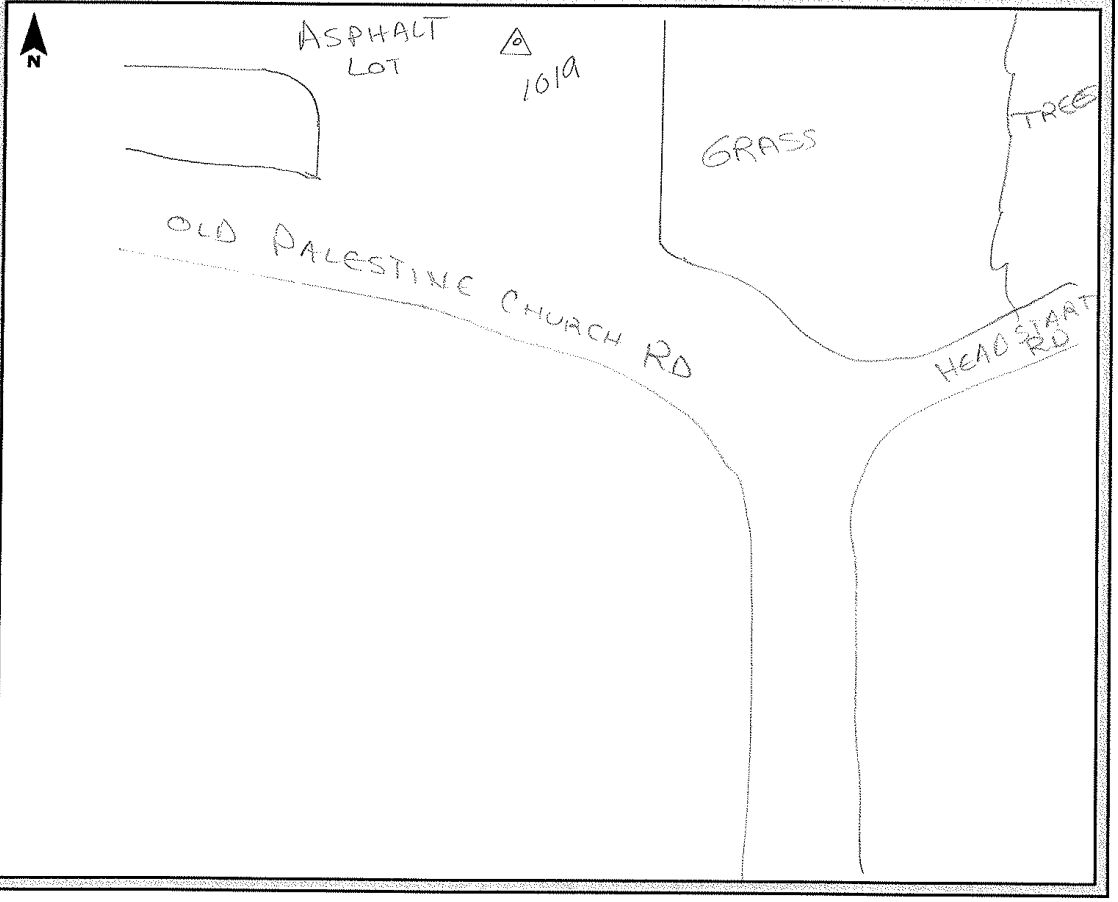


1018-3N-09DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-10-14
Station Name:	1019	**Operator Name:**	JOHN YAEGER
Latitude:	31-45-20.2	**Julian Day:** 344	**Session No.**
Longitude:	89-22-48.6	**Start Time:**	**End Time:**
Ellip. Height:	96.6	**Data File Name:**	MSL1DAR121014JS.dc
Type of Mark:	PK	**Type of Receiver:**	R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	60°/CLDY	**Antenna Height:** 2.0	to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

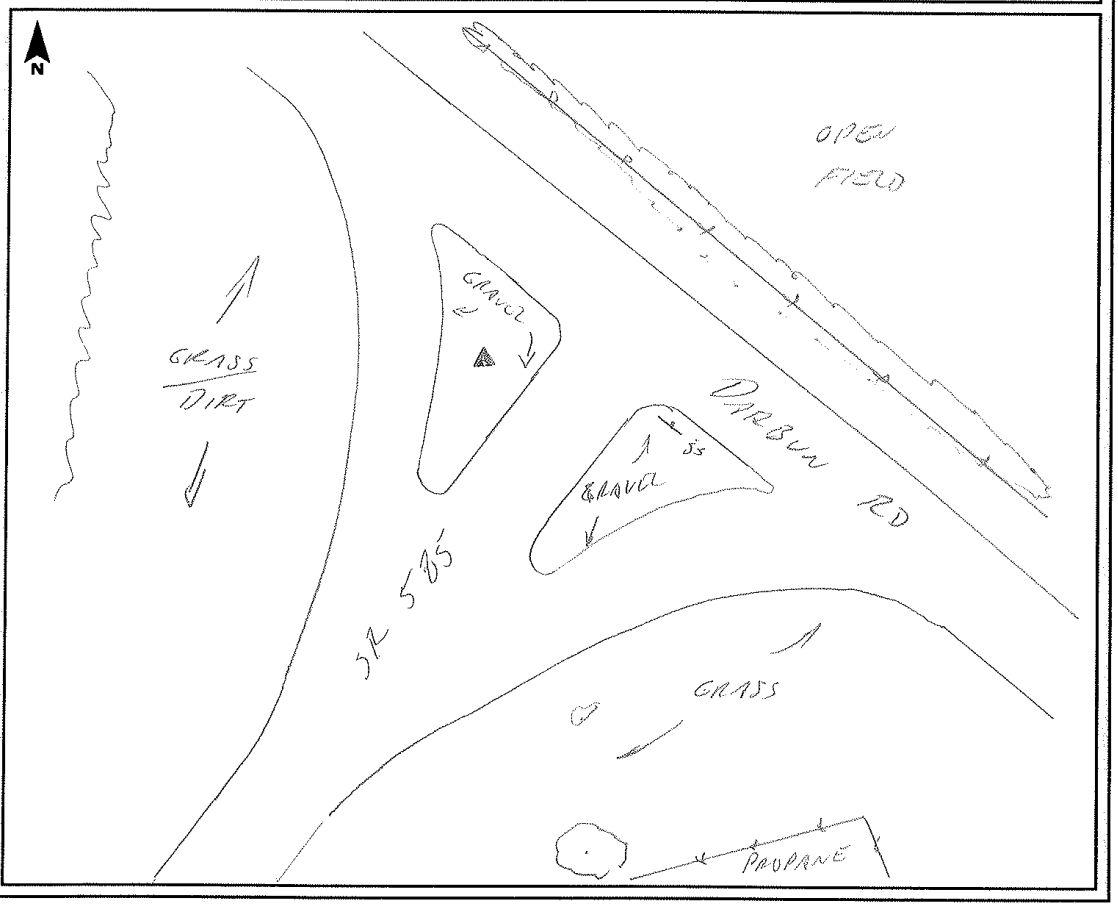
Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-10-14
Station Name:	1020 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-47-18.6	**Julian Day:**	**Session No.**
Longitude:	89-01-49.1	**Start Time:**	**End Time:**
Ellip. Height:	200.3 sft	**Data File Name:**	MSLIDAR121014RC.dc
Type of Mark:	PK	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	50°/CLR	**Antenna Height:**	2.0M to bottom of antenna mount

1020-3S-10DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-4-14
Station Name:	1021	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	31° 16' 41.4"	**Julian Day:**	338 **Session No.** 1
Longitude:	90° 01' 59.9"	**Start Time:**	**End Time:**
Ellip. Height:	93.6 m	**Data File Name:**	09063330.DAT
Type of Mark:	MAGNAIL W/WASHER	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	FOG/MIST	**Antenna Height:**	2.0M to bottom of antenna mount

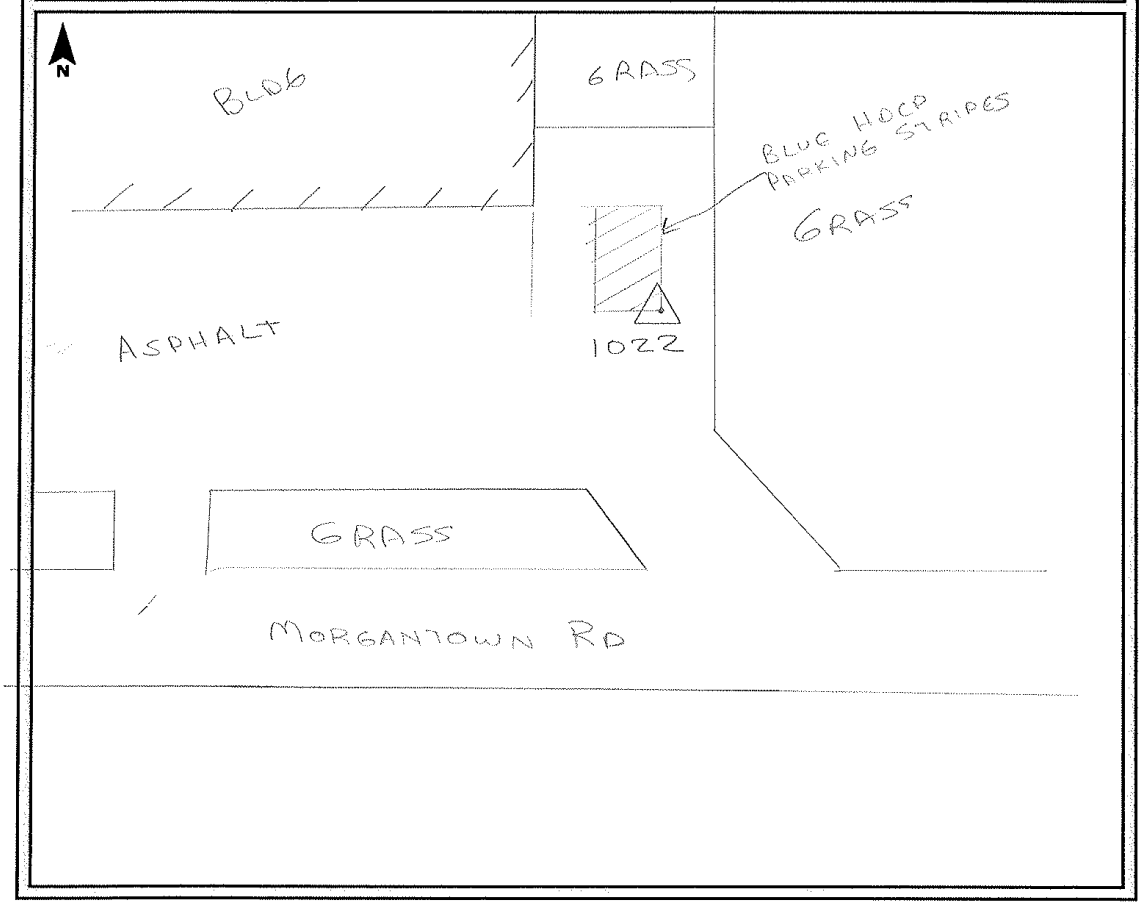


1021-3E-03DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-5-14
Station Name:	1022 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-18-45.9	**Julian Day:**	389 **Session No.** 2
Longitude:	89-55-13.1	**Start Time:**	**End Time:**
Ellip. Height:	76.8 sft	**Data File Name:**	MS LIDAR 1205 RC.dc
Type of Mark:	PK	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	70° / CLOY	**Antenna Height:**	2.0M to bottom of antenna mount

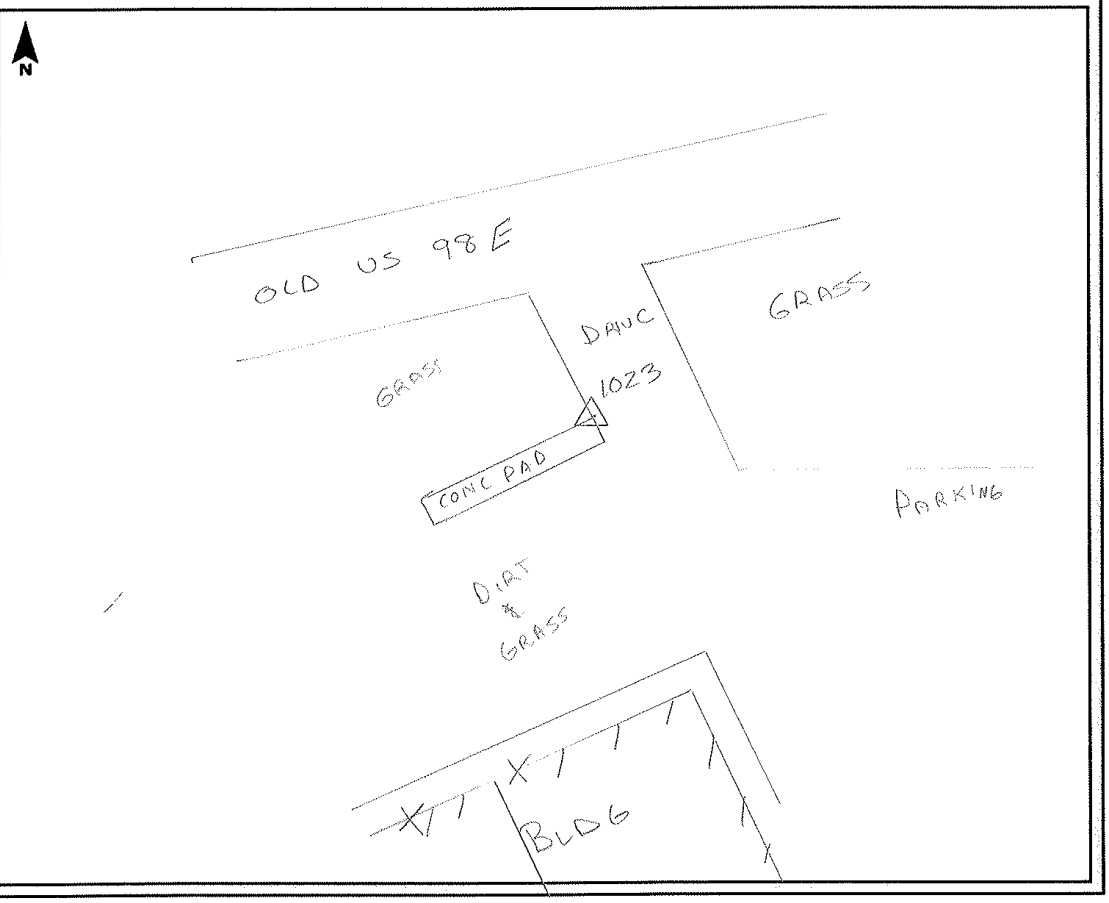


1022-3E-05DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-5-14
Station Name:	1023 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-15-10.9	**Julian Day:**	389 **Session No.**
Longitude:	89-47-14.5	**Start Time:**	**End Time:**
Ellip. Height:	143.5 sft	**Data File Name:**	MSLIDAR120SRC.dc
Type of Mark:	NETIV CONC PAD	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	75° / CLOY	**Antenna Height:**	2.0M to bottom of antenna mount

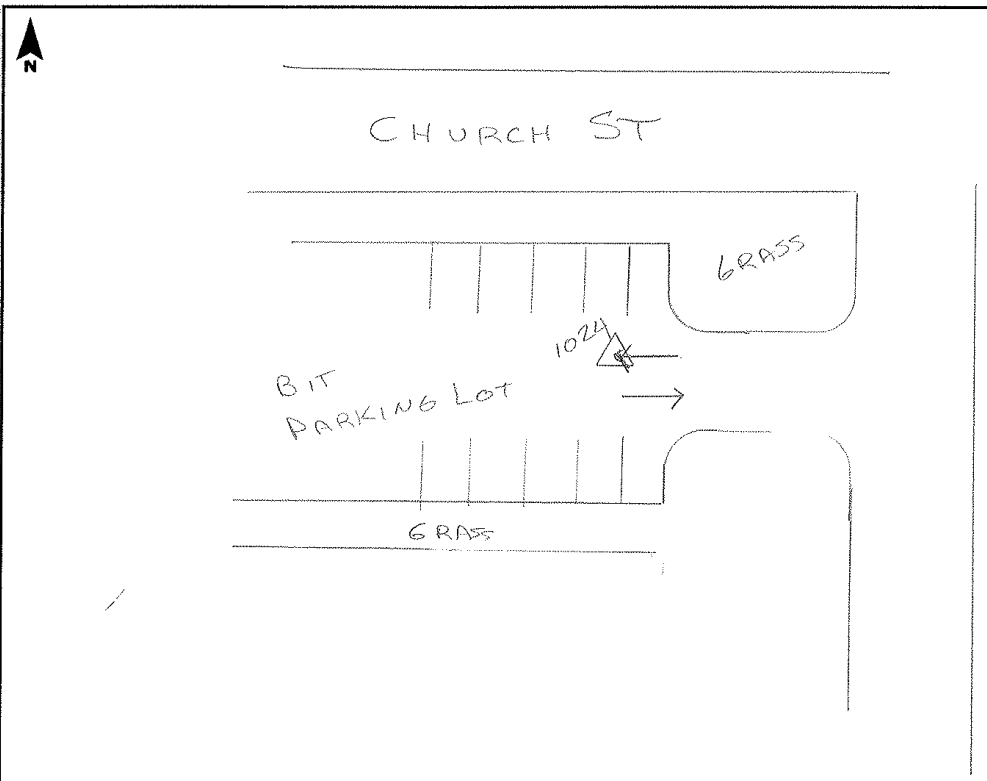


1023-3N-05DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-5-14
Station Name:	1024 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-15-10.6	**Julian Day:**	**Session No.**
Longitude:	89-50-13.1	**Start Time:**	**End Time:**
Ellip. Height:	57.5	**Data File Name:**	MSLIDAR120SRC.dr
Type of Mark:	PK@ W.TIP of ARROW	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	75°/ CLOY	**Antenna Height:**	2.0M to bottom of antenna mount

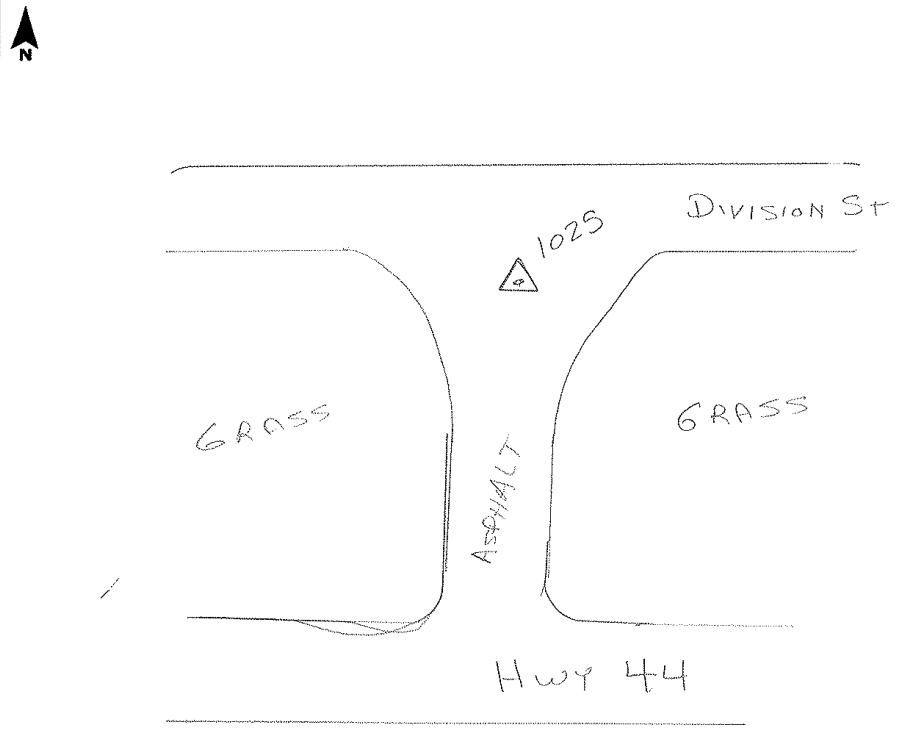


1024-3W-05DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-5-14
Station Name:	1025 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-14-05.4	**Julian Day:**	**Session No.**
Longitude:	89-52-22.0	**Start Time:**	**End Time:**
Ellip. Height:	71.958	**Data File Name:**	MSLIDAR1205RC.dc
Type of Mark:	PK	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	75°/PC	**Antenna Height:** 2.0M	to bottom of antenna mount

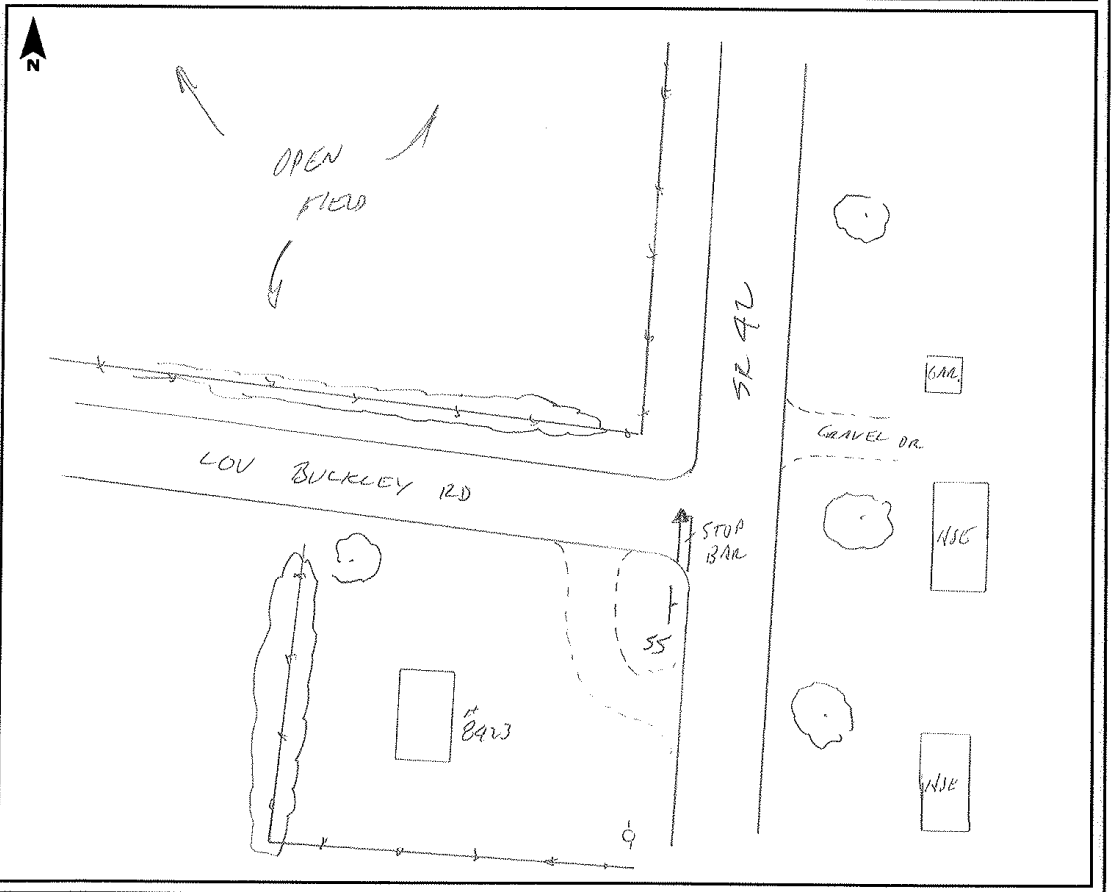


1025-3E-05DEC2014

GPS Observation Log Sheet

WOOLPERT

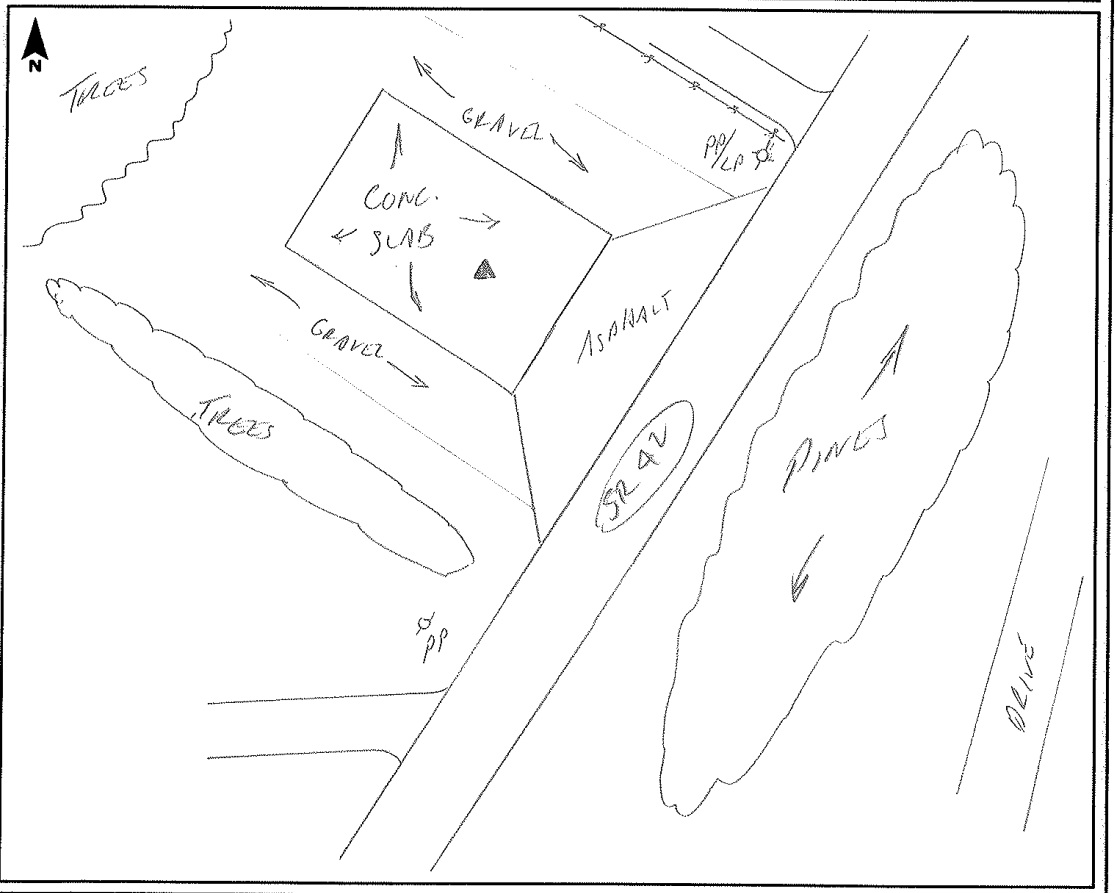
Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-8-14
Station Name:	1026 (GCP)	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	31° 42' 37.93"	**Julian Day:**	342 **Session No.**
Longitude:	89° 56' 31.64"	**Start Time:**	**End Time:**
Ellip. Height:	381.81'	**Data File Name:**	
Type of Mark:	N/A	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	Sunny 60°	**Antenna Height:**	2.0M to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

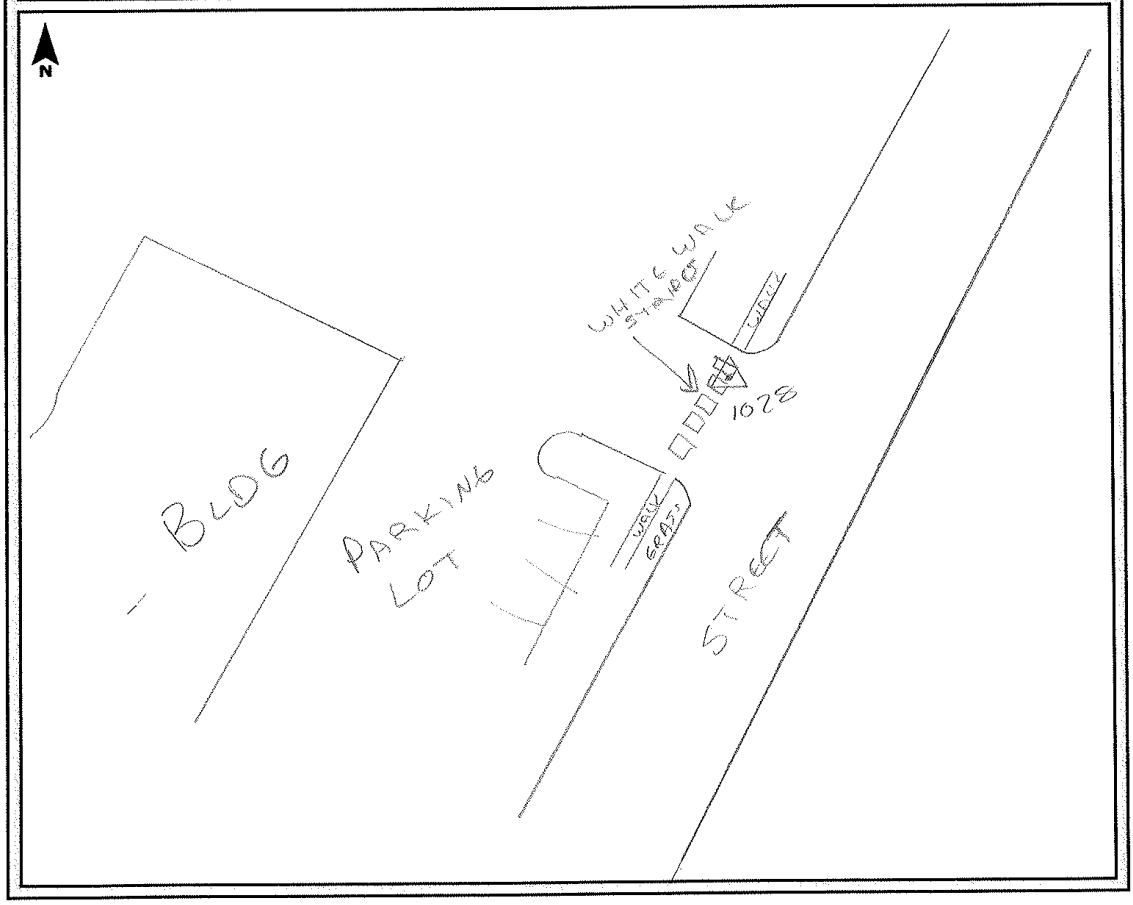
Project Name:	MISS QL2/TUPULO QL3 LIDAR USGS	**Project Number:**	74835 **Survey Date:** 12-3-14
Station Name:	1027 (GCP)	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	31° 35' 40.66"	**Julian Day:**	342 **Session No.**
Longitude:	89° 52' 12.52"	**Start Time:**	**End Time:**
Ellip. Height:	159.33'	**Data File Name:**	
Type of Mark:	BLACK '+' on conc.	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	Sunny 55°	**Antenna Height:**	2.0M to bottom of antenna mount



GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-9-14
Station Name:	1028 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-38-01.0	**Julian Day:**	342 **Session No.**
Longitude:	89-33-21.0	**Start Time:**	**End Time:**
Ellip. Height:	228.4 sft	**Data File Name:**	MSLIDAR120914RC.dc
Type of Mark:	TOP OF WIRE MARKING	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	60° / CLR	**Antenna Height:**	2.0M to bottom of antenna mount

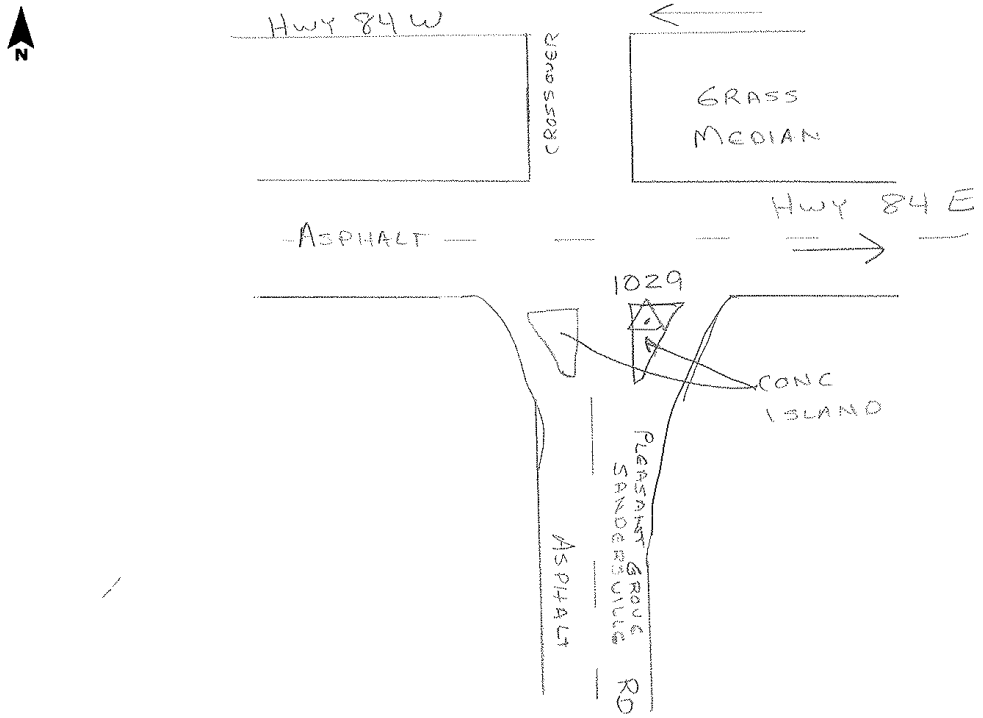


1028-3E-09DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-10-14
Station Name:	1029 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-42-14.0	**Julian Day:**	**Session No.**
Longitude:	88-55-12.5	**Start Time:**	**End Time:**
Ellip. Height:	229.4 ± ft	**Data File Name:**	MSLIDAR121014RC.dc
Type of Mark:	GOLD	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	55°/PC	**Antenna Height:** 2.0M	to bottom of antenna mount

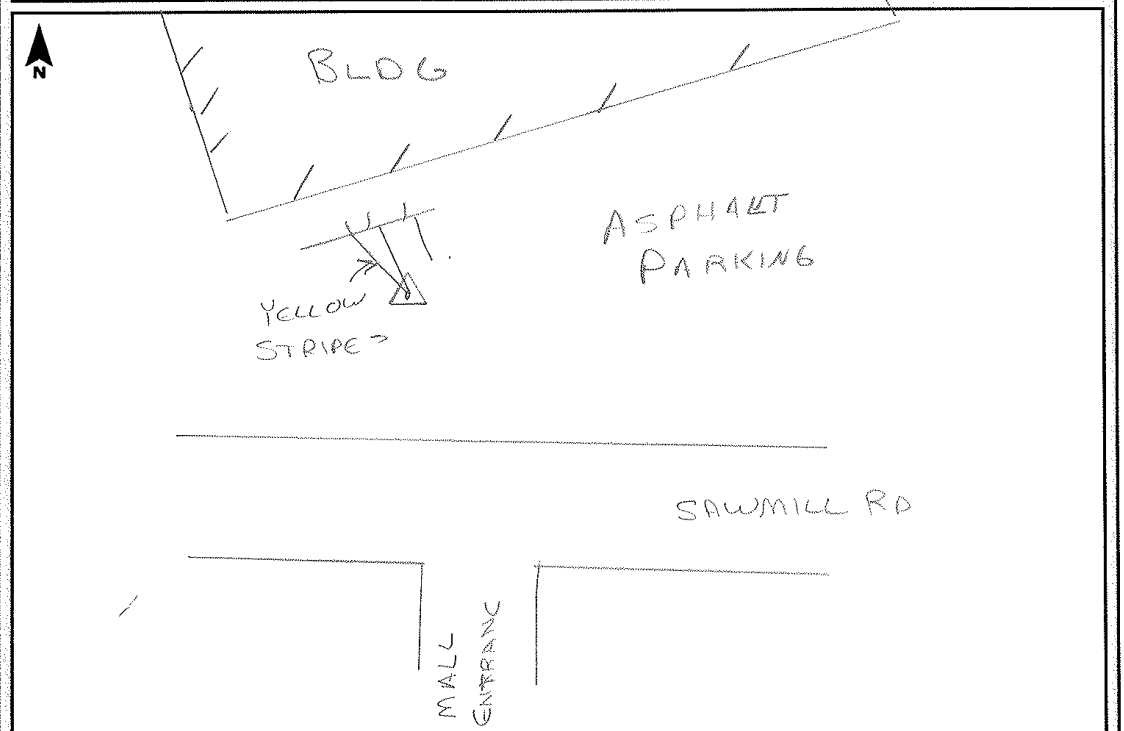


1029-3E-10DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:** 74835	**Survey Date:** 12-10-14
Station Name:	1030 (GCP)	**Operator Name:**	ROSS CHALOUPKA
Latitude:	31-41-37.6	**Julian Day:**	**Session No.**
Longitude:	89-08-12.8	**Start Time:**	**End Time:**
Ellip. Height:	179.8 SFT	**Data File Name:**	MSLIDAR121014RC.dc
Type of Mark:	PK @ INT of STRIPES	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	NA	**Type of Antenna:**	INTERNAL
Weather Condition:	60°/PC	**Antenna Height:** 2.0M	to bottom of antenna mount

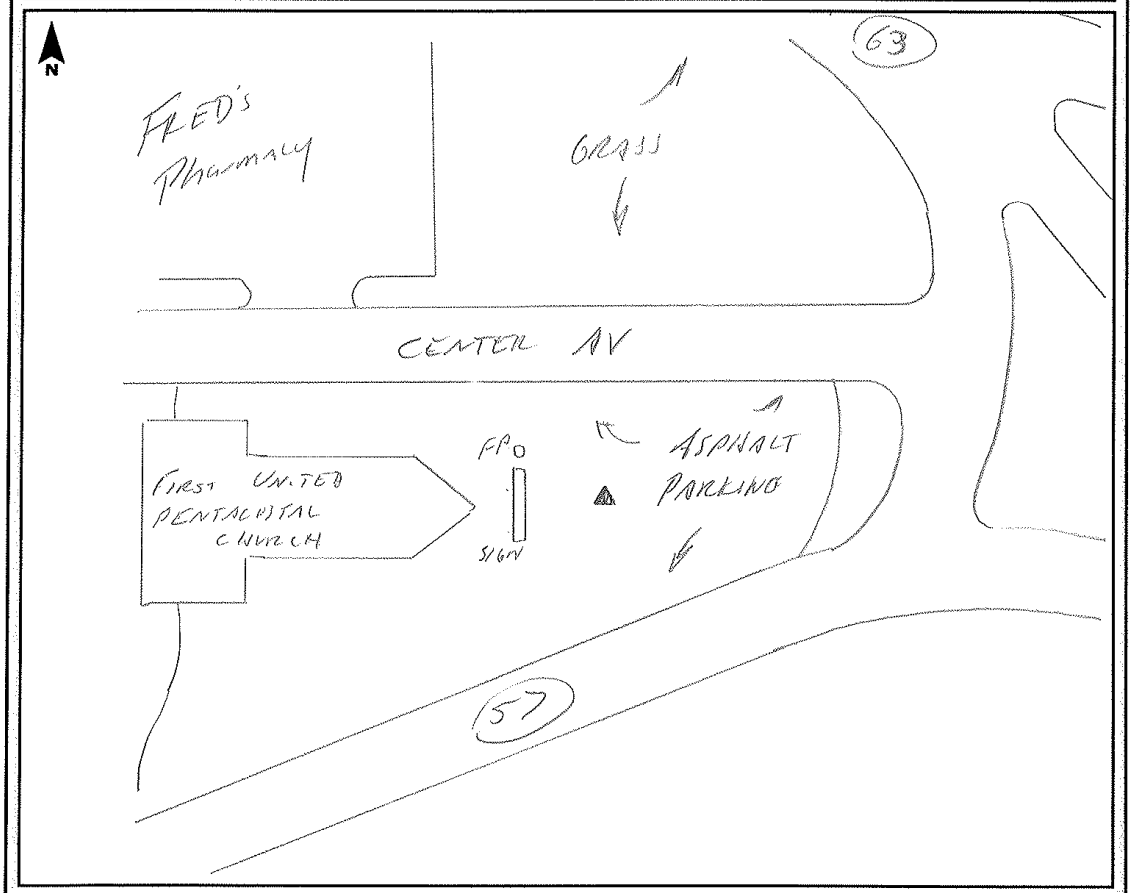


1030-3S-10DEC2014

GPS Observation Log Sheet

WOOLPERT

Project Name:	MISS QL2/TUPULO QL3 LiDAR USGS	**Project Number:**	74835 **Survey Date:** 12-12-10
Station Name:	1031	**Operator Name:**	JAMES R. SPEELMAN, PSM
Latitude:	34° 09' 25.28"	**Julian Day:**	346 **Session No.**
Longitude:	88° 33' 41.87"	**Start Time:**	**End Time:**
Ellip. Height:	22.416	**Data File Name:**	
Type of Mark:	MAG NAIL	**Type of Receiver:**	TRIMBLE R8-2
Stamping on Mark:	N/A	**Type of Antenna:**	INTERNAL
Weather Condition:	SUNNY 50°	**Antenna Height:**	2.0M to bottom of antenna mount



SECTION 4: EXISTING NGS DATA SHEETS

This section contains the published National Geodetic Survey (NGS) Data Sheets used in the final control network for this project.

MS COASTAL AOI

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER 18, 2014
 BV1795
***********************************************************************
 BV1795  DESIGNATION -  15 V 57
 BV1795  PID         -  BV1795
 BV1795  STATE/COUNTY-  MS/PERRY
 BV1795  COUNTRY     -  US
 BV1795  USGS QUAD   -  RICHTON (1964)
 BV1795
 BV1795                        *CURRENT SURVEY CONTROL
 BV1795
_____________________________________________________________________
 BV1795* NAD 83(2011) POSITION- 31 17 20.18972(N) 088 55 24.89529(W)
ADJUSTED
 BV1795* NAD 83(2011) ELLIP HT-    13.190 (meters)        (06/27/12)
ADJUSTED
 BV1795* NAD 83(2011) EPOCH   -  2010.00
 BV1795* NAVD 88 ORTHO HEIGHT -    40.189 (meters)      131.85  (feet)
ADJUSTED
 BV1795* NAVD 88 EPOCH        -  2009.55
 BV1795  **This station is located in a suspected subsidence area (see
below).
 BV1795
_____________________________________________________________________
 BV1795  NAD 83(2011) X  -    102,485.411 (meters)                    COMP
 BV1795  NAD 83(2011) Y  - -5,454,471.023 (meters)                    COMP
 BV1795  NAD 83(2011) Z  -  3,293,318.445 (meters)                    COMP
 BV1795  LAPLACE CORR    -         -1.31  (seconds)
DEFLEC12A
 BV1795  GEOID HEIGHT    -        -27.00  (meters)
GEOID12A
 BV1795  DYNAMIC HEIGHT  -         40.140 (meters)      131.69  (feet) COMP
 BV1795  MODELED GRAVITY -    979,420.2   (mgal)                      NAVD
88
 BV1795
 BV1795  VERT ORDER      -  SECOND    CLASS II
 BV1795
 BV1795  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1795  Type                                           Horiz  Ellip  Dist(km)
 BV1795  ----------------------------------------------------------------------
```

```
 BV1795  NETWORK                                          1.20   1.88
 BV1795  ---------------------------------------------------------------------
 BV1795  MEDIAN LOCAL ACCURACY AND DIST (003 points)   1.17   1.57      9.90
 BV1795  ---------------------------------------------------------------------
 BV1795  NOTE: Click here for information on individual local accuracy
 BV1795  values and other accuracy information.
 BV1795
 BV1795
 BV1795.The horizontal coordinates were established by GPS observations
 BV1795.and adjusted by the National Geodetic Survey in June 2012.
 BV1795
 BV1795.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV1795.frame has been affixed to the stable North American tectonic plate.
See
 BV1795.NA2011 for more information.
 BV1795
 BV1795.The horizontal coordinates are valid at the epoch date displayed
above
 BV1795.which is a decimal equivalence of Year/Month/Day.
 BV1795
 BV1795 ** This station is in an area of known vertical motion.  Due to the
 BV1795 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV1795 ** determined the orthometric heights for marks in these suspect
 BV1795 ** subsidence areas should be considered valid only at the epoch date
 BV1795 ** associated with the orthometric height.  These heights must always
 BV1795 ** be validated when used as control.  All previously superseded
 BV1795 ** orthometric heights are now considered suspect and are available
 BV1795 ** in the superseded section.  NGS does not recommend using suspect
 BV1795 ** or superseded heights as control.
 BV1795
 BV1795.The orthometric height was determined by differential leveling and
 BV1795.adjusted by the NATIONAL GEODETIC SURVEY
 BV1795.in July 2012.
 BV1795
 BV1795.No vertical observational check was made to the station.
 BV1795
 BV1795.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1795
 BV1795.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1795
 BV1795.The ellipsoidal height was determined by GPS observations
 BV1795.and is referenced to NAD 83.
 BV1795
 BV1795.The dynamic height is computed by dividing the NAVD 88
 BV1795.geopotential number by the normal gravity value computed on the
 BV1795.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV1795.degrees latitude (g = 980.6199 gals.).
 BV1795
 BV1795.The modeled gravity was interpolated from observed gravity values.
 BV1795
 BV1795. The following values were computed from the NAD 83(2011) position.
 BV1795
 BV1795;                   North         East     Units Scale Factor
Converg.
```

```
 BV1795;SPC MS E     -   198,314.164   291,407.391   MT  0.99995091   -0 02
48.7
 BV1795;SPC MS E     -   650,635.72    956,059.08    sFT  0.99995091   -0 02
48.7
 BV1795;UTM  16      - 3,463,221.265   316,903.276   MT  1.00001352   -0 59
57.5
 BV1795
 BV1795!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1795!SPC MS E     -   0.99999793  x   0.99995091  =   0.99994884
 BV1795!UTM  16      -   0.99999793  x   1.00001352  =   1.00001145
 BV1795
 BV1795                          SUPERSEDED SURVEY CONTROL
 BV1795
 BV1795  NAD 83(2007)-  31 17 20.19005(N)    088 55 24.89469(W) AD(2002.00) A
 BV1795  ELLIP H (09/06/11)   13.191  (m)                       GP(2002.00) 4
1
 BV1795  NAVD 88 (05/22/96)   40.290  (m)          132.18   (f) SUPERSEDED  2
2
 BV1795
 BV1795.Superseded values are not recommended for survey control.
 BV1795
 BV1795.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1795.See file dsdata.txt to determine how the superseded data were
derived.
 BV1795
 BV1795_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCV1690363221(NAD 83)
 BV1795
 BV1795_MARKER: DR = REFERENCE MARK DISK
 BV1795_SETTING: 32 = SET IN A RETAINING WALL OR CONCRETE LEDGE
 BV1795_SP_SET: HEADWALL
 BV1795_STAMPING: BM 15V 57 1987
 BV1795_MARK LOGO: MSHD
 BV1795_MAGNETIC: N = NO MAGNETIC MATERIAL
 BV1795_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BV1795+STABILITY: SURFACE MOTION
 BV1795_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV1795+SATELLITE: SATELLITE OBSERVATIONS - February 18, 2009
 BV1795
 BV1795  HISTORY     - Date     Condition        Report By
 BV1795  HISTORY     - 1987     MONUMENTED       MSHD
 BV1795  HISTORY     - 20090218 GOOD             MSDOT
 BV1795
 BV1795                          STATION DESCRIPTION
 BV1795
 BV1795'DESCRIBED BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1987
 BV1795'MARK IS LOCATED 6.76 KM (4.20 MI) SOUTH OF RICHTON IN A CONCRETE BOX
 BV1795'CULVERT, 13.20 KM (8.20 MI) NORTH OF BEAUMONT, 3.14 KM (1.95 MI)
NORTH
 BV1795'OF THE CROSSROAD AT HINTONVILLE IN THE SOUTHWEST CORNER OF SECTION
20,
 BV1795'T4N, R9W.  TO REACH FROM THE POST OFFICE IN RICHTON, GO SOUTH ON
STATE
 BV1795'HIGHWAY 15 FOR 7.32 KM (4.55 MI) TO THE MARK ON THE LEFT.  MARK IS A
 BV1795'MSHD DISK SET IN A DRILL HOLE IN THE NORTH END OF THE EAST HEADWALL
OF
 BV1795'A 6X4 FT BOX CULVERT.  IT IS 5.64 M (18.5 FT) EAST CENTER HIGHAY 15,
 BV1795'4.72 M (15.5 FT) NORTH NORTHWEST OF POWERLINE POLE NO. 348, 0.30 M
```

```
BV1795'(1.0 FT) SOUTH OF A CARSONITE WITNESS POST AND ABOUT 0.60 M (2.0 FT)
BV1795'BELOW THE LEVEL OF HIGHWAY.
BV1795
BV1795                          STATION RECOVERY (2009)
BV1795
BV1795'RECOVERY NOTE BY MS DEPT TRANS 2009 (KLH)
BV1795'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:04
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER 18, 2014
 BV1822
***********************************************************************
 BV1822  DESIGNATION -  15 V 81
 BV1822  PID         -  BV1822
 BV1822  STATE/COUNTY-  MS/JONES
 BV1822  COUNTRY     -  US
 BV1822  USGS QUAD   -  LAUREL EAST (1982)
 BV1822
 BV1822                         *CURRENT SURVEY CONTROL
 BV1822
_____________________________________________________________________
 BV1822* NAD 83(2011) POSITION- 31 40 49.58343(N) 089 06 53.61190(W)
ADJUSTED
 BV1822* NAD 83(2011) ELLIP HT-    43.287 (meters)        (06/27/12)
ADJUSTED
 BV1822* NAD 83(2011) EPOCH   -  2010.00
 BV1822* NAVD 88 ORTHO HEIGHT -    69.520 (meters)      228.08  (feet)
ADJUSTED
 BV1822* NAVD 88 EPOCH        -  2009.55
 BV1822  **This station is located in a suspected subsidence area (see
below).
 BV1822
_____________________________________________________________________
 BV1822  NAD 83(2011) X  -     83,922.624 (meters)                    COMP
 BV1822  NAD 83(2011) Y  - -5,432,140.147 (meters)                    COMP
 BV1822  NAD 83(2011) Z  -  3,330,352.127 (meters)                    COMP
 BV1822  LAPLACE CORR    -         -1.02  (seconds)
DEFLEC12A
 BV1822  GEOID HEIGHT    -        -26.25  (meters)
GEOID12A
 BV1822  DYNAMIC HEIGHT  -         69.438 (meters)      227.81  (feet) COMP
 BV1822  MODELED GRAVITY -    979,460.8   (mgal)                       NAVD
88
 BV1822
 BV1822  VERT ORDER      -  SECOND    CLASS II
 BV1822
 BV1822  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1822  Type                                           Horiz  Ellip  Dist(km)
 BV1822  ----------------------------------------------------------------------
 BV1822  NETWORK                                         0.81   1.14
 BV1822  ----------------------------------------------------------------------
 BV1822  MEDIAN LOCAL ACCURACY AND DIST (004 points)   0.72   0.67      7.25
 BV1822  ----------------------------------------------------------------------
 BV1822  NOTE: Click here for information on individual local accuracy
 BV1822  values and other accuracy information.
 BV1822
 BV1822
 BV1822.The horizontal coordinates were established by GPS observations
 BV1822.and adjusted by the National Geodetic Survey in June 2012.
```

```
 BV1822
 BV1822.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV1822.frame has been affixed to the stable North American tectonic plate.
See
 BV1822.NA2011 for more information.
 BV1822
 BV1822.The horizontal coordinates are valid at the epoch date displayed
above
 BV1822.which is a decimal equivalence of Year/Month/Day.
 BV1822
 BV1822 ** This station is in an area of known vertical motion.  Due to the
 BV1822 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV1822 ** determined the orthometric heights for marks in these suspect
 BV1822 ** subsidence areas should be considered valid only at the epoch date
 BV1822 ** associated with the orthometric height.  These heights must always
 BV1822 ** be validated when used as control.  All previously superseded
 BV1822 ** orthometric heights are now considered suspect and are available
 BV1822 ** in the superseded section.  NGS does not recommend using suspect
 BV1822 ** or superseded heights as control.
 BV1822
 BV1822.The orthometric height was determined by differential leveling and
 BV1822.adjusted by the NATIONAL GEODETIC SURVEY
 BV1822.in July 2012.
 BV1822
 BV1822.No vertical observational check was made to the station.
 BV1822
 BV1822.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1822
 BV1822.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1822
 BV1822.The ellipsoidal height was determined by GPS observations
 BV1822.and is referenced to NAD 83.
 BV1822
 BV1822.The dynamic height is computed by dividing the NAVD 88
 BV1822.geopotential number by the normal gravity value computed on the
 BV1822.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV1822.degrees latitude (g = 980.6199 gals.).
 BV1822
 BV1822.The modeled gravity was interpolated from observed gravity values.
 BV1822
 BV1822. The following values were computed from the NAD 83(2011) position.
 BV1822
 BV1822;                    North         East     Units Scale Factor
Converg.
 BV1822;SPC MS E     -   241,751.406   273,304.044   MT  0.99995879   -0 08
52.3
 BV1822;SPC MS E     -   793,146.07    896,665.02   sFT  0.99995879   -0 08
52.3
 BV1822;UTM  16      - 3,506,959.424   299,526.833   MT  1.00009570   -1 06
39.9
 BV1822
 BV1822!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1822!SPC MS E     -   0.99999320  x   0.99995879  =   0.99995199
 BV1822!UTM  16      -   0.99999320  x   1.00009570  =   1.00008890
```

```
 BV1822
 BV1822:                 Primary Azimuth Mark                      Grid Az
 BV1822:SPC MS E     -   15 V 80                                   158 58 51.4
 BV1822:UTM  16      -   15 V 80                                   159 56 39.0
 BV1822
 BV1822|---------------------------------------------------------------------
|
 BV1822| PID    Reference Object                    Distance      Geod. Az
|
 BV1822|                                                          dddmmss.s
|
 BV1822| BV1821 15 V 80                           APPROX. 1.5 KM 1584959.1
|
 BV1822|---------------------------------------------------------------------
|
 BV1822
 BV1822                          SUPERSEDED SURVEY CONTROL
 BV1822
 BV1822  NAD 83(2007)-  31 40 49.58346(N)    089 06 53.61192(W) AD(2002.00) A
 BV1822  ELLIP H (09/06/11)   43.285  (m)                       GP(2002.00) 4
1
 BV1822  NAVD 88 (05/22/96)   69.594  (m)          228.33   (f) SUPERSEDED  2
2
 BV1822
 BV1822.Superseded values are not recommended for survey control.
 BV1822
 BV1822.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1822.See file dsdata.txt to determine how the superseded data were
derived.
 BV1822
 BV1822_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBA9952606959(NAD 83)
 BV1822
 BV1822_MARKER: DR = REFERENCE MARK DISK
 BV1822_SETTING: 38 = SET IN THE ABUTMENT OR PIER OF A LARGE BRIDGE
 BV1822_SP_SET: BRIDGE ABUTMENT
 BV1822_STAMPING: BM 15V 81 1987
 BV1822_MARK LOGO: MSHD
 BV1822_MAGNETIC: N = NO MAGNETIC MATERIAL
 BV1822_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 BV1822_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV1822+SATELLITE: SATELLITE OBSERVATIONS - December 03, 2008
 BV1822
 BV1822  HISTORY     - Date     Condition        Report By
 BV1822  HISTORY     - 1987     MONUMENTED       MSHD
 BV1822  HISTORY     - 20080201 GOOD             MSDOT
 BV1822  HISTORY     - 20081203 GOOD             MSDOT
 BV1822
 BV1822                           STATION DESCRIPTION
 BV1822
 BV1822'DESCRIBED BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1987
 BV1822'MARK IS LOCATED 2.57 KM (1.60 MI) SOUTHEAST OF LAUREL IN A CONCRETE
 BV1822'BRIDGE OVER TALLAHALA CREEK IN THE NORTHEAST CORNER OF SECTION 8,
T8N,
 BV1822'R11W.  TO REACH FROM THE I-59 BRIDGE OVER STATE HIGHWAY 15 IN LAUREL,
 BV1822'GO SOUTH ON STATE HIGHWAY 15 FOR 1.61 KM (1.00 MI) TO A BRIDGE AND
THE
```

```
 BV1822'MARK.  MARK IS A MSHD DISK SET IN A DRILL HOLE IN THE SOUTHWEST END
OF
 BV1822'THE SOUTHEAST ABUTMENT OF A CONCRETE BRIDGE.  IT IS 8.22 M (27.0 FT)
 BV1822'SOUTH OF THE CENTER HIGHWAY 15 AND ABOUT 1.22 M (4.0 FT) BELOW THE
 BV1822'LEVEL OF THE HIGHWAY.
 BV1822
 BV1822                          STATION RECOVERY (2008)
 BV1822
 BV1822'RECOVERY NOTE BY MS DEPT TRANS 2008 (BF)
 BV1822'MARK IS IN A DRILL HOLE IN THE SOUTHWEST END OF THE SOUTHWEST
ABUTMENT
 BV1822'OF A CONCRETE BRIDGE.
 BV1822
 BV1822                          STATION RECOVERY (2008)
 BV1822
 BV1822'RECOVERY NOTE BY MS DEPT TRANS 2008 (KLH)
 BV1822'RECOVERED AS DESCRIBED

 *** retrieval complete.
 Elapsed Time = 00:00:03
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER 18, 2014
 BV0418
***********************************************************************
 BV0418  DESIGNATION -  45 V 16
 BV0418  PID         -  BV0418
 BV0418  STATE/COUNTY-  MS/WAYNE
 BV0418  COUNTRY     -  US
 BV0418  USGS QUAD   -  SHUBUTA (1964)
 BV0418
 BV0418                         *CURRENT SURVEY CONTROL
 BV0418
_______________________________________________________________________
 BV0418* NAD 83(2011) POSITION- 31 45 22.36892(N) 088 40 09.02424(W)
ADJUSTED
 BV0418* NAD 83(2011) ELLIP HT-    29.179 (meters)        (06/27/12)
ADJUSTED
 BV0418* NAD 83(2011) EPOCH   -  2010.00
 BV0418* NAVD 88 ORTHO HEIGHT -    55.971 (meters)      183.63   (feet)
ADJUSTED
 BV0418* NAVD 88 EPOCH        -  2009.55
 BV0418  **This station is located in a suspected subsidence area (see
below).
 BV0418
_______________________________________________________________________
 BV0418  NAD 83(2011) X  -    126,074.820 (meters)                    COMP
 BV0418  NAD 83(2011) Y  - -5,426,894.834 (meters)                    COMP
 BV0418  NAD 83(2011) Z  -  3,337,491.798 (meters)                    COMP
 BV0418  LAPLACE CORR    -         -1.81  (seconds)
DEFLEC12A
 BV0418  GEOID HEIGHT    -        -26.80  (meters)
GEOID12A
 BV0418  DYNAMIC HEIGHT  -         55.904 (meters)      183.41   (feet) COMP
 BV0418  MODELED GRAVITY -    979,451.1   (mgal)                       NAVD
88
 BV0418
 BV0418  VERT ORDER      -  FIRST     CLASS II
 BV0418
 BV0418  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV0418  Type                                           Horiz  Ellip  Dist(km)
 BV0418  ----------------------------------------------------------------------
 BV0418  NETWORK                                         1.64   2.20
 BV0418  ----------------------------------------------------------------------
 BV0418  MEDIAN LOCAL ACCURACY AND DIST (001 points)   1.39   1.86      6.90
 BV0418  ----------------------------------------------------------------------
 BV0418  NOTE: Click here for information on individual local accuracy
 BV0418  values and other accuracy information.
 BV0418
 BV0418
 BV0418.The horizontal coordinates were established by GPS observations
 BV0418.and adjusted by the National Geodetic Survey in June 2012.
```

```
 BV0418
 BV0418.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV0418.frame has been affixed to the stable North American tectonic plate.
See
 BV0418.NA2011 for more information.
 BV0418
 BV0418.The horizontal coordinates are valid at the epoch date displayed
above
 BV0418.which is a decimal equivalence of Year/Month/Day.
 BV0418
 BV0418 ** This station is in an area of known vertical motion.  Due to the
 BV0418 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV0418 ** determined the orthometric heights for marks in these suspect
 BV0418 ** subsidence areas should be considered valid only at the epoch date
 BV0418 ** associated with the orthometric height.  These heights must always
 BV0418 ** be validated when used as control.  All previously superseded
 BV0418 ** orthometric heights are now considered suspect and are available
 BV0418 ** in the superseded section.  NGS does not recommend using suspect
 BV0418 ** or superseded heights as control.
 BV0418
 BV0418.The orthometric height was determined by differential leveling and
 BV0418.adjusted by the NATIONAL GEODETIC SURVEY
 BV0418.in July 2012.
 BV0418
 BV0418.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV0418
 BV0418.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV0418
 BV0418.The ellipsoidal height was determined by GPS observations
 BV0418.and is referenced to NAD 83.
 BV0418
 BV0418.The dynamic height is computed by dividing the NAVD 88
 BV0418.geopotential number by the normal gravity value computed on the
 BV0418.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV0418.degrees latitude (g = 980.6199 gals.).
 BV0418
 BV0418.The modeled gravity was interpolated from observed gravity values.
 BV0418
 BV0418. The following values were computed from the NAD 83(2011) position.
 BV0418
 BV0418;                    North         East     Units Scale Factor
Converg.
 BV0418;SPC MS E     -   250,130.199   315,552.123   MT  0.99995298   +0 05
11.0
 BV0418;SPC MS E     -   820,635.49  1,035,273.92   sFT  0.99995298   +0 05
11.0
 BV0418;UTM  16      - 3,514,626.495   341,911.869   MT  0.99990823   -0 52
43.2
 BV0418
 BV0418!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV0418!SPC MS E     -   0.99999542  x   0.99995298  =   0.99994840
 BV0418!UTM  16      -   0.99999542  x   0.99990823  =   0.99990365
 BV0418
 BV0418                          SUPERSEDED SURVEY CONTROL
```

```
 BV0418
 BV0418  NAD 83(2007)-  31 45 22.36913(N)    088 40 09.02410(W) AD(2002.00) A
 BV0418  ELLIP H (09/06/11)   29.174  (m)                       GP(2002.00) 4
1
 BV0418  NAVD 88 (06/15/91)   56.007  (m)          183.75   (f) SUPERSEDED  1
2
 BV0418  NGVD 29 (??/??/??)   55.982  (m)          183.67   (f) ADJUSTED    1
2
 BV0418
 BV0418.Superseded values are not recommended for survey control.
 BV0418
 BV0418.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV0418.See file dsdata.txt to determine how the superseded data were
derived.
 BV0418
 BV0418_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCA4191114626(NAD 83)
 BV0418
 BV0418_MARKER: DD = SURVEY DISK
 BV0418_SETTING: 38 = SET IN THE ABUTMENT OR PIER OF A LARGE BRIDGE
 BV0418_SP_SET: BRIDGE ABUTMENT
 BV0418_STAMPING: BM 45V-16 1961
 BV0418_MARK LOGO: MSHD
 BV0418_MAGNETIC: N = NO MAGNETIC MATERIAL
 BV0418_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 BV0418_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV0418+SATELLITE: SATELLITE OBSERVATIONS - March 17, 2009
 BV0418
 BV0418  HISTORY     - Date     Condition        Report By
 BV0418  HISTORY     - 1961     MONUMENTED       MSHD
 BV0418  HISTORY     - 1964     GOOD             CGS
 BV0418  HISTORY     - 1980     GOOD             NGS
 BV0418  HISTORY     - 19910828 GOOD             MSHD
 BV0418  HISTORY     - 20080418 GOOD             MSDOT
 BV0418  HISTORY     - 20090317 GOOD             MSDOT
 BV0418
 BV0418                          STATION DESCRIPTION
 BV0418
 BV0418'DESCRIBED BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1961
 BV0418'7.25 MI S FROM SHUBUTA.
 BV0418'THE MARK IS LOCATED ABOUT 7 1/4 MILES SOUTH OF SHUBUTA, ALONG AND ON
 BV0418'THE WEST SIDE OF U.S. HIGHWAY 45, IN THE BASE OF, AND AT THE SOUTH
END
 BV0418'OF THE WEST RAILING OF A CONCRETE BRIDGE APPROXIMATELY 70 FEET IN
 BV0418'LENGTH SPANNING A SMALL CREEK.  TO REACH FROM THE TRAFFIC LIGHT AT
THE
 BV0418'INTERSECTION OF U.S. HIGHWAY 45 AND MAIN STREET IN SHUBUTA GO SOUTH
ON
 BV0418'U.S. 45 FOR 3.6 MILE TO A GRAVEL CROSSROAD IN THE VILLAGE OF
HIWANNEE,
 BV0418'CONTINUE SOUTH ON U.S. 45 FOR 4.0 MILES TO THE BRIDGE AND THE MARK ON
 BV0418'THE RIGHT.  THE MARK IS A STANDARD MSHD-USC AND GS BRONZE DISK
STAMPED
 BV0418'B. M. 45V-16 1961 AND IS SET IN CEMENT IN A DRILL HOLE FLUSH WITH THE
 BV0418'SURFACE OF THE BASE OF THE RAILING.
 BV0418
 BV0418                          STATION RECOVERY (1964)
 BV0418
```

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 BV0418'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1964
 BV0418'RECOVERED IN GOOD CONDITION.
 BV0418
 BV0418                          STATION RECOVERY (1980)
 BV0418
 BV0418'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1980
 BV0418'RECOVERED IN GOOD CONDITION.
 BV0418
 BV0418                          STATION RECOVERY (1991)
 BV0418
 BV0418'RECOVERY NOTE BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1991
 BV0418'THE MARK IS LOCATED ABOUT 5.6 MI (9.0 KM) NORTH-NORTHWEST OF
 BV0418'WAYNESBORO, IN A CONCRETE BRIDGE, 7.4 MI (11.9 KM) SOUTH OF SHUBUTA
 BV0418'AND IS IN SECTION 11, T 9N, R 7W.
 BV0418'TO REACH FROM THE POST OFFICE IN WAYNESBORO, GO NORTHEAST ON U.S.
 BV0418'HIGHWAY 84 FOR 0.2 MI (0.3 KM) TO THE INTERSECTION OF U.S. HIGHWAY
 BV0418'45, TURN LEFT AND GO NORTHWEST ON U.S. HIGHWAY 45 FOR 5.75 MI
 BV0418'(9.25 KM) TO A SIDE ROAD RIGHT, CONTINUE NORTHWEST ON U.S. HIGHWAY 45
 BV0418'FOR 0.5 MI (0.8 KM) TO THE BRIDGE AND THE MARK ON THE LEFT.
 BV0418'MARK IS A MSHD DISK SET IN A DRILL HOLE IN THE SOUTHWEST END OF THE
 BV0418'SOUTHEAST ABUTMENT OF A CONCRETE BRIDGE, ABOUT LEVEL WITH THE HIGHWAY
 BV0418'AND IS 15.0 FT (4.6 M) SOUTHWEST OF THE CENTER OF THE HIGHWAY.
 BV0418
 BV0418                          STATION RECOVERY (2008)
 BV0418
 BV0418'RECOVERY NOTE BY MS DEPT TRANS 2008 (KLH)
 BV0418'PORTIONS OF U.S. HWY. 45 MENTIONED IN THE PREVIOUS DESCRIPTIONS ARE
 BV0418'NOW DESIGNATED HWY. 145.  A NEW TO REACH IS AS FOLLOWS. FROM THE U.S.
 BV0418'HWY. 45 AND U.S. 84 INTERCHANGE, IN NORTHEAST WAYNESBORO, TRAVEL 3.8
 BV0418'MILES NORTHERLY ALONG U.S. HWY. 45 TO PLEASANT GROVE-CHAPPARAL ROAD
ON
 BV0418'THE RIGHT.
 BV0418'  TURN LEFT AND TRAVEL .1 MILES TO A T INTERSECTION AT HWY. 145 (OLD
 BV0418'U.S. HWY. 45), TURN RIGHT AND TRAVEL .4 MILES TO THE MARK ON THE LEFT
 BV0418'IN THE BRIDGE.
 BV0418
 BV0418                          STATION RECOVERY (2009)
 BV0418
 BV0418'RECOVERY NOTE BY MS DEPT TRANS 2009 (KLH)
 BV0418'RECOVERED AS DESCRIBED.

 *** retrieval complete.
 Elapsed Time = 00:00:03
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

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PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER 18, 2014
 BV1349
***********************************************************************
 BV1349  DESIGNATION -  57 V 103
 BV1349  PID         -  BV1349
 BV1349  STATE/COUNTY-  MS/GREENE
 BV1349  COUNTRY     -  US
 BV1349  USGS QUAD   -  LEAKESVILLE (1972)
 BV1349
 BV1349                        *CURRENT SURVEY CONTROL
 BV1349
_____________________________________________________________________
 BV1349* NAD 83(2011) POSITION- 31 11 22.95363(N) 088 31 17.22341(W)
ADJUSTED
 BV1349* NAD 83(2011) ELLIP HT-     1.094 (meters)        (06/27/12)
ADJUSTED
 BV1349* NAD 83(2011) EPOCH   -  2010.00
 BV1349* NAVD 88 ORTHO HEIGHT -    28.764 (meters)       94.37  (feet)
ADJUSTED
 BV1349* NAVD 88 EPOCH        -  2009.55
 BV1349  **This station is located in a suspected subsidence area (see
below).
 BV1349
_____________________________________________________________________
 BV1349  NAD 83(2011) X  -    140,911.800 (meters)                    COMP
 BV1349  NAD 83(2011) Y  - -5,459,311.072 (meters)                    COMP
 BV1349  NAD 83(2011) Z  -  3,283,905.158 (meters)                    COMP
 BV1349  LAPLACE CORR    -         -1.04  (seconds)
DEFLEC12A
 BV1349  GEOID HEIGHT    -        -27.67  (meters)
GEOID12A
 BV1349  DYNAMIC HEIGHT  -         28.728 (meters)       94.25  (feet) COMP
 BV1349  MODELED GRAVITY -    979,399.9   (mgal)                       NAVD
88
 BV1349
 BV1349  VERT ORDER      -  SECOND    CLASS II
 BV1349
 BV1349  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1349  Type                                           Horiz  Ellip  Dist(km)
 BV1349  ----------------------------------------------------------------------
 BV1349  NETWORK                                         1.19   1.71
 BV1349  ----------------------------------------------------------------------
 BV1349  MEDIAN LOCAL ACCURACY AND DIST (002 points)   1.02   1.15      6.10
 BV1349  ----------------------------------------------------------------------
 BV1349  NOTE: Click here for information on individual local accuracy
 BV1349  values and other accuracy information.
 BV1349
 BV1349
 BV1349.The horizontal coordinates were established by GPS observations
 BV1349.and adjusted by the National Geodetic Survey in June 2012.
```

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 BV1349
 BV1349.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV1349.frame has been affixed to the stable North American tectonic plate.
See
 BV1349.NA2011 for more information.
 BV1349
 BV1349.The horizontal coordinates are valid at the epoch date displayed
above
 BV1349.which is a decimal equivalence of Year/Month/Day.
 BV1349
 BV1349 ** This station is in an area of known vertical motion.  Due to the
 BV1349 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV1349 ** determined the orthometric heights for marks in these suspect
 BV1349 ** subsidence areas should be considered valid only at the epoch date
 BV1349 ** associated with the orthometric height.  These heights must always
 BV1349 ** be validated when used as control.  All previously superseded
 BV1349 ** orthometric heights are now considered suspect and are available
 BV1349 ** in the superseded section.  NGS does not recommend using suspect
 BV1349 ** or superseded heights as control.
 BV1349
 BV1349.The orthometric height was determined by differential leveling and
 BV1349.adjusted by the NATIONAL GEODETIC SURVEY
 BV1349.in July 2012.
 BV1349
 BV1349.No vertical observational check was made to the station.
 BV1349
 BV1349.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1349
 BV1349.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1349
 BV1349.The ellipsoidal height was determined by GPS observations
 BV1349.and is referenced to NAD 83.
 BV1349
 BV1349.The dynamic height is computed by dividing the NAVD 88
 BV1349.geopotential number by the normal gravity value computed on the
 BV1349.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV1349.degrees latitude (g = 980.6199 gals.).
 BV1349
 BV1349.The modeled gravity was interpolated from observed gravity values.
 BV1349
 BV1349. The following values were computed from the NAD 83(2011) position.
 BV1349
 BV1349;                    North         East     Units Scale Factor
Converg.
 BV1349;SPC MS E     -   187,350.862   329,725.549   MT  0.99996089   +0 09
41.5
 BV1349;SPC MS E     -   614,666.95  1,081,774.57   sFT  0.99996089   +0 09
41.5
 BV1349;UTM  16      - 3,451,623.723   355,033.451   MT  0.99985922   -0 47
17.0
 BV1349
 BV1349!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1349!SPC MS E     -   0.99999983  x   0.99996089  =   0.99996072
 BV1349!UTM  16      -   0.99999983  x   0.99985922  =   0.99985905
```

```
 BV1349
 BV1349                          SUPERSEDED SURVEY CONTROL
 BV1349
 BV1349  NAD 83(2007)-  31 11 22.95388(N)    088 31 17.22350(W) AD(2002.00) A
 BV1349  ELLIP H (09/06/11)    1.108   (m)                       GP(2002.00) 4
1
 BV1349  NAVD 88 (05/22/96)   28.855   (m)           94.67    (f) SUPERSEDED  2
2
 BV1349  NGVD 29 (??/??/92)   28.848   (m)           94.65    (f) ADJ UNCH    2
2
 BV1349
 BV1349.Superseded values are not recommended for survey control.
 BV1349
 BV1349.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1349.See file dsdata.txt to determine how the superseded data were
derived.
 BV1349
 BV1349_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCV5503351623(NAD 83)
 BV1349
 BV1349_MARKER: DD = SURVEY DISK
 BV1349_SETTING: 32 = SET IN A RETAINING WALL OR CONCRETE LEDGE
 BV1349_SP_SET: CULVERT HEADWALL
 BV1349_STAMPING: BM 57V 103 1970
 BV1349_MARK LOGO: MSHD
 BV1349_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BV1349+STABILITY: SURFACE MOTION
 BV1349_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV1349+SATELLITE: SATELLITE OBSERVATIONS - March 05, 2009
 BV1349
 BV1349  HISTORY     - Date     Condition        Report By
 BV1349  HISTORY     - 1970     MONUMENTED       MSHD
 BV1349  HISTORY     - 20080201 GOOD             MSDOT
 BV1349  HISTORY     - 20090305 GOOD             MSDOT
 BV1349
 BV1349                           STATION DESCRIPTION
 BV1349
 BV1349'DESCRIBED BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1970
 BV1349'3.1 MI NE FROM LEAKESVILLE.
 BV1349'THE MARK IS LOCATED 3.1 MILES NORTHEAST OF LEAKESVILLE IN THE SOUTH
 BV1349'END OF THE WEST HEADWALL OF AN 8 X 7 FOOT DOUBLE BOX CULVERT IN THE
 BV1349'SOUTHWEST QUARTER OF THE SOUTH- EAST QUARTER OF SECTION 30, T 3 N, R
 BV1349'5 W. IT IS 27 FEET NORTHWEST OF THE CENTER OF HIGHWAY 57, 98 FEET
 BV1349'SOUTH OF A POWER POLE, 1 FOOT NORTHEAST OF A METAL WITNESS POST SET
 BV1349'IN A DRILL HOLE IN THE SOUTHWEST END OF THE NORTHWEST HEADWALL OF AN
 BV1349'8 X 7 FOOT CONCRETE DOUBLE BOX CULVERT AND IS ABOUT 3 FEET BELOW THE
 BV1349'LEVEL OF THE HIGHWAY. TO REACH THE COURTHOUSE IN LEAKESVILLE GO
 BV1349'SOUTHEAST ON STATE HIGHWAY 63 FOR 1.1 MILES TO THE JUNCTION OF STATE
 BV1349'HIGHWAY 57 (NOW UNDER CONSTRUCTION). TURN LEFT AND GO NORTHEAST ON
 BV1349'HIGHWAY 57 FOR 1.5 MILES TO A SIDE ROAD RIGHT. CONTINUE NORTH ON
 BV1349'HIGHWAY 57 FOR 2.1 MILES TO THE CULVERT AND THE MARK ON THE LEFT.
 BV1349
 BV1349                           STATION RECOVERY (2008)
 BV1349
 BV1349'RECOVERY NOTE BY MS DEPT TRANS 2008 (JA)
 BV1349'RECOVERED IN GOOD CONDITION.
 BV1349
 BV1349                           STATION RECOVERY (2009)
```

```
BV1349
BV1349'RECOVERY NOTE BY MS DEPT TRANS 2009 (KLH)
BV1349'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:03
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 BV1860
***********************************************************************
 BV1860  FBN         -  This is a Federal Base Network Control Station.
 BV1860  DESIGNATION -  65 10
 BV1860  PID         -  BV1860
 BV1860  STATE/COUNTY-  AL/WASHINGTON
 BV1860  COUNTRY     -  US
 BV1860  USGS QUAD   -  FRUITDALE (1974)
 BV1860
 BV1860                        *CURRENT SURVEY CONTROL
 BV1860
_______________________________________________________________________
 BV1860* NAD 83(2011) POSITION- 31 20 00.35477(N) 088 23 59.25188(W)
ADJUSTED
 BV1860* NAD 83(2011) ELLIP HT-    37.797 (meters)        (06/27/12)
ADJUSTED
 BV1860* NAD 83(2011) EPOCH   -  2010.00
 BV1860* NAVD 88 ORTHO HEIGHT -    65.23  (meters)      214.0   (feet)
LEVELING
 BV1860* NAVD 88 EPOCH        -  2009.55
 BV1860  **This station is located in a suspected subsidence area (see
below).
 BV1860  **This station is included in the VTDP model (see below).
 BV1860
_______________________________________________________________________
 BV1860  GEOID HEIGHT    -        -27.43  (meters)
GEOID12A
 BV1860  NAD 83(2011) X  -    152,273.429 (meters)                    COMP
 BV1860  NAD 83(2011) Y  - -5,450,764.675 (meters)                    COMP
 BV1860  NAD 83(2011) Z  -  3,297,545.670 (meters)                    COMP
 BV1860  LAPLACE CORR    -         -1.50  (seconds)
DEFLEC12A
 BV1860  VERT ORDER      -  THIRD
 BV1860
 BV1860  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1860  Type                                          Horiz  Ellip  Dist(km)
 BV1860  ----------------------------------------------------------------------
 BV1860  NETWORK                                        0.46   0.92
 BV1860  ----------------------------------------------------------------------
 BV1860  MEDIAN LOCAL ACCURACY AND DIST (187 points)   0.93   2.20    199.84
 BV1860  ----------------------------------------------------------------------
 BV1860  NOTE: Click here for information on individual local accuracy
 BV1860  values and other accuracy information.
 BV1860
 BV1860
 BV1860.The horizontal coordinates were established by GPS observations
 BV1860.and adjusted by the National Geodetic Survey in June 2012.
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```
 BV1860
 BV1860.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV1860.frame has been affixed to the stable North American tectonic plate.
See
 BV1860.NA2011 for more information.
 BV1860
 BV1860.The horizontal coordinates are valid at the epoch date displayed
above
 BV1860.which is a decimal equivalence of Year/Month/Day.
 BV1860
 BV1860 ** This station is in an area of known vertical motion.  Due to the
 BV1860 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV1860 ** determined the orthometric heights for marks in these suspect
 BV1860 ** subsidence areas should be considered valid only at the epoch date
 BV1860 ** associated with the orthometric height.  These heights must always
 BV1860 ** be validated when used as control.  All previously superseded
 BV1860 ** orthometric heights are now considered suspect and are available
 BV1860 ** in the superseded section.  NGS does not recommend using suspect
 BV1860 ** or superseded heights as control.
 BV1860
 BV1860 ** The orthometric height was determined with a Vertical Time-
dependent
 BV1860 ** Positioning (VTDP) model and has been validated through GNSS
 BV1860 ** observations for the epoch indicated.  For additional
 BV1860 ** information on VTDP, please refer to the following web pages:
 BV1860 ** www.ngs.noaa.gov/heightmod/GulfCoastProject.shtml
 BV1860 ** www.ngs.noaa.gov/heightmod/NOAANOSNGSTR50.pdf
 BV1860
 BV1860.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1860
 BV1860.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1860
 BV1860.The ellipsoidal height was determined by GPS observations
 BV1860.and is referenced to NAD 83.
 BV1860
 BV1860. The following values were computed from the NAD 83(2011) position.
 BV1860
 BV1860;                    North         East     Units Scale Factor
Converg.
 BV1860;SPC AL W     -   148,169.107   514,370.550   MT  1.00002374   -0 28
04.6
 BV1860;SPC MS E     -   203,324.429   341,258.378   MT  0.99997099   +0 13
31.6
 BV1860;SPC MS E     -   667,073.56  1,119,611.86   sFT  0.99997099   +0 13
31.6
 BV1860;UTM  16      - 3,467,401.564   366,828.456   MT  0.99981874   -0 43
40.9
 BV1860
 BV1860!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1860!SPC AL W     -   0.99999406  x   1.00002374  =   1.00001780
 BV1860!SPC MS E     -   0.99999406  x   0.99997099  =   0.99996505
 BV1860!UTM  16      -   0.99999406  x   0.99981874  =   0.99981281
 BV1860
 BV1860:               Primary Azimuth Mark                    Grid Az
```

```
 BV1860:SPC AL W      -  65 9                                        121 24 36.0
 BV1860:SPC MS E      -  65 9                                        120 42 59.8
 BV1860:UTM  16       -  65 9                                        121 40 12.3
 BV1860
 BV1860|----------------------------------------------------------------------
|
 BV1860| PID    Reference Object                     Distance      Geod. Az
|
 BV1860|                                                           dddmmss.s
|
 BV1860| BV1859 65 9                                APPROX. 0.5 KM 1205631.4
|
 BV1860|----------------------------------------------------------------------
|
 BV1860
 BV1860                          SUPERSEDED SURVEY CONTROL
 BV1860
 BV1860  NAD 83(2007)-  31 20 00.35486(N)    088 23 59.25198(W) AD(2002.00) A
 BV1860  ELLIP H (09/06/11)   37.804  (m)                       GP(2002.00) 4
1
 BV1860  NAD 83(2007)-  31 20 00.35481(N)    088 23 59.25236(W) AD(2002.00) 0
 BV1860  ELLIP H (02/10/07)   37.810  (m)                       GP(2002.00)
 BV1860  ELLIP H (08/29/05)   37.769  (m)                       GP(       ) 4
1
 BV1860  ELLIP H (06/19/02)   37.772  (m)                       GP(       ) 4
1
 BV1860  ELLIP H (02/15/02)   37.829  (m)                       GP(       ) 4
1
 BV1860  NAD 83(1992)-  31 20 00.35482(N)    088 23 59.25075(W) AD(       ) B
 BV1860  ELLIP H (09/01/92)   37.811  (m)                       GP(       ) 1
2
 BV1860  NAD 83(1986)-  31 20 00.36913(N)    088 23 59.25235(W) AD(       ) 1
 BV1860  NAVD 88 (07/10/12)   65.229  (m)          214.01   (f) ADJUSTED    2
1
 BV1860  NAVD 88 (12/07/11)   65.286  (m)          214.19   (f) SUPERSEDED  2
1
 BV1860  NAVD 88 (08/31/99)   65.29   (m)          214.2    (f) LEVELING    3
 BV1860  NAVD 88 (02/29/96)   65.286  (m)          214.19   (f) SUPERSEDED  3
0
 BV1860  NAVD 88 (01/12/94)   65.4    (m)  GEOID93 model used   GPS OBS
 BV1860  NGVD 29 (??/??/??)   65.25   (m)          214.1    (f) N HEIGHT    3
 BV1860
 BV1860.Superseded values are not recommended for survey control.
 BV1860
 BV1860.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1860.See file dsdata.txt to determine how the superseded data were
derived.
 BV1860
 BV1860_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCV6682867401(NAD 83)
 BV1860
 BV1860_MARKER: DD = SURVEY DISK
 BV1860_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BV1860_SP_SET: CONCRETE POST
 BV1860_STAMPING: 65-10 1991
 BV1860_MARK LOGO: ALHD
 BV1860_PROJECTION: FLUSH
 BV1860_MAGNETIC: N = NO MAGNETIC MATERIAL
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BV1860_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
BV1860+STABILITY: SURFACE MOTION
BV1860_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
BV1860+SATELLITE: SATELLITE OBSERVATIONS - April 12, 2010
BV1860
BV1860  HISTORY     - Date     Condition        Report By
BV1860  HISTORY     - 1991     MONUMENTED       ALHD
BV1860  HISTORY     - 19920116 GOOD             NGS
BV1860  HISTORY     - 19930201 GOOD             NOS
BV1860  HISTORY     - 19930503 GOOD
BV1860  HISTORY     - 19940310 GOOD             ALHD
BV1860  HISTORY     - 19950328 GOOD             ALHD
BV1860  HISTORY     - 19980126 GOOD             NGS
BV1860  HISTORY     - 20000701 GOOD             MSHD
BV1860  HISTORY     - 20040622 GOOD             ALDOT
BV1860  HISTORY     - 20090306 GOOD             MSDOT
BV1860  HISTORY     - 20100412 GOOD             ALDOT
BV1860
BV1860                          STATION DESCRIPTION
BV1860
BV1860'DESCRIBED BY ALABAMA HIGHWAY DEPARTMENT 1991
BV1860'THE STATION IS LOCATED IN WASHINGTON COUNTY ON THE NORTH RIGHT OF WAY
BV1860'OF U.S. 45, ABOUT 0.90 MI (1.45 KM) SOUTHEAST OF FRUITDALE AND ABOUT
BV1860'12.50 MI (20.12 KM) SOUTHWEST OF CHATOM.
BV1860'TO REACH THE STATION FROM THE JUNCTION OF U.S. 45 AND ALA 17 (MILE
BV1860'POST 0 ON U.S. 45 AND MILE POST 44.15 ON ALA 17) ABOUT 17.0 MI
BV1860'(27.4 KM) SOUTH OF CHATOM, DRIVE NORTHWEST ON U.S. 45 FOR 8.50 MI
BV1860'(13.68 KM) TO MILE POST 8.50 AND THE STATION ON THE RIGHT.
BV1860'THE STATION IS 24.0 FT (7.3 M) SOUTH OF A BARRIER LINE MARKER SIGN,
BV1860'49.5 FT (15.1 M) NORTH-NORTHEAST OF THE CENTERLINE OF U.S. 45, 125.6
BV1860'FT (38.3 M) EAST-SOUTHEAST OF TELEPHONE CABLE PEDESTAL NO. 8 C 9, 1.4
BV1860'FT (0.4 M) SOUTH-SOUTHWEST OF A CARSONITE WITNESS POST, AND SET FLUSH
BV1860'WITH THE GROUND.
BV1860'STATION 65-9 1991 MAY BE USED AS AN AZIMUTH FOR THIS STATION.
BV1860
BV1860                          STATION RECOVERY (1992)
BV1860
BV1860'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
BV1860'THE STATION IS LOCATED 1.45 KM (0.90 MI) SOUTHEAST OF FRUITDALE AND
BV1860'20.12 KM (12.50 MI) SOUTHWEST OF CHATOM ON THE NORTH RIGHT-OF-WAY OF
BV1860'U.S. HIGHWAY 45.  OWNERSHIP--ALABAMA DEPARTMENT OF HIGHWAYS.
BV1860'TO REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 45 AND STATE
BV1860'HIGHWAY 17, GO NORTHWEST ON U.S. 45 FOR 13.68 KM (8.50 MI) TO MILE
BV1860'POST 8.5 AND THE STATION ON THE RIGHT.
BV1860'THE STATION IS SET IN THE TOP OF A CONCRETE MONUMENT FLUSH WITH THE
BV1860'GROUND, AND IS LOCATED 38.3 M (125.7 FT) EAST-SOUTHEAST OF TELEPHONE
BV1860'CABLE PEDASTAL NO. 8 C 9, 15.1 M (49.5 FT) NORTH-NORTHEAST OF THE
BV1860'HIGHWAY CENTERLINE, 7.3 M (24.0 FT) SOUTH OF A BARRIER LINE MARKER
BV1860'SIGN AND 0.43 M (1.41 FT) SOUTH-SOUTHWEST OF A FIBERGLASS WITNESS
BV1860'POST.
BV1860'NOTE--STATION 65-9 MAY BE USED AS AN AZIMUTH FOR THIS STATION.
BV1860
BV1860                          STATION RECOVERY (1993)
BV1860
BV1860'RECOVERY NOTE BY NATIONAL OCEAN SERVICE 1993 (DMM)
BV1860'RECOVERED AS DESCRIBED.
BV1860
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 BV1860                          STATION RECOVERY (1993)
 BV1860
 BV1860'RECOVERED 1993
 BV1860'RECOVERED IN GOOD CONDITION.
 BV1860
 BV1860                          STATION RECOVERY (1994)
 BV1860
 BV1860'RECOVERY NOTE BY ALABAMA HIGHWAY DEPARTMENT 1994 (JLD)
 BV1860'THE STATION IS LOCATED 1.45 KM (0.90 MI) SOUTHEAST OF FRUITDALE AND
 BV1860'20.12 KM (12.50 MI) SOUTHWEST OF CHATOM ON THE NORTH RIGHT-OF-WAY OF
 BV1860'U.S. HIGHWAY 45.  OWNERSHIP--ALABAMA DEPARTMENT OF HIGHWAYS. TO REACH
 BV1860'THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 45 AND STATE HIGHWAY
17,
 BV1860'GO NORTHWEST ON U.S. 45 FOR 13.68 KM (8.50 MI) TO MILE POST 8.5 AND
 BV1860'THE STATION ON THE RIGHT. THE STATION IS SET IN THE TOP OF A CONCRETE
 BV1860'MONUMENT FLUSH WITH THE GROUND, AND IS LOCATED 38.3 M (125.7 FT)
 BV1860'EAST-SOUTHEAST OF TELEPHONE CABLE PEDASTAL NO. 8 C 9, 15.1 M (49.5
FT)
 BV1860'NORTH-NORTHEAST OF THE HIGHWAY CENTERLINE, 7.3 M (24.0 FT) SOUTH OF A
 BV1860'BARRIER LINE MARKER SIGN AND 0.43 M (1.41 FT) SOUTH-SOUTHWEST OF A
 BV1860'FIBERGLASS WITNESS POST. NOTE--STATION 65-9 MAY BE USED AS AN AZIMUTH
 BV1860'FOR THIS STATION.
 BV1860
 BV1860                          STATION RECOVERY (1995)
 BV1860
 BV1860'RECOVERY NOTE BY ALABAMA HIGHWAY DEPARTMENT 1995 (JDS)
 BV1860'RECOVERED AS DESCRIBED.
 BV1860
 BV1860                          STATION RECOVERY (1998)
 BV1860
 BV1860'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1998 (CSM)
 BV1860'THE STATION IS LOCATED ABOUT 20.12 KM (12.50 MI) SOUTHWEST OF CHATOM,
 BV1860'1.45 KM (0.90 MI) SOUTHEAST OF FRUITDALE, ALONG THE NORTH-NORTHEAST
 BV1860'RIGHT-OF-WAY OF U.S. HIGHWAY 45.  OWNERSHIP--ALABAMA DEPARTMENT OF
 BV1860'TRANSPORTATION, 1409 COLISEUM BOULEVARD, MONTGOMERY AL 36130-3050.
 BV1860'CONTACT MR. DON SPILLARS, PHONE 334-242-6614 OR FAX 334-269-0826. TO
 BV1860'REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 45 AND STATE
 BV1860'HIGHWAY 17 NORTH, ABOUT 3.5 KM (2.15 MI) SOUTH OF VINEGAR BEND, GO
 BV1860'NORTHWESTERLY FOR 13.5 KM (8.40 MI) ON HIGHWAY 45 TO MILEPOST 8.5 AND
 BV1860'THE STATION ON THE RIGHT.  STATION IS 38.2 M (125.3 FT) EAST-
SOUTHEAST
 BV1860'OF TELEPHONE CABLE PEDESTAL NUMBER 8 C 9, 15.1 M (49.5 FT)
 BV1860'NORTH-NORTHEAST OF THE CENTER OF HIGHWAY 45, 7.3 M (24.0 FT) SOUTH OF
 BV1860'A METAL RIGHT-OF-WAY MARKER, 0.4 M (1.3 FT) SOUTH-SOUTHWEST OF A
 BV1860'WITNESS POST, ABOUT 0.5 M (1.6 FT) BELOW THE HIGHWAY LEVEL AND FLUSH
 BV1860'WITH GROUND.  NOTE--STATION 65-9 1991 MAY BE USED AS AN AZIMUTH FOR
 BV1860'THIS STATION.
 BV1860
 BV1860                          STATION RECOVERY (2000)
 BV1860
 BV1860'RECOVERY NOTE BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 2000
 BV1860'RECOVERED AS DESCRIBED.
 BV1860
 BV1860                          STATION RECOVERY (2004)
 BV1860
 BV1860'RECOVERY NOTE BY ALABAMA DEPARTMENT OF TRANSPORTATION 2004 (SCN)
 BV1860'RECOVERED AS DESCRIBED.
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BV1860
BV1860                          STATION RECOVERY (2009)
BV1860
BV1860'RECOVERY NOTE BY MS DEPT TRANS 2009 (KLH)
BV1860'RECOVERED AS DESCRIBED.
BV1860
BV1860                          STATION RECOVERY (2010)
BV1860
BV1860'RECOVERY NOTE BY ALABAMA DEPARTMENT OF TRANSPORTATION 2010 (JTR)
BV1860'RECOVERED IN GOOD CONDITION.
BV1860'
BV1860'NOTE-WITH EXCEPTION THAT THE METAL RIGHT OF WAY MARKER IS MISSING.

*** retrieval complete.
Elapsed Time = 00:00:06
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 BV1225
***********************************************************************
 BV1225  DESIGNATION -  84 V 58
 BV1225  PID         -  BV1225
 BV1225  STATE/COUNTY-  MS/JEFFERSON DAVIS
 BV1225  COUNTRY     -  US
 BV1225  USGS QUAD   -  MOUNT CARMEL (1982)
 BV1225
 BV1225                         *CURRENT SURVEY CONTROL
 BV1225
_____________________________________________________________________
 BV1225* NAD 83(2011) POSITION- 31 38 23.86380(N) 089 48 17.10313(W)
ADJUSTED
 BV1225* NAD 83(2011) ELLIP HT-    96.744 (meters)        (06/27/12)
ADJUSTED
 BV1225* NAD 83(2011) EPOCH   -  2010.00
 BV1225* NAVD 88 ORTHO HEIGHT -   122.627 (meters)      402.32  (feet)
ADJUSTED
 BV1225* NAVD 88 EPOCH        -  2009.55
 BV1225  **This station is located in a suspected subsidence area (see
below).
 BV1225
_____________________________________________________________________
 BV1225  NAD 83(2011) X  -     18,521.678 (meters)                   COMP
 BV1225  NAD 83(2011) Y  - -5,435,158.118 (meters)                   COMP
 BV1225  NAD 83(2011) Z  -  3,326,559.895 (meters)                   COMP
 BV1225  LAPLACE CORR    -          0.40  (seconds)
DEFLEC12A
 BV1225  GEOID HEIGHT    -        -25.89  (meters)
GEOID12A
 BV1225  DYNAMIC HEIGHT  -        122.480 (meters)      401.84  (feet) COMP
 BV1225  MODELED GRAVITY -    979,438.1   (mgal)                      NAVD
88
 BV1225
 BV1225  VERT ORDER      -  SECOND    CLASS II
 BV1225
 BV1225  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1225  Type                                           Horiz  Ellip  Dist(km)
 BV1225  ----------------------------------------------------------------------
 BV1225  NETWORK                                         1.19   1.37
 BV1225  ----------------------------------------------------------------------
 BV1225  MEDIAN LOCAL ACCURACY AND DIST (001 points)   0.96   0.96      9.35
 BV1225  ----------------------------------------------------------------------
 BV1225  NOTE: Click here for information on individual local accuracy
 BV1225  values and other accuracy information.
 BV1225
 BV1225
 BV1225.The horizontal coordinates were established by GPS observations
 BV1225.and adjusted by the National Geodetic Survey in June 2012.
```

```
 BV1225
 BV1225.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV1225.frame has been affixed to the stable North American tectonic plate.
See
 BV1225.NA2011 for more information.
 BV1225
 BV1225.The horizontal coordinates are valid at the epoch date displayed
above
 BV1225.which is a decimal equivalence of Year/Month/Day.
 BV1225
 BV1225 ** This station is in an area of known vertical motion.  Due to the
 BV1225 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV1225 ** determined the orthometric heights for marks in these suspect
 BV1225 ** subsidence areas should be considered valid only at the epoch date
 BV1225 ** associated with the orthometric height.  These heights must always
 BV1225 ** be validated when used as control.  All previously superseded
 BV1225 ** orthometric heights are now considered suspect and are available
 BV1225 ** in the superseded section.  NGS does not recommend using suspect
 BV1225 ** or superseded heights as control.
 BV1225
 BV1225.The orthometric height was determined by differential leveling and
 BV1225.adjusted by the NATIONAL GEODETIC SURVEY
 BV1225.in July 2012.
 BV1225
 BV1225.No vertical observational check was made to the station.
 BV1225
 BV1225.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1225
 BV1225.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1225
 BV1225.The ellipsoidal height was determined by GPS observations
 BV1225.and is referenced to NAD 83.
 BV1225
 BV1225.The dynamic height is computed by dividing the NAVD 88
 BV1225.geopotential number by the normal gravity value computed on the
 BV1225.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV1225.degrees latitude (g = 980.6199 gals.).
 BV1225
 BV1225.The modeled gravity was interpolated from observed gravity values.
 BV1225
 BV1225. The following values were computed from the NAD 83(2011) position.
 BV1225
 BV1225;                    North         East     Units Scale Factor
Converg.
 BV1225;SPC MS W     -   237,350.309   750,139.421   MT  0.99998099   +0 16
38.2
 BV1225;SPC MS W     -   778,706.81  2,461,082.42   sFT  0.99998099   +0 16
38.2
 BV1225;UTM  16      - 3,503,946.407   233,998.181   MT  1.00047278   -1 28
19.9
 BV1225
 BV1225!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1225!SPC MS W     -   0.99998481  x   0.99998099  =   0.99996580
 BV1225!UTM  16      -   0.99998481  x   1.00047278  =   1.00045758
```

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 BV1225
 BV1225                          SUPERSEDED SURVEY CONTROL
 BV1225
 BV1225  NAD 83(2007)-  31 38 23.86386(N)    089 48 17.10349(W) AD(2002.00) A
 BV1225  ELLIP H (09/06/11)   96.739  (m)                       GP(2002.00) 4
1
 BV1225  NAVD 88 (05/22/96)  122.708  (m)          402.58   (f) SUPERSEDED  2
2
 BV1225  NGVD 29 (??/??/92)  122.697  (m)          402.55   (f) ADJ UNCH    2
2
 BV1225
 BV1225.Superseded values are not recommended for survey control.
 BV1225
 BV1225.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1225.See file dsdata.txt to determine how the superseded data were
derived.
 BV1225
 BV1225_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBA3399803946(NAD 83)
 BV1225
 BV1225_MARKER: DD = SURVEY DISK
 BV1225_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BV1225_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 BV1225_STAMPING: BM 84V 58 1975
 BV1225_MARK LOGO: MSHD
 BV1225_PROJECTION: FLUSH
 BV1225_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BV1225+STABILITY: SURFACE MOTION
 BV1225_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV1225+SATELLITE: SATELLITE OBSERVATIONS - October 01, 2008
 BV1225
 BV1225  HISTORY     - Date     Condition        Report By
 BV1225  HISTORY     - 1975     MONUMENTED       MSHD
 BV1225  HISTORY     - 20040319 GOOD             DUNGAN
 BV1225  HISTORY     - 20081001 GOOD             MSDOT
 BV1225
 BV1225                           STATION DESCRIPTION
 BV1225
 BV1225'DESCRIBED BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1975
 BV1225'4.5 MI NE FROM PRENTISS.
 BV1225'THE MARK IS LOCATED 4.5 MILES NORTHEAST OF THE CENTER OF PRENTISS AT
 BV1225'THE SOUTHEAST CORNER OF A CEMETERY AT THE JUNCTION OF A GRAVELED ROAD
 BV1225'LEADING WEST, 1 MILE WEST OF THE CROSSROAD AT MT. CARMEL IN THE
 BV1225'SOUTHWEST 1/4 OF SECTION 22, T 8N, R 18W.  IT IS 76 FEET NORTHWEST OF
 BV1225'THE CENTER OF HIGHWAY 84, 26 FEET NORTH OF THE CENTER OF A GRAVELED
 BV1225'ROAD, 117.5 FEET WEST OF A POWER POLE, 73 FEET SOUTH-SOUTHEAST OF A
 BV1225'LONE CEDAR INSIDE THE CEMETERY, 1.5 FEET SOUTHEAST OF THE SOUTHEAST
 BV1225'CORNER OF THE CEMETERY, 1 FOOT SOUTH OF A METAL WITNESS POST SET IN
 BV1225'THE TOP OF A 12 INCH ROUND CONCRETE POST ABOUT 1 FOOT ABOVE THE LEVEL
 BV1225'OF THE HIGHWAY AND PROJECTS 1 INCH.  NOTE-- TO REACH FROM THE
 BV1225'COURTHOUSE IN PRENTISS GO NORTHEAST ON COLUMBIA AVENUE FOR 0.65 MILE
 BV1225'TO THE JUNCTION OF STATE HIGHWAY 13 AND U.S. HIGHWAY 84.  CONTINUE
 BV1225'NORTHEAST ON U.S. HIGHWAY 84 FOR 4 MILES TO AN ANGLING SIDE ROAD AND
 BV1225'THE MARK ON THE LEFT.
 BV1225
 BV1225                           STATION RECOVERY (2004)
 BV1225
 BV1225'RECOVERY NOTE BY DUNGAN ENGINEERING 2004 (NB)
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BV1225'RECOVERED IN GOOD CONDITION.
BV1225
BV1225                          STATION RECOVERY (2008)
BV1225
BV1225'RECOVERY NOTE BY MS DEPT TRANS 2008 (JAM)
BV1225'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:02
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER 18, 2014
 BV0841
***********************************************************************
 BV0841  DESIGNATION -  98 V 104
 BV0841  PID         -  BV0841
 BV0841  STATE/COUNTY-  MS/MARION
 BV0841  COUNTRY     -  US
 BV0841  USGS QUAD   -  SANDY HOOK NW (1982)
 BV0841
 BV0841                         *CURRENT SURVEY CONTROL
 BV0841
_____________________________________________________________________
 BV0841* NAD 83(1986) POSITION- 31 12 36.1    (N) 089 55 46.8     (W)
HD_HELD2
 BV0841* NAVD 88 ORTHO HEIGHT -   121.600 (meters)      398.95  (feet)
ADJUSTED
 BV0841* NAVD 88 EPOCH        -  2009.55
 BV0841  **This station is located in a suspected subsidence area (see
below).
 BV0841
_____________________________________________________________________
 BV0841  GEOID HEIGHT    -        -26.85  (meters)
GEOID12A
 BV0841  DYNAMIC HEIGHT  -        121.446 (meters)      398.44  (feet) COMP
 BV0841  MODELED GRAVITY -    979,378.1   (mgal)                       NAVD
88
 BV0841
 BV0841  VERT ORDER      -  FIRST     CLASS II
 BV0841
 BV0841.The horizontal coordinates were established by autonomous hand held
GPS
 BV0841.observations and have an estimated accuracy of +/- 10 meters.
 BV0841.
 BV0841 ** This station is in an area of known vertical motion.  Due to the
 BV0841 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV0841 ** determined the orthometric heights for marks in these suspect
 BV0841 ** subsidence areas should be considered valid only at the epoch date
 BV0841 ** associated with the orthometric height.  These heights must always
 BV0841 ** be validated when used as control.  All previously superseded
 BV0841 ** orthometric heights are now considered suspect and are available
 BV0841 ** in the superseded section.  NGS does not recommend using suspect
 BV0841 ** or superseded heights as control.
 BV0841
 BV0841.The orthometric height was determined by differential leveling and
 BV0841.adjusted by the NATIONAL GEODETIC SURVEY
 BV0841.in July 2012.
 BV0841
 BV0841.The dynamic height is computed by dividing the NAVD 88
 BV0841.geopotential number by the normal gravity value computed on the
```

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 BV0841.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV0841.degrees latitude (g = 980.6199 gals.).
 BV0841
 BV0841.The modeled gravity was interpolated from observed gravity values.
 BV0841
 BV0841;                    North         East     Units  Estimated Accuracy
 BV0841;SPC MS W     -   189,632.      738,465.      MT  (+/- 10 meters HH2
GPS)
 BV0841
 BV0841                          SUPERSEDED SURVEY CONTROL
 BV0841
 BV0841  NGVD 29 (??/??/92)  121.734  (m)          399.39   (f) ADJ UNCH    2
0
 BV0841
 BV0841.Superseded values are not recommended for survey control.
 BV0841
 BV0841.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV0841.See file dsdata.txt to determine how the superseded data were
derived.
 BV0841
 BV0841_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBV2087456578(NAD 83)
 BV0841
 BV0841_MARKER: DD = SURVEY DISK
 BV0841_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BV0841_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 BV0841_STAMPING: BM 98V-104 1968
 BV0841_MARK LOGO: MSHD
 BV0841_PROJECTION: PROJECTING 5 CENTIMETERS
 BV0841_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BV0841+STABILITY: SURFACE MOTION
 BV0841_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV0841+SATELLITE: SATELLITE OBSERVATIONS - January 17, 2009
 BV0841
 BV0841  HISTORY     - Date     Condition        Report By
 BV0841  HISTORY     - 1968     MONUMENTED       MSHD
 BV0841  HISTORY     - 20090117 GOOD             MAPTEC
 BV0841
 BV0841                          STATION DESCRIPTION
 BV0841
 BV0841'DESCRIBED BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1968
 BV0841'4.0 MI SW FROM FOXWORTH.
 BV0841'THE MARK IS LOCATED 4.0 MILES SOUTHWEST OF THE APPROXIMATE CENTER OF
 BV0841'FOXWORTH IN THE NORTHWEST ANGLE OF A CROSSROADS ON THE NORTH
 BV0841'RIGHT-OF-WAY OF U.S. HIGHWAY 98, 6.4 MILES SOUTHWEST OF COLUMBIA IN
 BV0841'THE SOUTHEAST 1/4 OF SECTION 19, T 3N, R 13E.  IT IS 83 FEET NORTH OF
 BV0841'THE CENTER OF U.S. HIGHWAY 98, 22 FEET SOUTH SOUTHWEST OF THE CENTER
 BV0841'OF A GRAVELED ROAD, 36 FEET WEST OF A 16 INCH OAK, 200 FEET WEST OF
 BV0841'THE CENTER OF A CROSSROADS, 5 FEET EAST OF AN 8 INCH PINE, 10.5 FEET
 BV0841'SOUTH OF THE EDGE OF A 2 FOOT BANK, 133 FEET WEST SOUTHWEST OF A GAS
 BV0841'VALVE, 1 FOOT SOUTHWEST OF A METAL WITNESS POST, SET IN THE TOP OF A
 BV0841'12 INCH ROUND CONCRETE POST ABOUT LEVEL WITH THE HIGHWAY AND PROJECTS
 BV0841'6 INCHES.  TO REACH FROM THE U.S. POST OFFICE IN FOXWORTH GO EAST ON
 BV0841'MISSISSIPPI HIGHWAY 587 FOR 0.4 MILE TO THE INTERSECTION OF U.S.
 BV0841'HIGHWAY 98.  TURN SHARP RIGHT (SOUTHWEST) AND CONTINUE ON U.S.
HIGHWAY
 BV0841'98 FOR 0.7 MILE TO THE FORKS OF U.S. HIGHWAY 98 AND MISSISSIPPI
 BV0841'HIGHWAY 35.  TAKE THE RIGHT FORK AND CONTINUE SOUTHWEST ON U.S.
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BV0841'HIGHWAY 98 FOR 3.6 MILES TO A CROSSROADS AND THE MARK ON THE RIGHT AS
BV0841'DESCRIBED.
BV0841
BV0841                          STATION RECOVERY (2009)
BV0841
BV0841'RECOVERY NOTE BY MAPTECH INCORPORATED 2009 (RCW)
BV0841'RECOVERED IN GOOD CONDITION.  NOTE-THE MARK IS 103.0 FT (31.4 M) WEST
BV0841'OF THE WESTERN MOST WATER VALVE, 77.8 FT (23.7 M) EAST OF POWER POLE
BV0841'NO.  F469A, 32.3 FT (9.8 M) EAST OF A BURIED CABLE SIGN.

*** retrieval complete.
Elapsed Time = 00:00:02
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The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 DL9066
***********************************************************************
 DL9066  DESIGNATION -  A 375
 DL9066  PID         -  DL9066
 DL9066  STATE/COUNTY-  MS/MARION
 DL9066  COUNTRY     -  US
 DL9066  USGS QUAD   -  SANDY HOOK NW (1982)
 DL9066
 DL9066                         *CURRENT SURVEY CONTROL
 DL9066
_____________________________________________________________________
 DL9066* NAD 83(2011) POSITION- 31 12 46.52897(N) 089 55 10.64090(W)
ADJUSTED
 DL9066* NAD 83(2011) ELLIP HT-    80.656 (meters)        (06/27/12)
ADJUSTED
 DL9066* NAD 83(2011) EPOCH   -  2010.00
 DL9066* NAVD 88 ORTHO HEIGHT -   107.508 (meters)      352.72  (feet)
ADJUSTED
 DL9066* NAVD 88 EPOCH        -  2009.55
 DL9066  **This station is located in a suspected subsidence area (see
below).
 DL9066
_____________________________________________________________________
 DL9066  NAD 83(2011) X  -      7,659.381 (meters)                    COMP
 DL9066  NAD 83(2011) Y  - -5,459,858.569 (meters)                    COMP
 DL9066  NAD 83(2011) Z  -  3,286,148.029 (meters)                    COMP
 DL9066  LAPLACE CORR    -         -1.46  (seconds)
DEFLEC12A
 DL9066  GEOID HEIGHT    -        -26.85  (meters)
GEOID12A
 DL9066  DYNAMIC HEIGHT  -        107.373 (meters)      352.27  (feet) COMP
 DL9066  MODELED GRAVITY -    979,379.3   (mgal)                       NAVD
88
 DL9066
 DL9066  VERT ORDER      -  FIRST     CLASS II
 DL9066
 DL9066  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DL9066  Type                                           Horiz  Ellip  Dist(km)
 DL9066  ----------------------------------------------------------------------
 DL9066  NETWORK                                         1.32   1.94
 DL9066  ----------------------------------------------------------------------
 DL9066  MEDIAN LOCAL ACCURACY AND DIST (004 points)   1.40   1.83     17.22
 DL9066  ----------------------------------------------------------------------
 DL9066  NOTE: Click here for information on individual local accuracy
 DL9066  values and other accuracy information.
 DL9066
 DL9066
 DL9066.The horizontal coordinates were established by GPS observations
 DL9066.and adjusted by the National Geodetic Survey in June 2012.
```

```
 DL9066
 DL9066.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DL9066.frame has been affixed to the stable North American tectonic plate.
See
 DL9066.NA2011 for more information.
 DL9066
 DL9066.The horizontal coordinates are valid at the epoch date displayed
above
 DL9066.which is a decimal equivalence of Year/Month/Day.
 DL9066
 DL9066 ** This station is in an area of known vertical motion.  Due to the
 DL9066 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 DL9066 ** determined the orthometric heights for marks in these suspect
 DL9066 ** subsidence areas should be considered valid only at the epoch date
 DL9066 ** associated with the orthometric height.  These heights must always
 DL9066 ** be validated when used as control.  All previously superseded
 DL9066 ** orthometric heights are now considered suspect and are available
 DL9066 ** in the superseded section.  NGS does not recommend using suspect
 DL9066 ** or superseded heights as control.
 DL9066
 DL9066.The orthometric height was determined by differential leveling and
 DL9066.adjusted by the NATIONAL GEODETIC SURVEY
 DL9066.in July 2012.
 DL9066
 DL9066.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 DL9066
 DL9066.The Laplace correction was computed from DEFLEC12A derived
deflections.
 DL9066
 DL9066.The ellipsoidal height was determined by GPS observations
 DL9066.and is referenced to NAD 83.
 DL9066
 DL9066.The dynamic height is computed by dividing the NAVD 88
 DL9066.geopotential number by the normal gravity value computed on the
 DL9066.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 DL9066.degrees latitude (g = 980.6199 gals.).
 DL9066
 DL9066.The modeled gravity was interpolated from observed gravity values.
 DL9066
 DL9066. The following values were computed from the NAD 83(2011) position.
 DL9066
 DL9066;                    North         East     Units Scale Factor
Converg.
 DL9066;SPC MS W     -   189,956.547   739,421.275   MT  0.99996916   +0 12
51.8
 DL9066;SPC MS W     -   623,215.77  2,425,917.97   sFT  0.99996916   +0 12
51.8
 DL9066;UTM  16      - 3,456,874.384   221,840.244   MT  1.00055448   -1 30
50.3
 DL9066;UTM  15      - 3,457,290.521   793,481.993   MT  1.00066255   +1 35
50.8
 DL9066
 DL9066!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DL9066!SPC MS W     -   0.99998733  x   0.99996916  =   0.99995650
 DL9066!UTM  16      -   0.99998733  x   1.00055448  =   1.00054181
```

```
 DL9066!UTM  15      -   0.99998733  x   1.00066255  =   1.00064988
 DL9066
 DL9066                          SUPERSEDED SURVEY CONTROL
 DL9066
 DL9066  NAD 83(2007)-  31 12 46.52910(N)    089 55 10.64145(W) AD(2002.00) A
 DL9066  ELLIP H (09/06/11)   80.662  (m)                       GP(2002.00) 4
1
 DL9066
 DL9066.Superseded values are not recommended for survey control.
 DL9066
 DL9066.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DL9066.See file dsdata.txt to determine how the superseded data were
derived.
 DL9066
 DL9066_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBV2184056874(NAD 83)
 DL9066
 DL9066_MARKER: DD = SURVEY DISK
 DL9066_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DL9066_STAMPING: A 375 2009
 DL9066_MARK LOGO: MSDOT
 DL9066_PROJECTION: FLUSH
 DL9066_MAGNETIC: N = NO MAGNETIC MATERIAL
 DL9066_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 DL9066+STABILITY: SURFACE MOTION
 DL9066_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DL9066+SATELLITE: SATELLITE OBSERVATIONS - May 03, 2009
 DL9066
 DL9066  HISTORY     - Date     Condition        Report By
 DL9066  HISTORY     - 20090503 MONUMENTED       EMC
 DL9066
 DL9066                          STATION DESCRIPTION
 DL9066
 DL9066'DESCRIBED BY EMC ENGINEERING SERV INC 2009
 DL9066'THE STATION IS LOCATED IN COLUMBIA, MISSISSIPPI ABOUT 77.4 MI (124.5
 DL9066'KM) WEST-SOUTHWEST OF COPELAND, 75.8 MI (122.0 KM) WEST OF FRUITDALE
 DL9066'AND 74.8 MI (120.4 KM) WEST OF YELLOW PINE.  OWNERSHIP--MISSISSIPPI
 DL9066'DEPARTMENT OF TRANSPORTATION.
 DL9066'
 DL9066'TO REACH FROM THE INTERSECTION OF HIGHWAY 35 SOUTH AND HIGHWAY 98,
 DL9066'PROCEED WEST ON HIGHWAY 98 2.8 MI (4.5 KM) TO THE MARK ON THE RIGHT.
 DL9066'
 DL9066'IT IS 157.2 FT (47.9 M) NORTHEAST OF POWER POLE, 118.5 FT (36.1 M)
 DL9066'NORTH OF CENTERLINE OF WEST BOUND LANE OF HIGHWAY 98, 103.5 FT (31.5
 DL9066'M) NORTH OF NORTH EDGE OF HIGHWAY 98, 90.0 FT (27.4 M) SOUTHWEST OF
 DL9066'POWER POLE AND 6.0 FT (1.8 M) SOUTHEAST OF ROW MARKER.

 *** retrieval complete.
 Elapsed Time = 00:00:02
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 DN3854
***********************************************************************
 DN3854  HT_MOD      -  This is a Height Modernization Survey Station.
 DN3854  DESIGNATION -  AP 40
 DN3854  PID         -  DN3854
 DN3854  STATE/COUNTY-  MS/LAWRENCE
 DN3854  COUNTRY     -  US
 DN3854  USGS QUAD   -  TOPEKA (1970)
 DN3854
 DN3854                        *CURRENT SURVEY CONTROL
 DN3854
_____________________________________________________________________
 DN3854* NAD 83(2011) POSITION- 31 24 52.41150(N) 090 08 51.44688(W)
ADJUSTED
 DN3854* NAD 83(2011) ELLIP HT-   111.347 (meters)        (06/27/12)
ADJUSTED
 DN3854* NAD 83(2011) EPOCH   -  2010.00
 DN3854* NAVD 88 ORTHO HEIGHT -   137.54  (meters)      451.2   (feet) GPS
OBS
 DN3854* NAVD 88 EPOCH        -  2009.55
 DN3854  **This station is located in a suspected subsidence area (see
below).
 DN3854
_____________________________________________________________________
 DN3854  GEOID HEIGHT    -        -26.19  (meters)
GEOID12A
 DN3854  NAD 83(2011) X  -    -14,037.603 (meters)                    COMP
 DN3854  NAD 83(2011) Y  - -5,448,252.881 (meters)                    COMP
 DN3854  NAD 83(2011) Z  -  3,305,263.880 (meters)                    COMP
 DN3854  LAPLACE CORR    -         -0.38  (seconds)
DEFLEC12A
 DN3854
 DN3854  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DN3854  Type                                          Horiz  Ellip  Dist(km)
 DN3854  ----------------------------------------------------------------
 DN3854  NETWORK                                        1.17   1.55
 DN3854  ----------------------------------------------------------------
 DN3854  MEDIAN LOCAL ACCURACY AND DIST (002 points)   1.12   1.33     22.53
 DN3854  ----------------------------------------------------------------
 DN3854  NOTE: Click here for information on individual local accuracy
 DN3854  values and other accuracy information.
 DN3854
 DN3854
 DN3854.The horizontal coordinates were established by GPS observations
 DN3854.and adjusted by the National Geodetic Survey in June 2012.
 DN3854
 DN3854.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DN3854.frame has been affixed to the stable North American tectonic plate.
See
```

```
 DN3854.NA2011 for more information.
 DN3854
 DN3854.The horizontal coordinates are valid at the epoch date displayed
above
 DN3854.which is a decimal equivalence of Year/Month/Day.
 DN3854
 DN3854 ** This station is in an area of known vertical motion.  Due to the
 DN3854 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 DN3854 ** determined the orthometric heights for marks in these suspect
 DN3854 ** subsidence areas should be considered valid only at the epoch date
 DN3854 ** associated with the orthometric height.  These heights must always
 DN3854 ** be validated when used as control.  All previously superseded
 DN3854 ** orthometric heights are now considered suspect and are available
 DN3854 ** in the superseded section.  NGS does not recommend using suspect
 DN3854 ** or superseded heights as control.
 DN3854
 DN3854.The orthometric height was determined by GPS observations and a
 DN3854.high-resolution geoid model using precise GPS observation and
 DN3854.processing techniques.
 DN3854
 DN3854.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 DN3854
 DN3854.The Laplace correction was computed from DEFLEC12A derived
deflections.
 DN3854
 DN3854.The ellipsoidal height was determined by GPS observations
 DN3854.and is referenced to NAD 83.
 DN3854
 DN3854. The following values were computed from the NAD 83(2011) position.
 DN3854
 DN3854;                    North         East     Units Scale Factor
Converg.
 DN3854;SPC MS W     -   212,252.738   717,657.961   MT  0.99995384   +0 05
48.5
 DN3854;SPC MS W     -   696,365.86  2,354,516.16   sFT  0.99995384   +0 05
48.5
 DN3854;UTM  15      - 3,479,066.973   771,171.488   MT  1.00050708   +1 29
15.5
 DN3854
 DN3854!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DN3854!SPC MS W     -   0.99998252  x   0.99995384  =   0.99993636
 DN3854!UTM  15      -   0.99998252  x   1.00050708  =   1.00048959
 DN3854
 DN3854                          SUPERSEDED SURVEY CONTROL
 DN3854
 DN3854  NAD 83(2007)-  31 24 52.41153(N)    090 08 51.44736(W) AD(2002.00) A
 DN3854  ELLIP H (09/06/11)  111.338  (m)                      GP(2002.00) 4
1
 DN3854
 DN3854.Superseded values are not recommended for survey control.
 DN3854
 DN3854.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DN3854.See file dsdata.txt to determine how the superseded data were
derived.
 DN3854
```

```
DN3854_U.S. NATIONAL GRID SPATIAL ADDRESS: 15RYQ7117179066(NAD 83)
DN3854
DN3854_MARKER: DD = SURVEY DISK
DN3854_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DN3854_STAMPING: AP40 2008
DN3854_MARK LOGO: MSDOT
DN3854_PROJECTION: FLUSH
DN3854_MAGNETIC: N = NO MAGNETIC MATERIAL
DN3854_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DN3854+STABILITY: SURFACE MOTION
DN3854_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DN3854+SATELLITE: SATELLITE OBSERVATIONS - November 12, 2008
DN3854
DN3854  HISTORY     - Date     Condition        Report By
DN3854  HISTORY     - 20081112 MONUMENTED       MSDOT
DN3854
DN3854                          STATION DESCRIPTION
DN3854
DN3854'DESCRIBED BY MS DEPT TRANS 2008
DN3854'THE STATION IS LOCATED IN LAWRENCE CO.  ON HIGHWAY 27 SOUTH NEAR THE
DN3854'COMMUNITY OF DIVIDE.  IT IS.62 MI NORTHWEST OF THE INTERSECTION OF
DN3854'HIGHWAY 27 AND HIGHWAY 44, 2.37 MI (3.8 KM) EAST OF THE COMMUNITY OF
DN3854'TOPEKA, AND 9.65 MI (15.5 KM) SOUTHWEST OF THE TOWN OF MONTICELLO.
DN3854'
DN3854'TO REACH FROM THE INTERSECTION OF HIGHWAY 27 AND HIGHWAY 44 GO NORTH
DN3854'ON HIGHWAY 27.62 MI (44.4 KM) TO A CROSSROAD AND THE STATION ON THE
DN3854'LEFT.
DN3854'
DN3854'THE STATION IS 50 FT (15.2 M) WEST OF A TELEPHONE PEDESTAL, 50 FT
DN3854'(15.2 M) EAST OF THE CENTER OF HIGHWAY 27, 25 FT (7.6 M) NORTH OF THE
DN3854'CENTER OF DIVIDE ROAD, AND 1 FT (0.3 M) EAST OF A FIBERGLASS WITNESS
DN3854'POST.

*** retrieval complete.
Elapsed Time = 00:00:03
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 DN4005
***********************************************************************
 DN4005  HT_MOD      -  This is a Height Modernization Survey Station.
 DN4005  DESIGNATION -  BAYS
 DN4005  PID         -  DN4005
 DN4005  STATE/COUNTY-  MS/JASPER
 DN4005  COUNTRY     -  US
 DN4005  USGS QUAD   -  BAY SPRINGS (1974)
 DN4005
 DN4005                         *CURRENT SURVEY CONTROL
 DN4005
_____________________________________________________________________
 DN4005* NAD 83(2011) POSITION- 31 58 10.80173(N) 089 15 53.73282(W)
ADJUSTED
 DN4005* NAD 83(2011) ELLIP HT-    87.437 (meters)        (06/27/12)
ADJUSTED
 DN4005* NAD 83(2011) EPOCH   -  2010.00
 DN4005* NAVD 88 ORTHO HEIGHT -   113.88  (meters)      373.6   (feet) GPS
OBS
 DN4005* NAVD 88 EPOCH        -  2009.55
 DN4005  **This station is located in a suspected subsidence area (see
below).
 DN4005
_____________________________________________________________________
 DN4005  GEOID HEIGHT    -        -26.43  (meters)
GEOID12A
 DN4005  NAD 83(2011) X  -     69,481.375 (meters)                    COMP
 DN4005  NAD 83(2011) Y  - -5,415,468.315 (meters)                    COMP
 DN4005  NAD 83(2011) Z  -  3,357,624.843 (meters)                    COMP
 DN4005  LAPLACE CORR    -         -1.40  (seconds)
DEFLEC12A
 DN4005
 DN4005  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DN4005  Type                                          Horiz  Ellip  Dist(km)
 DN4005  ----------------------------------------------------------------
 DN4005  NETWORK                                        0.93   1.16
 DN4005  ----------------------------------------------------------------
 DN4005  MEDIAN LOCAL ACCURACY AND DIST (006 points)   0.96   1.08     13.91
 DN4005  ----------------------------------------------------------------
 DN4005  NOTE: Click here for information on individual local accuracy
 DN4005  values and other accuracy information.
 DN4005
 DN4005
 DN4005.The horizontal coordinates were established by GPS observations
 DN4005.and adjusted by the National Geodetic Survey in June 2012.
 DN4005
 DN4005.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DN4005.frame has been affixed to the stable North American tectonic plate.
See
```

```
 DN4005.NA2011 for more information.
 DN4005
 DN4005.The horizontal coordinates are valid at the epoch date displayed
above
 DN4005.which is a decimal equivalence of Year/Month/Day.
 DN4005
 DN4005 ** This station is in an area of known vertical motion.  Due to the
 DN4005 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 DN4005 ** determined the orthometric heights for marks in these suspect
 DN4005 ** subsidence areas should be considered valid only at the epoch date
 DN4005 ** associated with the orthometric height.  These heights must always
 DN4005 ** be validated when used as control.  All previously superseded
 DN4005 ** orthometric heights are now considered suspect and are available
 DN4005 ** in the superseded section.  NGS does not recommend using suspect
 DN4005 ** or superseded heights as control.
 DN4005
 DN4005.The orthometric height was determined by GPS observations and a
 DN4005.high-resolution geoid model using precise GPS observation and
 DN4005.processing techniques.
 DN4005
 DN4005.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 DN4005
 DN4005.The Laplace correction was computed from DEFLEC12A derived
deflections.
 DN4005
 DN4005.The ellipsoidal height was determined by GPS observations
 DN4005.and is referenced to NAD 83.
 DN4005
 DN4005. The following values were computed from the NAD 83(2011) position.
 DN4005
 DN4005;                    North         East     Units Scale Factor
Converg.
 DN4005;SPC MS E     -   273,867.314   259,205.922   MT  0.99997052   -0 13
42.7
 DN4005;SPC MS E     -   898,513.01    850,411.43   sFT  0.99997052   -0 13
42.7
 DN4005;UTM  16      - 3,539,314.089   285,970.578   MT  1.00016497   -1 11
58.8
 DN4005
 DN4005!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DN4005!SPC MS E     -   0.99998627  x   0.99997052  =   0.99995679
 DN4005!UTM  16      -   0.99998627  x   1.00016497  =   1.00015124
 DN4005
 DN4005                          SUPERSEDED SURVEY CONTROL
 DN4005
 DN4005  NAD 83(2007)-  31 58 10.80185(N)     089 15 53.73313(W) AD(2002.00) A
 DN4005  ELLIP H (09/06/11)   87.433  (m)                        GP(2002.00) 4
1
 DN4005
 DN4005.Superseded values are not recommended for survey control.
 DN4005
 DN4005.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DN4005.See file dsdata.txt to determine how the superseded data were
derived.
 DN4005
```

```
 DN4005_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBA8597039314(NAD 83)
 DN4005
 DN4005_MARKER: DD = SURVEY DISK
 DN4005_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DN4005_STAMPING: BAYS 2008
 DN4005_MARK LOGO: MSDOT
 DN4005_PROJECTION: FLUSH
 DN4005_MAGNETIC: N = NO MAGNETIC MATERIAL
 DN4005_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 DN4005+STABILITY: SURFACE MOTION
 DN4005_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DN4005+SATELLITE: SATELLITE OBSERVATIONS - December 16, 2008
 DN4005
 DN4005  HISTORY     - Date     Condition        Report By
 DN4005  HISTORY     - 20081216 MONUMENTED       MSDOT
 DN4005
 DN4005                          STATION DESCRIPTION
 DN4005
 DN4005'DESCRIBED BY MS DEPT TRANS 2008 (PAB)
 DN4005'THE MARK IS LOCATED ABOUT 3 MI (4.8 KM) EAST OF BAY SPRINGS ALONG THE
 DN4005'NORTH SIDE OF S.R. 528 AT THE M.D.O.T. JASPER COUNTY MAINTENANCE
 DN4005'FACILITY.
 DN4005'
 DN4005'TO REACH FROM THE INTERSECTION OF S.R. 528 AND S.R. 15, NEAR DOWNTOWN
 DN4005'BAY SPRINGS, TRAVEL EAST ON S.R. 528 FOR 1.8 MI (2.9 KM) TO THE MARK
 DN4005'ON THE LEFT.
 DN4005'
 DN4005'THE MARK IS A M.D.O.T. DISK SET IN THE TOP OF A 12-INCH ROUND
CONCRETE
 DN4005'POST FLUSH WITH THE GROUND.  IT IS 84.0 FT (25.6 M) SOUTHWEST OF THE
 DN4005'NORTHWEST CORNER OF A METAL BUILDING, 57.0 FT (17.4 M) EAST OF A
 DN4005'NORTH-SOUTH CHAIN-LINK FENCE, 33.0 FT (10.1 M) WEST OF A FLAG POLE,
 DN4005'11.0 FT (3.4 M) SOUTH OF THE SOUTHWEST CORNER OF A CONCRETE SLAB AND
 DN4005'1.5 FT (0.5 M) SOUTH OF A FIBERGLASS WITNESS POST.

 *** retrieval complete.
 Elapsed Time = 00:00:04
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 DN3995
***********************************************************************
 DN3995  HT_MOD      -  This is a Height Modernization Survey Station.
 DN3995  DESIGNATION -  BEA 1
 DN3995  PID         -  DN3995
 DN3995  STATE/COUNTY-  MS/PERRY
 DN3995  COUNTRY     -  US
 DN3995  USGS QUAD   -  BEAUMONT (1982)
 DN3995
 DN3995                         *CURRENT SURVEY CONTROL
 DN3995
_____________________________________________________________________
 DN3995* NAD 83(2011) POSITION- 31 12 00.97330(N) 088 54 42.14010(W)
ADJUSTED
 DN3995* NAD 83(2011) ELLIP HT-     2.368 (meters)        (06/27/12)
ADJUSTED
 DN3995* NAD 83(2011) EPOCH   -  2010.00
 DN3995* NAVD 88 ORTHO HEIGHT -    29.65  (meters)       97.3   (feet) GPS
OBS
 DN3995* NAVD 88 EPOCH        -  2009.55
 DN3995  **This station is located in a suspected subsidence area (see
below).
 DN3995
_____________________________________________________________________
 DN3995  GEOID HEIGHT    -        -27.27  (meters)
GEOID12A
 DN3995  NAD 83(2011) X  -    103,712.707 (meters)                    COMP
 DN3995  NAD 83(2011) Y  - -5,459,538.924 (meters)                    COMP
 DN3995  NAD 83(2011) Z  -  3,284,907.443 (meters)                    COMP
 DN3995  LAPLACE CORR    -         -0.93  (seconds)
DEFLEC12A
 DN3995
 DN3995  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DN3995  Type                                          Horiz  Ellip  Dist(km)
 DN3995  ----------------------------------------------------------------
 DN3995  NETWORK                                        0.84   1.39
 DN3995  ----------------------------------------------------------------
 DN3995  MEDIAN LOCAL ACCURACY AND DIST (006 points)   0.97   1.26     12.19
 DN3995  ----------------------------------------------------------------
 DN3995  NOTE: Click here for information on individual local accuracy
 DN3995  values and other accuracy information.
 DN3995
 DN3995
 DN3995.The horizontal coordinates were established by GPS observations
 DN3995.and adjusted by the National Geodetic Survey in June 2012.
 DN3995
 DN3995.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DN3995.frame has been affixed to the stable North American tectonic plate.
See
```

```
 DN3995.NA2011 for more information.
 DN3995
 DN3995.The horizontal coordinates are valid at the epoch date displayed
above
 DN3995.which is a decimal equivalence of Year/Month/Day.
 DN3995
 DN3995 ** This station is in an area of known vertical motion.  Due to the
 DN3995 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 DN3995 ** determined the orthometric heights for marks in these suspect
 DN3995 ** subsidence areas should be considered valid only at the epoch date
 DN3995 ** associated with the orthometric height.  These heights must always
 DN3995 ** be validated when used as control.  All previously superseded
 DN3995 ** orthometric heights are now considered suspect and are available
 DN3995 ** in the superseded section.  NGS does not recommend using suspect
 DN3995 ** or superseded heights as control.
 DN3995
 DN3995.The orthometric height was determined by GPS observations and a
 DN3995.high-resolution geoid model using precise GPS observation and
 DN3995.processing techniques.
 DN3995
 DN3995.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 DN3995
 DN3995.The Laplace correction was computed from DEFLEC12A derived
deflections.
 DN3995
 DN3995.The ellipsoidal height was determined by GPS observations
 DN3995.and is referenced to NAD 83.
 DN3995
 DN3995. The following values were computed from the NAD 83(2011) position.
 DN3995
 DN3995;                    North         East     Units Scale Factor
Converg.
 DN3995;SPC MS E     -   188,482.482   292,531.177   MT  0.99995069   -0 02
26.2
 DN3995;SPC MS E     -   618,379.61    959,746.04    sFT  0.99995069   -0 02
26.2
 DN3995;UTM  16      - 3,453,371.686   317,863.748   MT  1.00000920   -0 59
26.1
 DN3995
 DN3995!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DN3995!SPC MS E     -   0.99999963  x   0.99995069  =   0.99995032
 DN3995!UTM  16      -   0.99999963  x   1.00000920  =   1.00000883
 DN3995
 DN3995                          SUPERSEDED SURVEY CONTROL
 DN3995
 DN3995  NAD 83(2007)-  31 12 00.97356(N)     088 54 42.13958(W) AD(2002.00) A
 DN3995  ELLIP H (09/06/11)    2.370  (m)                        GP(2002.00) 4
1
 DN3995
 DN3995.Superseded values are not recommended for survey control.
 DN3995
 DN3995.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DN3995.See file dsdata.txt to determine how the superseded data were
derived.
 DN3995
```

```
 DN3995_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCV1786353371(NAD 83)
 DN3995
 DN3995_MARKER: DD = SURVEY DISK
 DN3995_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DN3995_STAMPING: BEA1 2008
 DN3995_MARK LOGO: MSDOT
 DN3995_PROJECTION: FLUSH
 DN3995_MAGNETIC: N = NO MAGNETIC MATERIAL
 DN3995_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 DN3995+STABILITY: SURFACE MOTION
 DN3995_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DN3995+SATELLITE: SATELLITE OBSERVATIONS - December 16, 2008
 DN3995
 DN3995  HISTORY     - Date     Condition        Report By
 DN3995  HISTORY     - 20081216 MONUMENTED       MSDOT
 DN3995
 DN3995                          STATION DESCRIPTION
 DN3995
 DN3995'DESCRIBED BY MS DEPT TRANS 2008 (PAB)
 DN3995'THE MARK IS LOCATED IN A GRASSY AREA IN FRONT OF THE M.D.O.T. PERRY
 DN3995'COUNTY MAINTENANCE FACILITY ALONG THE WEST SIDE OF S.R. 15 ABOUT 2 MI
 DN3995'(3.2 KM) NORTH OF BEAUMONT.
 DN3995'
 DN3995'TO REACH FROM THE INTERSECTION OF S.R. 15 AND S.R. 198 (OLD U.S.
 DN3995'HIGHWAY 98) IN BEAUMONT, TRAVEL NORTH ALONG S.R. 15 FOR 2.2 MI (3.5
 DN3995'KM) TO THE MARK ON THE LEFT.
 DN3995'
 DN3995'THE MARK IS A M.D.O.T. DISK SET IN THE TOP OF A 12-INCH ROUND
CONCRETE
 DN3995'POST FLUSH WITH THE GROUND.  IT IS 80.4 FT (24.5 M) WEST-NORTHWEST OF
 DN3995'THE CENTER OF S.R. 15, 54.1 FT (16.5 M) SOUTH-SOUTHWEST OF A FENCE
 DN3995'CORNER, 41.0 FT (12.5 M) EAST-SOUTHEAST OF THE SOUTHEAST CORNER OF A
 DN3995'METAL BUILDING, 26.0 FT (7.9 M) WEST OF A GAS METER, 25.0
 DN3995'WEST-NORTHWEST OF A FENCE CORNER AND 1.5 FT (0.5 M) EAST-SOUTHEAST OF
 DN3995'A FIBERGLASS WITNESS POST.

 *** retrieval complete.
 Elapsed Time = 00:00:02
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 BV1347
***********************************************************************
 BV1347  DESIGNATION -  C 1 41 2 RM 4
 BV1347  PID         -  BV1347
 BV1347  STATE/COUNTY-  MS/GREENE
 BV1347  COUNTRY     -  US
 BV1347  USGS QUAD   -  LEAKESVILLE (1972)
 BV1347
 BV1347                         *CURRENT SURVEY CONTROL
 BV1347
_____________________________________________________________________
 BV1347* NAD 83(2011) POSITION- 31 10 12.96719(N) 088 31 19.35750(W)
ADJUSTED
 BV1347* NAD 83(2011) ELLIP HT-     1.363 (meters)        (06/27/12)
ADJUSTED
 BV1347* NAD 83(2011) EPOCH   -  2010.00
 BV1347* NAVD 88 ORTHO HEIGHT -    29.122 (meters)       95.54  (feet)
ADJUSTED
 BV1347* NAVD 88 EPOCH        -  2009.55
 BV1347  **This station is located in a suspected subsidence area (see
below).
 BV1347
_____________________________________________________________________
 BV1347  NAD 83(2011) X  -    140,884.105 (meters)                    COMP
 BV1347  NAD 83(2011) Y  - -5,460,428.320 (meters)                    COMP
 BV1347  NAD 83(2011) Z  -  3,282,061.223 (meters)                    COMP
 BV1347  LAPLACE CORR    -         -0.92  (seconds)
DEFLEC12A
 BV1347  GEOID HEIGHT    -        -27.73  (meters)
GEOID12A
 BV1347  DYNAMIC HEIGHT  -         29.085 (meters)       95.42  (feet) COMP
 BV1347  MODELED GRAVITY -    979,393.8   (mgal)                       NAVD
88
 BV1347
 BV1347  VERT ORDER      -  SECOND    CLASS II
 BV1347
 BV1347  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1347  Type                                          Horiz  Ellip  Dist(km)
 BV1347  ----------------------------------------------------------------------
 BV1347  NETWORK                                        2.14   2.70
 BV1347  ----------------------------------------------------------------------
 BV1347  MEDIAN LOCAL ACCURACY AND DIST (002 points)   2.06   2.38      4.17
 BV1347  ----------------------------------------------------------------------
 BV1347  NOTE: Click here for information on individual local accuracy
 BV1347  values and other accuracy information.
 BV1347
 BV1347
 BV1347.The horizontal coordinates were established by GPS observations
 BV1347.and adjusted by the National Geodetic Survey in June 2012.
```

```
 BV1347
 BV1347.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV1347.frame has been affixed to the stable North American tectonic plate.
See
 BV1347.NA2011 for more information.
 BV1347
 BV1347.The horizontal coordinates are valid at the epoch date displayed
above
 BV1347.which is a decimal equivalence of Year/Month/Day.
 BV1347
 BV1347 ** This station is in an area of known vertical motion.  Due to the
 BV1347 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV1347 ** determined the orthometric heights for marks in these suspect
 BV1347 ** subsidence areas should be considered valid only at the epoch date
 BV1347 ** associated with the orthometric height.  These heights must always
 BV1347 ** be validated when used as control.  All previously superseded
 BV1347 ** orthometric heights are now considered suspect and are available
 BV1347 ** in the superseded section.  NGS does not recommend using suspect
 BV1347 ** or superseded heights as control.
 BV1347
 BV1347.The orthometric height was determined by differential leveling and
 BV1347.adjusted by the NATIONAL GEODETIC SURVEY
 BV1347.in July 2012.
 BV1347
 BV1347.No vertical observational check was made to the station.
 BV1347
 BV1347.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1347
 BV1347.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1347
 BV1347.The ellipsoidal height was determined by GPS observations
 BV1347.and is referenced to NAD 83.
 BV1347
 BV1347.The dynamic height is computed by dividing the NAVD 88
 BV1347.geopotential number by the normal gravity value computed on the
 BV1347.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV1347.degrees latitude (g = 980.6199 gals.).
 BV1347
 BV1347.The modeled gravity was interpolated from observed gravity values.
 BV1347
 BV1347. The following values were computed from the NAD 83(2011) position.
 BV1347
 BV1347;                    North         East     Units Scale Factor
Converg.
 BV1347;SPC MS E     -   185,195.358   329,675.112   MT  0.99996086   +0 09
40.0
 BV1347;SPC MS E     -   607,595.10  1,081,609.10   sFT  0.99996086   +0 09
40.0
 BV1347;UTM  16      - 3,449,469.569   354,947.317   MT  0.99985953   -0 47
16.5
 BV1347
 BV1347!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1347!SPC MS E     -   0.99999979  x   0.99996086  =   0.99996065
 BV1347!UTM  16      -   0.99999979  x   0.99985953  =   0.99985932
```

```
 BV1347
 BV1347                          SUPERSEDED SURVEY CONTROL
 BV1347
 BV1347  NAD 83(2007)-  31 10 12.96744(N)    088 31 19.35759(W) AD(2002.00) A
 BV1347  ELLIP H (09/06/11)    1.378  (m)                       GP(2002.00) 4
1
 BV1347  NAVD 88 (05/22/96)   29.215  (m)           95.85   (f) SUPERSEDED  2
2
 BV1347  NGVD 29 (??/??/92)   29.208  (m)           95.83   (f) ADJ UNCH    2
2
 BV1347
 BV1347.Superseded values are not recommended for survey control.
 BV1347
 BV1347.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1347.See file dsdata.txt to determine how the superseded data were
derived.
 BV1347
 BV1347_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCV5494749469(NAD 83)
 BV1347
 BV1347_MARKER: DR = REFERENCE MARK DISK
 BV1347_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BV1347_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 BV1347_STAMPING: C 1 41 2 NO 4 1975
 BV1347_MARK LOGO: NGS
 BV1347_PROJECTION: FLUSH
 BV1347_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BV1347+STABILITY: SURFACE MOTION
 BV1347_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV1347+SATELLITE: SATELLITE OBSERVATIONS - March 06, 2009
 BV1347
 BV1347  HISTORY     - Date     Condition        Report By
 BV1347  HISTORY     - 1975     MONUMENTED       NGS
 BV1347  HISTORY     - 20080201 GOOD             MSDOT
 BV1347  HISTORY     - 20090306 GOOD             MSDOT
 BV1347
 BV1347                          STATION DESCRIPTION
 BV1347
 BV1347'DESCRIBED BY NATIONAL GEODETIC SURVEY 1975
 BV1347'2.1 MI ENE FROM LEAKESVILLE.
 BV1347'THE MARK IS LOCATED 2.1 MILES EAST-NORTHEAST OF LEAKESVILLE ON THE
 BV1347'WEST ROW OF STATE HIGHWAY 57 IN THE NORTHWEST QUARTER OF THE
 BV1347'NORTHEAST QUARTER OF SECTION 6, T 2 N, R 5 W. IT IS 84.42 FEET
 BV1347'NORTH-NORTHWEST OF THE STATION, 61 FEET WEST OF THE CENTER OF
 BV1347'HIGHWAY, 13.5 FEET EAST OF A FENCE, 2.9 FEET SOUTH OF A POWER POLE,
 BV1347'1.6 FEET NORTH OF A METAL WITNESS POST SET IN THE TOP OF A SQUARE
 BV1347'CONCERTE POST ABOUT 1 FOOT BELOW THE LEVEL OF THE HIGHWAY AND IS
 BV1347'FLUSH THE GROUND. TO REACH FROM THE COURTHOUSE IN LEAKESVILLE GO
 BV1347'SOUTHEAST STATE HIGHWAY 63 FOR 1.05 MILES TO THE JUNCTION OF STATE
 BV1347'HIGHWAY 57. TURN LEFT AND GO NORTHEAST ON STATE HIGHWAY 57 FOR 1.45
 BV1347'MILES TO A FORK. TAKE THE LEFT FORK AND GO NORTH ON STATE HIGHWAY 57
 BV1347'FOR 0.7 MILE TO THE MARK ON THE LEFT.
 BV1347
 BV1347                          STATION RECOVERY (2008)
 BV1347
 BV1347'RECOVERY NOTE BY MS DEPT TRANS 2008 (JA)
 BV1347'RECOVERED IN GOOD CONDITION.
 BV1347
```

```
BV1347                          STATION RECOVERY (2009)
BV1347
BV1347'RECOVERY NOTE BY MS DEPT TRANS 2009 (KLH)
BV1347'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:02
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 DN4043
***********************************************************************
 DN4043  HT_MOD      -  This is a Height Modernization Survey Station.
 DN4043  DESIGNATION -  COLL
 DN4043  PID         -  DN4043
 DN4043  STATE/COUNTY-  MS/COVINGTON
 DN4043  COUNTRY     -  US
 DN4043  USGS QUAD   -  COLLINS (1982)
 DN4043
 DN4043                        *CURRENT SURVEY CONTROL
 DN4043
______________________________________________________________________
 DN4043* NAD 83(2011) POSITION- 31 38 09.57767(N) 089 34 19.41552(W)
ADJUSTED
 DN4043* NAD 83(2011) ELLIP HT-    88.606 (meters)        (06/27/12)
ADJUSTED
 DN4043* NAD 83(2011) EPOCH   -  2010.00
 DN4043* NAVD 88 ORTHO HEIGHT -   114.53  (meters)      375.8    (feet) GPS
OBS
 DN4043* NAVD 88 EPOCH        -  2009.55
 DN4043  **This station is located in a suspected subsidence area (see
below).
 DN4043
______________________________________________________________________
 DN4043  GEOID HEIGHT    -        -25.92  (meters)
GEOID12A
 DN4043  NAD 83(2011) X  -     40,596.533 (meters)                    COMP
 DN4043  NAD 83(2011) Y  - -5,435,261.953 (meters)                    COMP
 DN4043  NAD 83(2011) Z  -  3,326,181.002 (meters)                    COMP
 DN4043  LAPLACE CORR    -         -0.52  (seconds)
DEFLEC12A
 DN4043
 DN4043  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DN4043  Type                                          Horiz  Ellip  Dist(km)
 DN4043  ----------------------------------------------------------------------
 DN4043  NETWORK                                        0.63   0.92
 DN4043  ----------------------------------------------------------------------
 DN4043  MEDIAN LOCAL ACCURACY AND DIST (010 points)   0.90   1.07     23.05
 DN4043  ----------------------------------------------------------------------
 DN4043  NOTE: Click here for information on individual local accuracy
 DN4043  values and other accuracy information.
 DN4043
 DN4043
 DN4043.The horizontal coordinates were established by GPS observations
 DN4043.and adjusted by the National Geodetic Survey in June 2012.
 DN4043
 DN4043.NAD 83(2011) refers to NAD 83 coordinates where the reference
```

```
 DN4043.frame has been affixed to the stable North American tectonic plate.
See
 DN4043.NA2011 for more information.
 DN4043
 DN4043.The horizontal coordinates are valid at the epoch date displayed
above
 DN4043.which is a decimal equivalence of Year/Month/Day.
 DN4043
 DN4043 ** This station is in an area of known vertical motion.  Due to the
 DN4043 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 DN4043 ** determined the orthometric heights for marks in these suspect
 DN4043 ** subsidence areas should be considered valid only at the epoch date
 DN4043 ** associated with the orthometric height.  These heights must always
 DN4043 ** be validated when used as control.  All previously superseded
 DN4043 ** orthometric heights are now considered suspect and are available
 DN4043 ** in the superseded section.  NGS does not recommend using suspect
 DN4043 ** or superseded heights as control.
 DN4043
 DN4043.The orthometric height was determined by GPS observations and a
 DN4043.high-resolution geoid model using precise GPS observation and
 DN4043.processing techniques.
 DN4043
 DN4043.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 DN4043
 DN4043.The Laplace correction was computed from DEFLEC12A derived
deflections.
 DN4043
 DN4043.The ellipsoidal height was determined by GPS observations
 DN4043.and is referenced to NAD 83.
 DN4043
 DN4043. The following values were computed from the NAD 83(2011) position.
 DN4043
 DN4043;                     North         East     Units Scale Factor
Converg.
 DN4043;SPC MS E     -   237,025.951   229,923.667   MT  1.00001054   -0 23
15.0
 DN4043;SPC MS E     -   777,642.64    754,341.23   sFT  1.00001054   -0 23
15.0
 DN4043;UTM  16      - 3,502,962.598   256,063.181   MT  1.00033397   -1 20
59.2
 DN4043
 DN4043!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DN4043!SPC MS E     -   0.99998609  x   1.00001054  =   0.99999663
 DN4043!UTM  16      -   0.99998609  x   1.00033397  =   1.00032005
 DN4043
 DN4043                          SUPERSEDED SURVEY CONTROL
 DN4043
 DN4043  NAD 83(2007)-  31 38 09.57777(N)    089 34 19.41572(W) AD(2002.00) A
 DN4043  ELLIP H (09/06/11)   88.606  (m)                       GP(2002.00) 4
1
 DN4043
 DN4043.Superseded values are not recommended for survey control.
 DN4043
 DN4043.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
```

DN4043.See file dsdata.txt to determine how the superseded data were derived.
DN4043
DN4043_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBA5606302962(NAD 83)
DN4043
DN4043_MARKER: DD = SURVEY DISK
DN4043_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DN4043_STAMPING: COLL 2008
DN4043_MARK LOGO: MSDOT
DN4043_PROJECTION: FLUSH
DN4043_MAGNETIC: N = NO MAGNETIC MATERIAL
DN4043_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DN4043+STABILITY: SURFACE MOTION
DN4043_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DN4043+SATELLITE: SATELLITE OBSERVATIONS - December 14, 2008
DN4043
DN4043 HISTORY   - Date   Condition   Report By
DN4043 HISTORY   - 20081214 MONUMENTED   MSDOT
DN4043
DN4043   STATION DESCRIPTION
DN4043
DN4043'DESCRIBED BY MS DEPT TRANS 2008 (RDB)
DN4043'THE STATION IS LOCATED ABOUT 6.7 MI (10.8 KM) NORTHWEST OF SEMINARY,
DN4043'2.5 MI (4.1 KM) EAST-NORTHEAST OF WILLIAMSBURG AND 1.2 MI (1.9 KM)
DN4043'WEST-SOUTHWEST OF COLLINS.
DN4043'
DN4043'TO REACH FROM THE INTERSECTION OF HIGHWAY 49 AND HIGHWAY 84 GO WEST
DN4043'0.6 MI (1.0 KM) TO A CEMETERY AND THE STATION ON THE RIGHT.
DN4043'
DN4043'THE STATION IS 200 FT (61.0 M) EAST OF A POWER POLE, 120 FT (36.6 M)
DN4043'NORTH OF THE CENTER OF THE WEST BOUND LAND OF HIGHWAY 84, 50 FT (15.2
DN4043'M) SOUTH OF A POWER POLE, 1 FT (0.3 M) SOUTH OF A FIBERGLASS WITNESS
DN4043'POST.

*** retrieval complete.
Elapsed Time = 00:00:03

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER 18, 2014
 DL8921
***********************************************************************
 DL8921  DESIGNATION -  F 374
 DL8921  PID         -  DL8921
 DL8921  STATE/COUNTY-  MS/LAMAR
 DL8921  COUNTRY     -  US
 DL8921  USGS QUAD   -  HATTIESBURG SW (1982)
 DL8921
 DL8921                        *CURRENT SURVEY CONTROL
 DL8921
_____________________________________________________________________
 DL8921* NAD 83(2011) POSITION- 31 19 01.41005(N) 089 24 47.38515(W)
ADJUSTED
 DL8921* NAD 83(2011) ELLIP HT-    96.300 (meters)        (06/27/12)
ADJUSTED
 DL8921* NAD 83(2011) EPOCH   -  2010.00
 DL8921* NAVD 88 ORTHO HEIGHT -   122.876 (meters)      403.14  (feet)
ADJUSTED
 DL8921* NAVD 88 EPOCH        -  2009.55
 DL8921  **This station is located in a suspected subsidence area (see
below).
 DL8921
_____________________________________________________________________
 DL8921  NAD 83(2011) X  -     55,859.055 (meters)                    COMP
 DL8921  NAD 83(2011) Y  - -5,453,598.976 (meters)                    COMP
 DL8921  NAD 83(2011) Z  -  3,296,025.286 (meters)                    COMP
 DL8921  LAPLACE CORR    -         -0.16  (seconds)
DEFLEC12A
 DL8921  GEOID HEIGHT    -        -26.58  (meters)
GEOID12A
 DL8921  DYNAMIC HEIGHT  -        122.724 (meters)      402.64  (feet) COMP
 DL8921  MODELED GRAVITY -    979,405.7   (mgal)                     NAVD
88
 DL8921
 DL8921  VERT ORDER      -  FIRST     CLASS II
 DL8921
 DL8921  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DL8921  Type                                           Horiz  Ellip  Dist(km)
 DL8921  ----------------------------------------------------------------------
 DL8921  NETWORK                                         0.96   1.39
 DL8921  ----------------------------------------------------------------------
 DL8921  MEDIAN LOCAL ACCURACY AND DIST (006 points)   1.06   1.37      9.06
 DL8921  ----------------------------------------------------------------------
 DL8921  NOTE: Click here for information on individual local accuracy
 DL8921  values and other accuracy information.
 DL8921
 DL8921
 DL8921.The horizontal coordinates were established by GPS observations
 DL8921.and adjusted by the National Geodetic Survey in June 2012.
```

```
 DL8921
 DL8921.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DL8921.frame has been affixed to the stable North American tectonic plate.
See
 DL8921.NA2011 for more information.
 DL8921
 DL8921.The horizontal coordinates are valid at the epoch date displayed
above
 DL8921.which is a decimal equivalence of Year/Month/Day.
 DL8921
 DL8921 ** This station is in an area of known vertical motion.  Due to the
 DL8921 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 DL8921 ** determined the orthometric heights for marks in these suspect
 DL8921 ** subsidence areas should be considered valid only at the epoch date
 DL8921 ** associated with the orthometric height.  These heights must always
 DL8921 ** be validated when used as control.  All previously superseded
 DL8921 ** orthometric heights are now considered suspect and are available
 DL8921 ** in the superseded section.  NGS does not recommend using suspect
 DL8921 ** or superseded heights as control.
 DL8921
 DL8921.The orthometric height was determined by differential leveling and
 DL8921.adjusted by the NATIONAL GEODETIC SURVEY
 DL8921.in July 2012.
 DL8921
 DL8921.No vertical observational check was made to the station.
 DL8921
 DL8921.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 DL8921
 DL8921.The Laplace correction was computed from DEFLEC12A derived
deflections.
 DL8921
 DL8921.The ellipsoidal height was determined by GPS observations
 DL8921.and is referenced to NAD 83.
 DL8921
 DL8921.The dynamic height is computed by dividing the NAVD 88
 DL8921.geopotential number by the normal gravity value computed on the
 DL8921.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 DL8921.degrees latitude (g = 980.6199 gals.).
 DL8921
 DL8921.The modeled gravity was interpolated from observed gravity values.
 DL8921
 DL8921. The following values were computed from the NAD 83(2011) position.
 DL8921
 DL8921;                    North         East     Units Scale Factor
Converg.
 DL8921;SPC MS E     -   201,573.084   244,810.228   MT  0.99998756   -0 18
05.0
 DL8921;SPC MS E     -   661,327.69    803,181.56   sFT  0.99998756   -0 18
05.0
 DL8921;UTM  16      - 3,467,255.357   270,359.181   MT  1.00025050   -1 15
17.5
 DL8921
 DL8921!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DL8921!SPC MS E     -   0.99998488  x   0.99998756  =   0.99997244
 DL8921!UTM  16      -   0.99998488  x   1.00025050  =   1.00023537
```

```
 DL8921
 DL8921                          SUPERSEDED SURVEY CONTROL
 DL8921
 DL8921  NAD 83(2007)-  31 19 01.41022(N)    089 24 47.38537(W) AD(2002.00) A
 DL8921  ELLIP H (09/06/11)   96.303  (m)                       GP(2002.00) 4
1
 DL8921
 DL8921.Superseded values are not recommended for survey control.
 DL8921
 DL8921.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DL8921.See file dsdata.txt to determine how the superseded data were
derived.
 DL8921
 DL8921_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBV7035967255(NAD 83)
 DL8921
 DL8921_MARKER: DD = SURVEY DISK
 DL8921_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DL8921_STAMPING: F 374 2009
 DL8921_MARK LOGO: MSDOT
 DL8921_PROJECTION: FLUSH
 DL8921_MAGNETIC: N = NO MAGNETIC MATERIAL
 DL8921_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 DL8921+STABILITY: SURFACE MOTION
 DL8921_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DL8921+SATELLITE: SATELLITE OBSERVATIONS - September 24, 2012
 DL8921
 DL8921  HISTORY     - Date     Condition        Report By
 DL8921  HISTORY     - 20090421 MONUMENTED       EMCINC
 DL8921  HISTORY     - 20090812 GOOD             MAPTEC
 DL8921  HISTORY     - 20120924 GOOD
 DL8921
 DL8921                          STATION DESCRIPTION
 DL8921
 DL8921'DESCRIBED BY EMC INCORPORATED 2009
 DL8921'THE MARK IS LOCATED IN WEST HATTIESBURG ABOUT 24.0 MI (38.7 KM)
 DL8921'SOUTH-SOUTHEAST OF COLLINS, AND 23.2 MI (37.4 KM) SOUTH-SOUTHWEST OF
 DL8921'ELLISVILLE.
 DL8921'
 DL8921'TO REACH THE MARK FROM THE SOUTHWEST CORNER OF THE INTERSECTION OF
 DL8921'HIGHWAY 98 AND OLD HIGHWAY 11 IT IS +- 150 FT (45.7 M) SOUTHWEST OF
 DL8921'CENTER OF INTERSECTION.
 DL8921'
 DL8921'IT IS 145.3 FT (44.3 M) NORTHWEST OF A LAMP POLE, 128.5 FT (39.2 M)
 DL8921'NORTHEAST OF A ELECTRIC POWER POLE, 80.5 FT (24.5 M) SOUTHWEST OF GUY
 DL8921'POLE SIGNAL LIGHTS, 56.4 FT (17.2 M) SOUTHWEST OF THE CENTERLINE OF
 DL8921'SOUTH BOUND RAMP TO OLD HIGHWAY 11 SOUTH, 37.0 FT (11.3 M) WEST OF
 DL8921'YIELD SIGN.
 DL8921
 DL8921                          STATION RECOVERY (2009)
 DL8921
 DL8921'RECOVERY NOTE BY MAPTECH INCORPORATED 2009 (CLK)
 DL8921'RECOVERED AS DESCRIBED.
 DL8921
 DL8921                          STATION RECOVERY (2012)
 DL8921
 DL8921'RECOVERY NOTE BY FUGRO AERIAL & MOBILE MAPPING INC 2012
 DL8921'RECOVERED IN GOOD CONDITION.
```

```
*** retrieval complete.
Elapsed Time = 00:00:03
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 BW0361
***********************************************************************
 BW0361  DESIGNATION -  GAGING STATION
 BW0361  PID         -  BW0361
 BW0361  STATE/COUNTY-  MS/PIKE
 BW0361  COUNTRY     -  US
 BW0361  USGS QUAD   -  HOLMESVILLE (1972)
 BW0361
 BW0361                        *CURRENT SURVEY CONTROL
 BW0361
_____________________________________________________________________
 BW0361* NAD 83(1986) POSITION- 31 10 36.3    (N) 090 16 43.4    (W)
HD_HELD2
 BW0361* NAVD 88 ORTHO HEIGHT -    81.633 (meters)      267.82  (feet)
ADJUSTED
 BW0361* NAVD 88 EPOCH        -  2009.55
 BW0361  **This station is located in a suspected subsidence area (see
below).
 BW0361
_____________________________________________________________________
 BW0361  GEOID HEIGHT    -        -26.69  (meters)
GEOID12A
 BW0361  DYNAMIC HEIGHT  -         81.530 (meters)      267.49  (feet) COMP
 BW0361  MODELED GRAVITY -    979,385.8   (mgal)                      NAVD
88
 BW0361
 BW0361  VERT ORDER      -  FIRST     CLASS II
 BW0361
 BW0361.The horizontal coordinates were established by autonomous hand held
GPS
 BW0361.observations and have an estimated accuracy of +/- 10 meters.
 BW0361.
 BW0361 ** This station is in an area of known vertical motion.  Due to the
 BW0361 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BW0361 ** determined the orthometric heights for marks in these suspect
 BW0361 ** subsidence areas should be considered valid only at the epoch date
 BW0361 ** associated with the orthometric height.  These heights must always
 BW0361 ** be validated when used as control.  All previously superseded
 BW0361 ** orthometric heights are now considered suspect and are available
 BW0361 ** in the superseded section.  NGS does not recommend using suspect
 BW0361 ** or superseded heights as control.
 BW0361
 BW0361.The orthometric height was determined by differential leveling and
 BW0361.adjusted by the NATIONAL GEODETIC SURVEY
 BW0361.in July 2012.
 BW0361
 BW0361.The dynamic height is computed by dividing the NAVD 88
 BW0361.geopotential number by the normal gravity value computed on the
```

```
 BW0361.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BW0361.degrees latitude (g = 980.6199 gals.).
 BW0361
 BW0361.The modeled gravity was interpolated from observed gravity values.
 BW0361
 BW0361;                    North         East     Units  Estimated Accuracy
 BW0361;SPC MS W     -   185,873.      705,206.      MT  (+/- 10 meters HH2
GPS)
 BW0361
 BW0361                          SUPERSEDED SURVEY CONTROL
 BW0361
 BW0361  NGVD 29 (??/??/??)   81.617  (m)          267.77   (f) ADJUSTED    2
0
 BW0361
 BW0361.Superseded values are not recommended for survey control.
 BW0361
 BW0361.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BW0361.See file dsdata.txt to determine how the superseded data were
derived.
 BW0361
 BW0361_U.S. NATIONAL GRID SPATIAL ADDRESS: 15RYQ5935452380(NAD 83)
 BW0361
 BW0361_MARKER: DD = SURVEY DISK
 BW0361_SETTING: 38 = SET IN THE ABUTMENT OR PIER OF A LARGE BRIDGE
 BW0361_SP_SET: BRIDGE ABUTMENT
 BW0361_STAMPING: GAGING STATION
 BW0361_MARK LOGO: CGS
 BW0361_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 BW0361_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BW0361+SATELLITE: SATELLITE OBSERVATIONS - January 18, 2009
 BW0361
 BW0361  HISTORY     - Date     Condition        Report By
 BW0361  HISTORY     - UNK      MONUMENTED       USGS
 BW0361  HISTORY     - 1968     GOOD             MSHD
 BW0361  HISTORY     - 20090118 GOOD             MAPTEC
 BW0361
 BW0361                          STATION DESCRIPTION
 BW0361
 BW0361'DESCRIBED BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1968
 BW0361'9.1 MI NW FROM MAGNOLIA.
 BW0361'THE MARK IS LOCATED 9.1 MILES NORTHWEST OF THE APPROXIMATE CENTER OF
 BW0361'TYLERTOWN IN THE SOUTH END OF THE EAST ABUTMENT OF A CONCRETE BRIDGE
 BW0361'OVER THE BOGUE CHITTO RIVER IN THE SOUTHEAST 1/4 OF SECTION 34, T 3N,
 BW0361'R 9E.  IT IS 17 FEET SOUTHWEST OF THE CENTER OF U.S. HIGHWAY 98, 2
 BW0361'FEET NORTHEAST OF THE SOUTHWEST END OF THE ABUTMENT 4 FEET NORTHWEST
 BW0361'OF A METAL WITNESS POST, SET IN A DRILL HOLE IN THE SOUTH END OF THE
 BW0361'EAST ABUTMENT OF A CONCRETE BRIDGE AND IS ABOUT 2 FEET BELOW THE
LEVEL
 BW0361'OF THE HIGHWAY.  NOTE-- TO REACH FROM THE U.S. POST OFFICE IN
 BW0361'TYLERTOWN GO WEST ON U.S. HIGHWAY 98 FOR 8.9 MILES TO A CROSSROADS.
 BW0361'CONTINUE WEST ON U.S. HIGHWAY 98 FOR 0.55 MILE TO THE CONCRETE BRIDGE
 BW0361'AND THE MARK ON THE LEFT AS DESCRIBED.
 BW0361
 BW0361                          STATION RECOVERY (2009)
 BW0361
 BW0361'RECOVERY NOTE BY MAPTECH INCORPORATED 2009 (RCW)
```

```
 BW0361'RECOVERED IN GOOD CONDITION.  NOTE-THE MARK IS 58.0 NE OF A POWER
POLE
 BW0361', 30.7 FT (9.4 M) SOUTHWEST OF THE CENTERLINE OF EASTBOUND LANE OF
 BW0361'HIGHWAY 98, 0.8 FT (0.2 M) NORTH OF THE SOUTHWEST CORNER OF BRIDGE
 BW0361'ABUTMENT, 4 FT (1.2 M) BELOW THE LEVEL OF THE ROAD.

 *** retrieval complete.
 Elapsed Time = 00:00:02
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 BV1867
***********************************************************************
 BV1867  CBN         -  This is a Cooperative Base Network Control Station.
 BV1867  DESIGNATION -  HOGAN 2 RM 3
 BV1867  PID         -  BV1867
 BV1867  STATE/COUNTY-  MS/GREENE
 BV1867  COUNTRY     -  US
 BV1867  USGS QUAD   -  LEAKESVILLE SW (1973)
 BV1867
 BV1867                        *CURRENT SURVEY CONTROL
 BV1867
______________________________________________________________________
 BV1867* NAD 83(2011) POSITION- 31 02 13.06705(N) 088 42 53.62888(W)
ADJUSTED
 BV1867* NAD 83(2011) ELLIP HT-    30.891 (meters)        (06/27/12)
ADJUSTED
 BV1867* NAD 83(2011) EPOCH   -  2010.00
 BV1867* NAVD 88 ORTHO HEIGHT -    58.937 (meters)      193.36  (feet)
ADJUSTED
 BV1867* NAVD 88 EPOCH        -  2009.55
 BV1867  **This station is located in a suspected subsidence area (see
below).
 BV1867
______________________________________________________________________
 BV1867  NAD 83(2011) X  -    122,675.764 (meters)                    COMP
 BV1867  NAD 83(2011) Y  - -5,468,530.002 (meters)                    COMP
 BV1867  NAD 83(2011) Z  -  3,269,421.509 (meters)                    COMP
 BV1867  LAPLACE CORR    -         -1.23  (seconds)
DEFLEC12A
 BV1867  GEOID HEIGHT    -        -28.04  (meters)
GEOID12A
 BV1867  DYNAMIC HEIGHT  -         58.862 (meters)      193.12  (feet) COMP
 BV1867  MODELED GRAVITY -    979,373.0   (mgal)                      NAVD
88
 BV1867
 BV1867  VERT ORDER      -  FIRST     CLASS II
 BV1867
 BV1867  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1867  Type                                           Horiz  Ellip  Dist(km)
 BV1867  ----------------------------------------------------------------------
 BV1867  NETWORK                                         0.66   1.88
 BV1867  ----------------------------------------------------------------------
 BV1867  MEDIAN LOCAL ACCURACY AND DIST (146 points)   0.99   2.67    280.34
 BV1867  ----------------------------------------------------------------------
 BV1867  NOTE: Click here for information on individual local accuracy
 BV1867  values and other accuracy information.
 BV1867
 BV1867
 BV1867.The horizontal coordinates were established by GPS observations
```

```
 BV1867.and adjusted by the National Geodetic Survey in June 2012.
 BV1867
 BV1867.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV1867.frame has been affixed to the stable North American tectonic plate.
See
 BV1867.NA2011 for more information.
 BV1867
 BV1867.The horizontal coordinates are valid at the epoch date displayed
above
 BV1867.which is a decimal equivalence of Year/Month/Day.
 BV1867
 BV1867 ** This station is in an area of known vertical motion.  Due to the
 BV1867 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV1867 ** determined the orthometric heights for marks in these suspect
 BV1867 ** subsidence areas should be considered valid only at the epoch date
 BV1867 ** associated with the orthometric height.  These heights must always
 BV1867 ** be validated when used as control.  All previously superseded
 BV1867 ** orthometric heights are now considered suspect and are available
 BV1867 ** in the superseded section.  NGS does not recommend using suspect
 BV1867 ** or superseded heights as control.
 BV1867
 BV1867.The orthometric height was determined by differential leveling and
 BV1867.adjusted by the NATIONAL GEODETIC SURVEY
 BV1867.in July 2012.
 BV1867
 BV1867.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1867
 BV1867.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1867
 BV1867.The ellipsoidal height was determined by GPS observations
 BV1867.and is referenced to NAD 83.
 BV1867
 BV1867.The dynamic height is computed by dividing the NAVD 88
 BV1867.geopotential number by the normal gravity value computed on the
 BV1867.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV1867.degrees latitude (g = 980.6199 gals.).
 BV1867
 BV1867.The modeled gravity was interpolated from observed gravity values.
 BV1867
 BV1867. The following values were computed from the NAD 83(2011) position.
 BV1867
 BV1867;                    North         East     Units Scale Factor
Converg.
 BV1867;SPC MS E     -   170,380.641   311,306.256   MT  0.99995158   +0 03
39.8
 BV1867;SPC MS E     -   558,990.49  1,021,343.94   sFT  0.99995158   +0 03
39.8
 BV1867;UTM  16      - 3,434,961.435   336,337.198   MT  0.99993041   -0 53
03.8
 BV1867
 BV1867!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1867!SPC MS E     -   0.99999515  x   0.99995158  =   0.99994673
 BV1867!UTM  16      -   0.99999515  x   0.99993041  =   0.99992556
 BV1867
```

```
 BV1867:                 Primary Azimuth Mark                      Grid Az
 BV1867:SPC MS E     -   HOGAN AZ MK                               173 06 46.0
 BV1867:UTM  16      -   HOGAN AZ MK                               174 03 29.6
 BV1867
 BV1867|---------------------------------------------------------------------
|
 BV1867| PID    Reference Object                    Distance      Geod. Az
|
 BV1867|                                                          dddmmss.s
|
 BV1867| BV1841 HOGAN 2                             69.972 METERS 03012
|
 BV1867| BV1093 HOGAN AZ MK                        APPROX. 1.0 KM 1731025.8
|
 BV1867|---------------------------------------------------------------------
|
 BV1867
 BV1867                          SUPERSEDED SURVEY CONTROL
 BV1867
 BV1867  NAD 83(2007)-  31 02 13.06739(N)    088 42 53.62879(W) AD(2002.00) A
 BV1867  ELLIP H (09/06/11)   30.907  (m)                       GP(2002.00) 4
1
 BV1867  NAD 83(2007)-  31 02 13.06705(N)    088 42 53.62955(W) AD(2002.00) 0
 BV1867  ELLIP H (02/10/07)   30.923  (m)                       GP(2002.00)
 BV1867  ELLIP H (04/15/02)   30.939  (m)                       GP(       ) 4
2
 BV1867  ELLIP H (02/15/02)   30.935  (m)                       GP(       ) 4
1
 BV1867  NAD 83(1993)-  31 02 13.08532(N)    088 42 53.62351(W) AD(       ) 1
 BV1867  NAD 83(1993)-  31 02 13.06688(N)    088 42 53.62945(W) AD(       ) B
 BV1867  ELLIP H (01/12/94)   30.987  (m)                       GP(       ) 4
1
 BV1867  NAVD 88 (08/29/05)   59.0    (m)  GEOID03 model used   GPS OBS
 BV1867  NAVD 88 (02/15/02)   59.1    (m)  GEOID99 model used   GPS OBS
 BV1867  NAVD 88 (01/12/94)   59.2    (m)  GEOID93 model used   GPS OBS
 BV1867  NGVD 29 (08/12/04)   59.06   (m)          193.8    (f) RESET       3
 BV1867
 BV1867.Superseded values are not recommended for survey control.
 BV1867
 BV1867.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1867.See file dsdata.txt to determine how the superseded data were
derived.
 BV1867
 BV1867_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCV3633734961(NAD 83)
 BV1867
 BV1867_MARKER: DR = REFERENCE MARK DISK
 BV1867_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BV1867_SP_SET: CONCRETE POST
 BV1867_STAMPING: HOGAN 2 NO 3 1993
 BV1867_MARK LOGO: NGS
 BV1867_PROJECTION: FLUSH
 BV1867_MAGNETIC: N = NO MAGNETIC MATERIAL
 BV1867_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BV1867+STABILITY: SURFACE MOTION
 BV1867_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV1867+SATELLITE: SATELLITE OBSERVATIONS - September 12, 2009
 BV1867
```

```
 BV1867  HISTORY     - Date     Condition        Report By
 BV1867  HISTORY     - 1993     MONUMENTED       NGS
 BV1867  HISTORY     - 20000611 GOOD             MSHD
 BV1867  HISTORY     - 20040622 GOOD             MSDOT
 BV1867  HISTORY     - 20090219 GOOD             MAPTEC
 BV1867  HISTORY     - 20090912 GOOD             EMCINC
 BV1867
 BV1867                          STATION DESCRIPTION
 BV1867
 BV1867'DESCRIBED BY NATIONAL GEODETIC SURVEY 1993
 BV1867'15.29 KM (9.50 MI) SOUTH ALONG U.S. HIGHWAY 98 FROM THE POST OFFICE
AT
 BV1867'MC LAIN, TO THE MARK ON THE LEFT IN GRASS MEDIAN OF HIGHWAY,
 BV1867'IN TOP OF A ROUND CONCRETE MONUMENT, FLUSH WITH THE GROUND, 222.5 FT
 BV1867'(67.8 M) SOUTH SOUTHWEST OF POWER POLE WITH TWO GUY WIRES, 71.0 FT
 BV1867'(21.6 M) SOUTHWEST OF THE CENTER OF PRESENT HIGHWAY, 44.0 FT
 BV1867'(13.4 M) NORTHEAST OF THE CENTER OF NEW SOUTH BOUND LANES OF HIGHWAY,
 BV1867'2.0 FT (0.6 M) SOUTH SOUTHEAST OF A CARSONITE WITNESS POST AND 2.0 FT
 BV1867'(0.6 M) NORTH NORTHWEST OF A METAL WITNESS POST AND SIGN.
 BV1867'STATION IS LOCATED ABOUT 11.6 MI (18.7 KM) NORTHWEST OF LUCEDALE, 1.6
 BV1867'MI (2.6 KM) NORTH OF THE NORTH END OF BRIDGE OVER CHICKASAWHAY RIVER
 BV1867'AND IN THE GRASS MEDIAN OF U.S. HIGHWAY 98.
 BV1867'TO REACH FROM THE POST OFFICE IN MCLAIN, GO SOUTH ON U.S. HIGHWAY 98
 BV1867'FOR 9.10 MI (14.64 KM) TO A PAVED SIDE ROAD ON THE LEFT, CONTINUE
 BV1867'SOUTH ON U.S. HIGHWAY 98 FOR 0.40 MI (0.64 KM) TO THE STATION ON THE
 BV1867'RIGHT, IN GRASS MEDIAN OF HIGHWAY.
 BV1867'STATION IS A STANDARD NGS REFERENCE MARK DISK, STAMPED---HOGAN 2 NO 3
 BV1867'1993---SET IN TOP OF A ROUND CONCRETE MONUMENT, FLUSH WITH THE
 BV1867'GROUND.  IT IS IN GRASS MEDIAN OF HIGHWAY 98, 222.5 FT (67.8 M) SOUTH
 BV1867'SOUTHWEST OF A POWER POLE WITH TWO GUY WIRES, 71.0 FT (21.6 M)
 BV1867'SOUTHWEST OF THE CENTER OF PRESENT HIGHWAY 98, 44.0 FT (13.4 M)
 BV1867'NORTHEAST OF THE CENTER OF THE NEW SOUTH BOUND LANES OF HIGHWAY (NOW
 BV1867'UNDER CONSTRUCTION), 2.0 FT (0.6 M) SOUTH SOUTHEAST OF A CARSONITE
 BV1867'WITNESS POST AND 2.0 FT (0.6 M) NORTH NORTHWEST OF A METAL WITNESS
 BV1867'POST AND SIGN.
 BV1867'STATION IS LOCATED ABOUT 11.6 MI (18.7 KM) NORTHWEST OF LUCEDALE, 1.6
 BV1867'MI (2.6 KM) NORTH OF THE NORTH END OF BRIDGE OVER CHICKASAWHAY RIVER
 BV1867'AND IN THE GRASS MEDIAN OF U.S. HIGHWAY 98.
 BV1867'TO REACH FROM THE POST OFFICE IN MCLAIN, GO SOUTH ON U.S. HIGHWAY 98
 BV1867'FOR 9.10 MI (14.64 KM) TO A PAVED ROAD ON THE LEFT, CONTINUE SOUTH ON
 BV1867'U.S. HIGHWAY 98 FOR 0.40 MI (0.64 KM) TO THE MARK ON THE RIGHT, IN
 BV1867'GRASS MEDIAN OF HIGHWAY 98.
 BV1867'STATION IS A STANDARD NGS REFERENCE MARK DISK, STAMPED---HOGAN 2 NO 3
 BV1867'1993---SET IN TOP OF A ROUND CONCRETE MONUMENT, FLUSH WITH THE
 BV1867'GROUND.  IT IS 69.977 M (229.583 FT) SOUTH SOUTHWEST OF STATION HOGAN
 BV1867'2 1990 IN AZIMUTH 210-12-14.7 FROM NORTH, 222.5 FT (67.8 M) SOUTH
 BV1867'SOUTHWEST OF A POWER POLE WITH TWO GUY WIRES, 71.0 FT (21.6 M)
 BV1867'SOUTHWEST OF THE CENTER OF PRESENT HIGHWAY 98, 44.0 FT (13.4 M)
 BV1867'NORTHEAST OF THE CENTER OF THE NEW SOUTH BOUND LANES OF HIGHWAY 98
 BV1867'(NOW UNDER CONSTRUCTION), 2.0 FT (0.6 M) SOUTH SOUTHEAST OF A
 BV1867'CARSONITE WITNESS POST AND 2.0 FT (0.6 M) NORTH NORTHWEST OF A METAL
 BV1867'WITNESS POST AND SIGN.
 BV1867
 BV1867                          STATION RECOVERY (2000)
 BV1867
 BV1867'RECOVERY NOTE BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 2000
 BV1867'RECOVERED AS DESCRIBED.
```

```
BV1867
BV1867                          STATION RECOVERY (2004)
BV1867
BV1867'RECOVERY NOTE BY MS DEPT TRANS 2004 (KB)
BV1867'RECOVERED AS DESCRIBED.
BV1867
BV1867                          STATION RECOVERY (2009)
BV1867
BV1867'RECOVERY NOTE BY MAPTECH INCORPORATED 2009 (CLK)
BV1867'RECOVERED AS DESCRIBED.
BV1867
BV1867                          STATION RECOVERY (2009)
BV1867
BV1867'RECOVERY NOTE BY EMC INCORPORATED 2009 (JBP)
BV1867'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:06
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 BV1600
***********************************************************************
 BV1600  SACS        -  This is a Secondary Airport Control Station.
 BV1600  DESIGNATION -  MAGNOLIA
 BV1600  PID         -  BV1600
 BV1600  STATE/COUNTY-  MS/JONES
 BV1600  COUNTRY     -  US
 BV1600  USGS QUAD   -  LAUREL WEST (1982)
 BV1600
 BV1600                        *CURRENT SURVEY CONTROL
 BV1600
_____________________________________________________________________
 BV1600* NAD 83(2011) POSITION- 31 39 58.53743(N) 089 10 09.23562(W)   NO
CHECK
 BV1600* NAD 83(2011) ELLIP HT-    44.150 (meters)        (06/27/12)   NO
CHECK
 BV1600* NAD 83(2011) EPOCH   -  2010.00
 BV1600* NAVD 88 ORTHO HEIGHT -          **(meters)           **(feet) NOT
PUB
 BV1600  **This station is located in a suspected subsidence area (see
below).
 BV1600
_____________________________________________________________________
 BV1600  NAD 83(2011) X  -     78,782.668 (meters)                    COMP
 BV1600  NAD 83(2011) Y  - -5,433,043.492 (meters)                    COMP
 BV1600  NAD 83(2011) Z  -  3,329,014.514 (meters)                    COMP
 BV1600  LAPLACE CORR    -         -1.45  (seconds)
DEFLEC12A
 BV1600  GEOID HEIGHT    -        -26.19  (meters)
GEOID12A
 BV1600
 BV1600  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1600  Type                                          Horiz  Ellip  Dist(km)
 BV1600  ----------------------------------------------------------------
 BV1600  NETWORK                                        7.85   5.00
 BV1600  ----------------------------------------------------------------
 BV1600  MEDIAN LOCAL ACCURACY AND DIST (003 points)   3.79   5.10      0.52
 BV1600  ----------------------------------------------------------------
 BV1600  NOTE: Click here for information on individual local accuracy
 BV1600  values and other accuracy information.
 BV1600
 BV1600
 BV1600.This mark is at Hesler-Noble Field Airport (LUL)
 BV1600
 BV1600.The horizontal coordinates were established by GPS observations
 BV1600.and adjusted by the National Geodetic Survey in June 2012.
 BV1600
 BV1600.NAD 83(2011) refers to NAD 83 coordinates where the reference
```

```
 BV1600.frame has been affixed to the stable North American tectonic plate.
See
 BV1600.NA2011 for more information.
 BV1600
 BV1600.The horizontal coordinates are valid at the epoch date displayed
above
 BV1600.which is a decimal equivalence of Year/Month/Day.
 BV1600
 BV1600.No horizontal observational check was made to the station.
 BV1600.
 BV1600 ** This station is in an area of known vertical motion.  If an
 BV1600 ** orthometric height was ever established but is not available
 BV1600 ** in the current survey control section, the orthometric height
 BV1600 ** is considered suspect.  Suspect heights are available in the
 BV1600 ** superseded section only if requested.
 BV1600
 BV1600.GPS derived orthometric heights for airport stations designated as
 BV1600.PACS or SACS are published to 2 decimal places.  This maintains
 BV1600.centimeter relative accuracy between the PACS and SACS.  It does
 BV1600.not indicate centimeter accuracy relative to other marks which are
 BV1600.part of the NAVD 88 network.
 BV1600
 BV1600.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1600
 BV1600.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1600
 BV1600.The ellipsoidal height was determined by GPS observations
 BV1600.and is referenced to NAD 83.
 BV1600
 BV1600. The following values were computed from the NAD 83(2011) position.
 BV1600
 BV1600;                    North         East     Units Scale Factor
Converg.
 BV1600;SPC MS E     -   240,193.820   268,146.949   MT  0.99996251   -0 10
34.8
 BV1600;SPC MS E     -   788,035.89    879,745.45   sFT  0.99996251   -0 10
34.8
 BV1600;UTM  16      - 3,505,488.517   294,343.521   MT  1.00012166   -1 08
21.1
 BV1600
 BV1600!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1600!SPC MS E     -   0.99999307  x   0.99996251  =   0.99995558
 BV1600!UTM  16      -   0.99999307  x   1.00012166  =   1.00011473
 BV1600
 BV1600:                Primary Azimuth Mark                    Grid Az
 BV1600:SPC MS E     -  MAGNOLIA AZ MK                         263 15 07.6
 BV1600:UTM  16      -  MAGNOLIA AZ MK                         264 12 53.9
 BV1600
 BV1600|-----------------------------------------------------------------------
|
 BV1600| PID    Reference Object                     Distance      Geod. Az
|
 BV1600|                                                           dddmmss.s
|
```

```
 BV1600| BV1604 LAUREL COMPRESS CO WATER TANK       APPROX. 3.9 KM 0402550.6
|
 BV1600| BV1602 LUL AP 1965 STA B                  354.522 METERS 05631
|
 BV1600| BV1603 LAUREL RADIO STATION WAML MAST     APPROX. 1.8 KM 0863747.2
|
 BV1600| BV1601 AIRPORT BEACON LAUREL MUN APT      470.759 METERS 1633337.8
|
 BV1600| CG1568 MAGNOLIA RM 1                       27.928 METERS 18125
|
 BV1600| CG1567 MAGNOLIA AZ MK                                    2630432.8
|
 BV1600| CG1569 MAGNOLIA RM 2                       40.458 METERS 29125
|
 BV1600| BV1599 LUL ARP 1965                       APPROX. 0.5 KM 3294048.6
|
 BV1600|----------------------------------------------------------------------
|
 BV1600
 BV1600                          SUPERSEDED SURVEY CONTROL
 BV1600
 BV1600  NAD 83(2007)-  31 39 58.53783(N)    089 10 09.23703(W) AD(2002.00) 0
 BV1600  ELLIP H (02/10/07)   44.171  (m)                       GP(2002.00)
 BV1600  ELLIP H (04/15/02)   44.172  (m)                       GP(       ) 4
1
 BV1600  NAD 83(1993)-  31 39 58.53776(N)    089 10 09.23663(W) AD(       ) 1
 BV1600  ELLIP H (07/21/95)   44.215  (m)                       GP(       ) 4
1
 BV1600  NAD 83(1993)-  31 39 58.53877(N)    089 10 09.23784(W) AD(       ) 3
 BV1600  NAD 83(1986)-  31 39 58.55287(N)    089 10 09.23778(W) AD(       ) 3
 BV1600  NAD 27      -  31 39 57.96700(N)    089 10 09.02800(W) AD(       ) 3
 BV1600
 BV1600.Superseded values are not recommended for survey control.
 BV1600
 BV1600.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1600.See file dsdata.txt to determine how the superseded data were
derived.
 BV1600
 BV1600_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBA9434305488(NAD 83)
 BV1600
 BV1600_MARKER: DS = TRIANGULATION STATION DISK
 BV1600_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BV1600_SP_SET: TOP OF SQUARE CONCRETE MONUMENT
 BV1600_STAMPING: MAGNOLIA 1958
 BV1600_MARK LOGO: CGS
 BV1600_MAGNETIC: N = NO MAGNETIC MATERIAL
 BV1600_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 BV1600_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV1600+SATELLITE: SATELLITE OBSERVATIONS - February 20, 1994
 BV1600
 BV1600  HISTORY     - Date     Condition        Report By
 BV1600  HISTORY     - 1956     MONUMENTED       CGS
 BV1600  HISTORY     - 1964     GOOD             MSHD
 BV1600  HISTORY     - 1964     GOOD             CGS
 BV1600  HISTORY     - 1965     GOOD             CGS
 BV1600  HISTORY     - 19940220 GOOD             NOS
 BV1600
```

BV1600 STATION DESCRIPTION
BV1600
BV1600'DESCRIBED BY COAST AND GEODETIC SURVEY 1956 (WNM)
BV1600'THE STATION IS ABOUT 3 MILES SOUTHWEST OF THE CENTER OF LAUREL, 1/2
BV1600'MILE WEST OF U.S. HIGHWAY 11, AT THE LAUREL MUNICIPAL AIRPORT AND
BV1600'IS ON THE AIRPORT ADMINISTRATION BUILDING LAWN. IT IS 121 FEET
BV1600'SOUTH OF THE SOUTHEAST CORNER OF THE ADMINISTRATION BUILDING, 92
BV1600'FEET WEST OF THE CENTER OF A NORTH-SOUTH STREET AND 44 FEET NORTH
BV1600'OF THE CENTER OF AN EAST-WEST STREET. THE MARK IS FLUSH AND
BV1600'THE DISK IS STAMPED MAGNOLIA 1956.
BV1600'
BV1600'TO REACH THE AZIMUTH MARK FROM THE STATION, GO WEST ACROSS THE
BV1600'AIRPORT FOR APPROXIMATELY 0.6 MILE TO THE COMPASS ROSE AT THE WEST
BV1600'EDGE OF THE AIRPORT.
BV1600'
BV1600'REFERENCE MARK 1 IS 32 FEET NORTHEAST OF THE NORTHEAST CORNER OF A
BV1600'LARGE BUILDING, 23 FEET SOUTHWEST OF A LIGHT POLE AND 12 FEET NORTH
BV1600'OF A FENCE LINE. THE MARK IS FLUSH AND THE DISK IS STAMPED MAGNOLIA
BV1600'NO 1 1956.
BV1600'
BV1600'REFERENCE MARK 2 IS SET FLUSH IN A DRILL HOLE, IN CONCRETE, NEAR THE
BV1600'WEST END OF THE TOP STEP OF THE MAIN ENTRANCE OF THE ADMINISTRATION
BV1600'BUILDING. THE MARK IS FLUSH AND THE DISK IS STAMPED MAGNOLIA NO 2
BV1600'1956.
BV1600'
BV1600'THE AZIMUTH MARK IS 63 FEET EAST OF A WHITE WITNESS POST AND A FENCE
BV1600'LINE, 26 FEET EAST OF THE WEST END OF A TAXI STRIP, 25 FEET NORTH OF
BV1600'THE SOUTH EDGE OF THE TAXI STRIP AND IS SET IN THE CENTER OF THE
BV1600'COMPASS ROSE. THE MARK IS SET FLUSH IN A DRILL HOLE IN CONCRETE
BV1600'AND THE DISK IS STAMPED MAGNOLIA 1956.
BV1600
BV1600 STATION RECOVERY (1964)
BV1600
BV1600'RECOVERY NOTE BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1964 (AMC)
BV1600'THE STATION WAS VISITED ON 7-24-64 AND THE STATION, R.M. 1, R.M. 2
BV1600'WERE FOUND IN GOOD CONDITION. THE AZIMUTH MARK WAS NOT RECOVERED.
BV1600'THE 1956 DESCRIPTION IS ADEQUATE.
BV1600
BV1600 STATION RECOVERY (1964)
BV1600
BV1600'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1964 (JMC)
BV1600'STATION MARK, RM 1 AND 2, AZIMUTH MARK RECOVERED IN GOOD CONDITION.
BV1600'
BV1600'PREVIOUS DESCRIPTION ADEQUATE.
BV1600
BV1600 STATION RECOVERY (1965)
BV1600
BV1600'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1965 (WMR)
BV1600'STATION, REFERENCE MARKS AND AZIMUTH MARK RECOVERED IN GOOD
BV1600'CONDITION.
BV1600'
BV1600'THE DESCRIPTION IS ADEQUATE FOR RECOVERY.
BV1600
BV1600 STATION RECOVERY (1994)
BV1600
BV1600'RECOVERY NOTE BY NATIONAL OCEAN SERVICE 1994 (CSM)
BV1600'THE STATION IS ABOUT 3.0 MILES (4.8 KM) SOUTHWEST OF THE CENTER OF

```
 BV1600'LAUREL, MS., 0.5 MILES (0.8 KM) WEST OF US-11, AT THE LAUREL
 BV1600'MUNINCIPAL AIRPORT AND IS ON THE AIRPORT ADMINISTRATION BUILDING
LAWN.
 BV1600'TO REACH FROM EXIT 93 OFF OF I-59 SOUTH TAKE THE IMMEDIATE RIGHT AT
 BV1600'LIGHT AFTER THE EXIT AND GO NORTHWEST FOR 0.15 MILES (0.24 KM) TO A
 BV1600'ROAD LEFT, TURN LEFT AND GO 0.25 MILES (0.40 KM) TO ROAD RIGHT, TURN
 BV1600'RIGHT AND GO FOR O.25 MILES TO TERMINAL BUILDING ON LEFT.  THE
STATION
 BV1600'IS A STANDARD CGS TRIANGULATION DISK STAMPED ---MAGNOLIA 1958---, SET
 BV1600'IN A ROUND CONCRETE MONUMENT RECESSED 6 CM. IT IS 121 FT (36.9 M)
 BV1600'SOUTH OF THE SOUTHEAST CORNER OF THE ADMINISTRATION BUILDING, 14.1 M
 BV1600'(46.3 FT) NORTHEAST OF EAST CORNER OF A BRICK PLANTER WITH TREE,
10.55
 BV1600'M (34.61 FT) NORTHWEST OF EGDE OF ASPHALT ROAD (BASE DR.), AND 5.5 M
 BV1600'(18.0 FT) SOUTHEAST OF EDGE OF PARKING LOT.  THE STATION IS BETWEEN
 BV1600'THE SIXTH AND SEVENTH TREES IN A LINE OF TREES COUNTING NORTH TO
 BV1600'SOUTH.

 *** retrieval complete.
 Elapsed Time = 00:00:03



 ------------------------------------------------------------------------
-
 -   This listing contains control for which complete digital
-
 -   data sheets where not provided.  The complete data sheets were
-
 -   not provided for the reason listed below.  The reason below is
-
 -   associated with a horizontal control Nonpub code shown under
-
 -   the heading 'H' and/or a vertical control Nonpub code shown under
-
 -   the heading 'v'
-
 -
-
 -   The format of the records are as follows:
-
 -       Pid  = Station Permanent Identifier)
-
 -       Name = Station Designation
-
 -       Lat  = Approx. Latitude (Degrees, Minutes, truncated Seconds)
-
 -       Lon  = Approx. Longitude (Degrees, Minutes, truncated Seconds)
-
 -       O    = Horizontal Order
-
 -       o    = Vertical Order
-
 -       H    = Horizontal Nonpub Code
-
 -       v    = Vertical Nonpub Code
-
```

H Nonpub	HORIZONTAL CONTROL NONPUB REASON
B	Station is a RBN antenna
C	Not a publishable datum within the state
D	No descriptive text available
I	No NAD83 coordinates available, only IGS08 coordinates
L	CORS L1 Phase Center is not publishable
N	No geodetic control
O	Outside NGS publication area
P	Purpose of position is not for network control
R	Restricted position
T	Station is a temporary point/bench mark
V	Station is a VOR antenna
W	Weakly determined position
X	Surface mark reported destroyed
Y	Surface and underground mark reported destroyed

v Nonpub	VERTICAL CONTROL NONPUB REASON
C	Not a publishable datum within the state
D	No descriptive text available
F	Bench mark not yet adjusted
N	No geodetic control
L	CORS L1 Phase Center is not publishable
O	Outside NGS publication area
R	Restricted elevation
S	Mark is in a subsidence area

```
 -       T        Station is a temporary point/bench mark
-
 -       X        Surface mark reported destroyed
-
 -       Y        Surface and underground mark reported destroyed
-
 -       Z        Presumed destroyed
-
 -
-
 -
-
 -   NOTE - Stations found in this listing may still have a valid
-
 -          datasheet produced by use of other publishable values.
-
 -          For example, an ADJUSTED height may be non-publishable
-
 -          but a good GPS height might be found on the datasheet.
-
 -          This listing does not imply that values found on the datasheet
-
 -          are restricted.  If it's on the datasheet, use it.
-
 -
-
 ------------------------------------------------------------------------------
-
  Pid    Name                            Lat        Lon        Elev      O o
Hv
  ------ ------------------------------ ---------- ---------- --------- - - -
-
 >BV1600 MAGNOLIA                      31 39 58.5/089 10 09.2           ?
S
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 AA6286
***********************************************************************
 AA6286  HT_MOD      -  This is a Height Modernization Survey Station.
 AA6286  CBN         -  This is a Cooperative Base Network Control Station.
 AA6286  PACS        -  This is a Primary Airport Control Station.
 AA6286  DESIGNATION -  MS04 PJR B
 AA6286  PID         -  AA6286
 AA6286  STATE/COUNTY-  MS/JEFFERSON DAVIS
 AA6286  COUNTRY     -  US
 AA6286  USGS QUAD   -  PRENTISS WEST (1970)
 AA6286
 AA6286                        *CURRENT SURVEY CONTROL
 AA6286
_____________________________________________________________________
 AA6286* NAD 83(2011) POSITION- 31 35 47.98457(N) 089 54 26.14499(W)
ADJUSTED
 AA6286* NAD 83(2011) ELLIP HT-   115.090 (meters)        (06/27/12)
ADJUSTED
 AA6286* NAD 83(2011) EPOCH    -  2010.00
 AA6286* NAVD 88 ORTHO HEIGHT -   141.03  (meters)      462.7   (feet) GPS
OBS
 AA6286* NAVD 88 EPOCH        -  2009.55
 AA6286  **This station is located in a suspected subsidence area (see
below).
 AA6286
_____________________________________________________________________
 AA6286  GEOID HEIGHT    -        -25.95  (meters)
GEOID12A
 AA6286  NAD 83(2011) X  -      8,801.356 (meters)                    COMP
 AA6286  NAD 83(2011) Y  - -5,437,715.227 (meters)                    COMP
 AA6286  NAD 83(2011) Z  -  3,322,481.035 (meters)                    COMP
 AA6286  LAPLACE CORR    -          0.16  (seconds)
DEFLEC12A
 AA6286
 AA6286  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 AA6286  Type                                          Horiz  Ellip  Dist(km)
 AA6286  ----------------------------------------------------------------
 AA6286  NETWORK                                        0.72   1.00
 AA6286  ----------------------------------------------------------------
 AA6286  MEDIAN LOCAL ACCURACY AND DIST (022 points)   1.08   2.67     45.23
 AA6286  ----------------------------------------------------------------
 AA6286  NOTE: Click here for information on individual local accuracy
 AA6286  values and other accuracy information.
 AA6286
 AA6286
 AA6286.This mark is at Prentiss-Jefferson Davis C Airport (MS04)
 AA6286
 AA6286.The horizontal coordinates were established by GPS observations
 AA6286.and adjusted by the National Geodetic Survey in June 2012.
```

```
 AA6286
 AA6286.NAD 83(2011) refers to NAD 83 coordinates where the reference
 AA6286.frame has been affixed to the stable North American tectonic plate.
See
 AA6286.NA2011 for more information.
 AA6286
 AA6286.The horizontal coordinates are valid at the epoch date displayed
above
 AA6286.which is a decimal equivalence of Year/Month/Day.
 AA6286
 AA6286 ** This station is in an area of known vertical motion.  Due to the
 AA6286 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 AA6286 ** determined the orthometric heights for marks in these suspect
 AA6286 ** subsidence areas should be considered valid only at the epoch date
 AA6286 ** associated with the orthometric height.  These heights must always
 AA6286 ** be validated when used as control.  All previously superseded
 AA6286 ** orthometric heights are now considered suspect and are available
 AA6286 ** in the superseded section.  NGS does not recommend using suspect
 AA6286 ** or superseded heights as control.
 AA6286
 AA6286.The orthometric height was determined by GPS observations and a
 AA6286.high-resolution geoid model.
 AA6286
 AA6286.GPS derived orthometric heights for airport stations designated as
 AA6286.PACS or SACS are published to 2 decimal places.  This maintains
 AA6286.centimeter relative accuracy between the PACS and SACS.  It does
 AA6286.not indicate centimeter accuracy relative to other marks which are
 AA6286.part of the NAVD 88 network.
 AA6286
 AA6286.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 AA6286
 AA6286.The Laplace correction was computed from DEFLEC12A derived
deflections.
 AA6286
 AA6286.The ellipsoidal height was determined by GPS observations
 AA6286.and is referenced to NAD 83.
 AA6286
 AA6286. The following values were computed from the NAD 83(2011) position.
 AA6286
 AA6286;                    North         East     Units Scale Factor
Converg.
 AA6286;SPC MS W     -   232,506.905   740,434.165   MT  0.99997016   +0 13
23.7
 AA6286;SPC MS W     -   762,816.40  2,429,241.09   sFT  0.99997016   +0 13
23.7
 AA6286;UTM  16      - 3,499,398.969   224,144.443   MT  1.00053865   -1 31
27.1
 AA6286
 AA6286!             -  Elev Factor  x  Scale Factor =   Combined Factor
 AA6286!SPC MS W     -   0.99998193  x   0.99997016  =   0.99995209
 AA6286!UTM  16      -   0.99998193  x   1.00053865  =   1.00052057
 AA6286
 AA6286:                Primary Azimuth Mark                    Grid Az
 AA6286:SPC MS W     -  MS04 PJR A 1994                         127 02 10.0
 AA6286:UTM  16      -  MS04 PJR A 1994                         128 47 00.8
```

```
 AA6286
 AA6286|--------------------------------------------------------------------
|
 AA6286| PID    Reference Object                      Distance      Geod. Az
|
 AA6286|                                                            dddmmss.s
|
 AA6286| AA6287 MS04 PJR A 1994                     APPROX. 0.6 KM 1271533.7
|
 AA6286| AA6288 MS04 PJR C 1994                     345.123 METERS 29352
|
 AA6286|--------------------------------------------------------------------
|
 AA6286
 AA6286                          SUPERSEDED SURVEY CONTROL
 AA6286
 AA6286  NAD 83(2007)-  31 35 47.98463(N)    089 54 26.14540(W) AD(2002.00) A
 AA6286  ELLIP H (09/06/11)  115.084  (m)                       GP(2002.00) 4
1
 AA6286  NAD 83(2007)-  31 35 47.98436(N)    089 54 26.14560(W) AD(2002.00) 0
 AA6286  ELLIP H (02/10/07)  115.074  (m)                       GP(2002.00)
 AA6286  ELLIP H (04/15/02)  115.093  (m)                       GP(       ) 4
2
 AA6286  ELLIP H (02/15/02)  115.091  (m)                       GP(       ) 4
1
 AA6286  NAD 83(1993)-  31 35 47.98403(N)    089 54 26.14532(W) AD(       ) B
 AA6286  ELLIP H (07/21/95)  115.166  (m)                       GP(       ) 4
1
 AA6286  NAVD 88 (02/15/02)  141.13   (m)  GEOID99 model used   GPS OBS
 AA6286  NGVD 29 (07/21/95)  141.11   (m)          463.0    (f) LEVELING    3
 AA6286
 AA6286.Superseded values are not recommended for survey control.
 AA6286
 AA6286.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AA6286.See file dsdata.txt to determine how the superseded data were
derived.
 AA6286
 AA6286_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RBV2414499398(NAD 83)
 AA6286
 AA6286_MARKER: DD = SURVEY DISK
 AA6286_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 AA6286_STAMPING: PJR B 1994
 AA6286_MARK LOGO: NOS
 AA6286_PROJECTION: FLUSH
 AA6286_MAGNETIC: N = NO MAGNETIC MATERIAL
 AA6286_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 AA6286_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 AA6286+SATELLITE: SATELLITE OBSERVATIONS - March 02, 2011
 AA6286
 AA6286  HISTORY     - Date     Condition        Report By
 AA6286  HISTORY     - 1994     MONUMENTED       NOS
 AA6286  HISTORY     - 20000404 GOOD             NGS
 AA6286  HISTORY     - 20030610 GOOD             DUNGAN
 AA6286  HISTORY     - 20081112 GOOD             MSDOT
 AA6286  HISTORY     - 20110302 GOOD             WATER
 AA6286
 AA6286                          STATION DESCRIPTION
```

```
 AA6286
 AA6286'DESCRIBED BY NATIONAL OCEAN SERVICE 1994 (CSM)
 AA6286'THE STATION IS LOCATED AT THE PRENTISS/JEFFERSON DAVIS CO. AIRPORT IN
 AA6286'PRENTISS, MS.  FROM THE INTERSECTION OF US-84 AND STATE ROUTE 13 ON
 AA6286'THE SOUTH SIDE OF PRENTISS GO WEST OF US-84 FOR 1.0 MILE (1.6 KM) TO
A
 AA6286'ROAD RIGHT AND PROCEED FOR 1.25 MILES (2.01 KM) TO AIRPORT ON LEFT.
 AA6286'THE STATION IS LOCATED AT THE NEAR CENTER OF THE AIRPORT ON A BERM
 AA6286'OVERLOOKING THE AIRPORT AND IN LINE WITH THE WINDSOCK AND AIRPORT
 AA6286'BEACON AND THE WESTERN EDGE OF THE RAMP.  IT IS 120 M (393.7 FT)
 AA6286'WEST-NORTHWEST OF THE WESTERN MOST CORNER OF THE RAMP, 120 M (393.7
 AA6286'FT) NORTHEAST OF THE CENTERLINE OF THE RUNWAY, 9.5 M (31.2 FT)
 AA6286'SOUTH-SOUTHWEST OF THE SOUTHWEST EDGE OF A SEGMENTED CIRCLE, 24.5 M
 AA6286'(80.4 FT) SOUTH-SOUTHWEST OF THE WINDSOCK, 31.05 M (101.87 FT)
 AA6286'SOUTH-SOUTHWEST OF THE AIRPORT BEACON, AND 24.5 M (80.4 FT) SOUTH OF
A
 AA6286'SOUTHERNMOST FENCE CORNER.  THE STATION IS A STANDARD NOS DISK
STAMPED
 AA6286'---PJR B 1994---, SET IN A CONCRETE MONUMENT FLUSH WITH THE GROUND.
 AA6286
 AA6286                          STATION RECOVERY (2000)
 AA6286
 AA6286'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2000
 AA6286'RECOVERED AS DESCRIBED.
 AA6286
 AA6286                          STATION RECOVERY (2003)
 AA6286
 AA6286'RECOVERY NOTE BY DUNGAN ENGINEERING 2003 (DB)
 AA6286'RECOVERED IN GOOD CONDITION.
 AA6286
 AA6286                          STATION RECOVERY (2008)
 AA6286
 AA6286'RECOVERY NOTE BY MS DEPT TRANS 2008 (RDB)
 AA6286'RECOVERED AS DESCRIBED.
 AA6286
 AA6286                          STATION RECOVERY (2011)
 AA6286
 AA6286'RECOVERY NOTE BY WATERSHED SCIENCES 2011 (JD)
 AA6286'RECOVERED IN GOOD CONDITION.

 *** retrieval complete.
 Elapsed Time = 00:00:03
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER 19, 2014
 BW0198
***********************************************************************
 BW0198  DESIGNATION -  N 110
 BW0198  PID         -  BW0198
 BW0198  STATE/COUNTY-  MS/LAWRENCE
 BW0198  COUNTRY     -  US
 BW0198  USGS QUAD   -  MONTICELLO (1970)
 BW0198
 BW0198                        *CURRENT SURVEY CONTROL
 BW0198
_____________________________________________________________________________
 BW0198* NAD 83(1986) POSITION- 31 33 21.     (N) 090 06 46.     (W)   SCALED
 BW0198* NAVD 88 ORTHO HEIGHT -    61.238 (meters)      200.91  (feet)
ADJUSTED
 BW0198* NAVD 88 EPOCH        -  2009.55
 BW0198  **This station is located in a suspected subsidence area (see
below).
 BW0198
_____________________________________________________________________________
 BW0198  GEOID HEIGHT    -        -26.06  (meters)
GEOID12A
 BW0198  DYNAMIC HEIGHT  -         61.164 (meters)      200.67  (feet) COMP
 BW0198  MODELED GRAVITY -    979,436.7   (mgal)                      NAVD
88
 BW0198
 BW0198  VERT ORDER      -  SECOND    CLASS II
 BW0198
 BW0198.The horizontal coordinates were scaled from a topographic map and
have
 BW0198.an estimated accuracy of +/- 6 seconds.
 BW0198.
 BW0198 ** This station is in an area of known vertical motion.  Due to the
 BW0198 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BW0198 ** determined the orthometric heights for marks in these suspect
 BW0198 ** subsidence areas should be considered valid only at the epoch date
 BW0198 ** associated with the orthometric height.  These heights must always
 BW0198 ** be validated when used as control.  All previously superseded
 BW0198 ** orthometric heights are now considered suspect and are available
 BW0198 ** in the superseded section.  NGS does not recommend using suspect
 BW0198 ** or superseded heights as control.
 BW0198
 BW0198.The orthometric height was determined by differential leveling and
 BW0198.adjusted by the NATIONAL GEODETIC SURVEY
 BW0198.in July 2012.
 BW0198
 BW0198.No vertical observational check was made to the station.
 BW0198
 BW0198.The dynamic height is computed by dividing the NAVD 88
```

```
 BW0198.geopotential number by the normal gravity value computed on the
 BW0198.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BW0198.degrees latitude (g = 980.6199 gals.).
 BW0198
 BW0198.The modeled gravity was interpolated from observed gravity values.
 BW0198
 BW0198;                    North         East     Units  Estimated Accuracy
 BW0198;SPC MS W     -   227,920.      720,940.      MT  (+/- 180 meters
Scaled)
 BW0198
 BW0198                          SUPERSEDED SURVEY CONTROL
 BW0198
 BW0198  NAVD 88 (05/22/96)   61.319  (m)          201.18   (f) SUPERSEDED  2
0
 BW0198  NGVD 29 (??/??/92)   61.331  (m)          201.22   (f) ADJ UNCH    2
0
 BW0198
 BW0198.Superseded values are not recommended for survey control.
 BW0198
 BW0198.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BW0198.See file dsdata.txt to determine how the superseded data were
derived.
 BW0198
 BW0198_U.S. NATIONAL GRID SPATIAL ADDRESS: 15RYQ740948(NAD 83)
 BW0198
 BW0198_MARKER: DB = BENCH MARK DISK
 BW0198_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BW0198_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 BW0198_STAMPING: 201.378 N110 1935
 BW0198_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BW0198+STABILITY: SURFACE MOTION
 BW0198
 BW0198  HISTORY     - Date     Condition        Report By
 BW0198  HISTORY     - 1935     MONUMENTED       CGS
 BW0198  HISTORY     - 1972     GOOD             MSHD
 BW0198
 BW0198                          STATION DESCRIPTION
 BW0198
 BW0198'DESCRIBED BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1972
 BW0198'0.35 MI NW FROM MONTICELLO.
 BW0198'THE MARK IS LOCATED 0.35 MILES NORTHWEST OF MONTICELLO IN THE NORTH
 BW0198'ANGLE OF THE CROSSING OF THE G.M. AND O. RAILROAD TRACK WITH HOLLICE
 BW0198'STREET JUST NORTH OF THE STATION.  IT IS 104 FEET NORTH OF THE NORTH
 BW0198'CORNER OF THE G.M. AND O. RAILROAD STATION AT MONTICELLO, 84 FEET
 BW0198'NORTHEAST OF THE NORTHEAST RAIL OF THE MAIN TRACK, 164 FEET SOUTHWEST
 BW0198'OF THE CENTER OF HIGHWAY 84, 23 FEET NORTHWEST OF THE CENTER OF
 BW0198'HOLLICE STREET, 14 FEET SOUTHWEST OF A 30 INCH PECAN, 4.5 FEET EAST
OF
 BW0198'A POWER POLE WITH A TRANSFORMER AND A LAMP ON IT, 1 FOOT NORTHWEST OF
 BW0198'A METAL WITNESS POST SET IN THE TOP OF A 10 INCH SQUARE CONCRETE POST
 BW0198'ABOUT 2 FEET BELOW THE LEVEL OF THE MAIN TRACK AND PROJECTS 6 INCHES.
 BW0198'NOTE-- TO REACH FROM THE COURTHOUSE IN MONTICELLO GO WEST ON U.S.
 BW0198'HIGHWAY 84 FOR 0.55 MILES TO THE INTERSECTION OF HOLLICE STREET AND
 BW0198'THE MARK ON THE LEFT.

 *** retrieval complete.
 Elapsed Time = 00:00:01
```

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 BV1123
***********************************************************************
 BV1123  CBN         -  This is a Cooperative Base Network Control Station.
 BV1123  DESIGNATION -  SHUBUTA RESET
 BV1123  PID         -  BV1123
 BV1123  STATE/COUNTY-  MS/CLARKE
 BV1123  COUNTRY     -  US
 BV1123  USGS QUAD   -  SHUBUTA (1964)
 BV1123
 BV1123                        *CURRENT SURVEY CONTROL
 BV1123
_____________________________________________________________________
 BV1123* NAD 83(2011) POSITION- 31 52 17.60514(N) 088 42 12.56057(W)
ADJUSTED
 BV1123* NAD 83(2011) ELLIP HT-    31.176 (meters)        (06/27/12)
ADJUSTED
 BV1123* NAD 83(2011) EPOCH   -  2010.00
 BV1123* NAVD 88 ORTHO HEIGHT -    58.117 (meters)      190.67  (feet)
ADJUSTED
 BV1123* NAVD 88 EPOCH        -  2009.55
 BV1123  **This station is located in a suspected subsidence area (see
below).
 BV1123
_____________________________________________________________________
 BV1123  NAD 83(2011) X  -    122,672.001 (meters)                    COMP
 BV1123  NAD 83(2011) Y  - -5,420,230.528 (meters)                    COMP
 BV1123  NAD 83(2011) Z  -  3,348,361.128 (meters)                    COMP
 BV1123  LAPLACE CORR    -         -1.68  (seconds)
DEFLEC12A
 BV1123  GEOID HEIGHT    -        -26.93  (meters)
GEOID12A
 BV1123  DYNAMIC HEIGHT  -         58.048 (meters)      190.45  (feet) COMP
 BV1123  MODELED GRAVITY -    979,458.1   (mgal)                      NAVD
88
 BV1123
 BV1123  VERT ORDER      -  FIRST     CLASS II
 BV1123
 BV1123  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 BV1123  Type                                           Horiz  Ellip  Dist(km)
 BV1123  ----------------------------------------------------------------------
 BV1123  NETWORK                                         1.60   5.92
 BV1123  ----------------------------------------------------------------------
 BV1123  MEDIAN LOCAL ACCURACY AND DIST (025 points)   1.81   4.70    113.60
 BV1123  ----------------------------------------------------------------------
 BV1123  NOTE: Click here for information on individual local accuracy
 BV1123  values and other accuracy information.
 BV1123
 BV1123
 BV1123.The horizontal coordinates were established by GPS observations
```

```
 BV1123.and adjusted by the National Geodetic Survey in June 2012.
 BV1123
 BV1123.NAD 83(2011) refers to NAD 83 coordinates where the reference
 BV1123.frame has been affixed to the stable North American tectonic plate.
See
 BV1123.NA2011 for more information.
 BV1123
 BV1123.The horizontal coordinates are valid at the epoch date displayed
above
 BV1123.which is a decimal equivalence of Year/Month/Day.
 BV1123
 BV1123 ** This station is in an area of known vertical motion.  Due to the
 BV1123 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 BV1123 ** determined the orthometric heights for marks in these suspect
 BV1123 ** subsidence areas should be considered valid only at the epoch date
 BV1123 ** associated with the orthometric height.  These heights must always
 BV1123 ** be validated when used as control.  All previously superseded
 BV1123 ** orthometric heights are now considered suspect and are available
 BV1123 ** in the superseded section.  NGS does not recommend using suspect
 BV1123 ** or superseded heights as control.
 BV1123
 BV1123.The orthometric height was determined by differential leveling and
 BV1123.adjusted by the NATIONAL GEODETIC SURVEY
 BV1123.in July 2012.
 BV1123
 BV1123.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 BV1123
 BV1123.The Laplace correction was computed from DEFLEC12A derived
deflections.
 BV1123
 BV1123.The ellipsoidal height was determined by GPS observations
 BV1123.and is referenced to NAD 83.
 BV1123
 BV1123.The dynamic height is computed by dividing the NAVD 88
 BV1123.geopotential number by the normal gravity value computed on the
 BV1123.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 BV1123.degrees latitude (g = 980.6199 gals.).
 BV1123
 BV1123.The modeled gravity was interpolated from observed gravity values.
 BV1123
 BV1123. The following values were computed from the NAD 83(2011) position.
 BV1123
 BV1123;                    North         East     Units Scale Factor
Converg.
 BV1123;SPC MS E     -   262,914.871   312,285.858   MT  0.99995186   +0 04
06.8
 BV1123;SPC MS E     -   862,579.87  1,024,557.85   sFT  0.99995186   +0 04
06.8
 BV1123;UTM  16      - 3,527,463.960   338,861.869   MT  0.99992024   -0 53
58.8
 BV1123
 BV1123!             -  Elev Factor  x  Scale Factor =   Combined Factor
 BV1123!SPC MS E     -   0.99999510  x   0.99995186  =   0.99994697
 BV1123!UTM  16      -   0.99999510  x   0.99992024  =   0.99991535
 BV1123
```

```
 BV1123:                 Primary Azimuth Mark                      Grid Az
 BV1123:SPC MS E     -   SHUBUTA MUNICIPAL WATER TANK              160 22 22.6
 BV1123:UTM  16      -   SHUBUTA MUNICIPAL WATER TANK              161 20 28.2
 BV1123
 BV1123|---------------------------------------------------------------------
|
 BV1123| PID    Reference Object                      Distance      Geod. Az
|
 BV1123|                                                            dddmmss.s
|
 BV1123| BV0430 SHUBUTA RM 1                          27.634 METERS 07632
|
 BV1123| BV1124 SHUBUTA RM 3                          27.227 METERS 09406
|
 BV1123| BV1544 SHUBUTA MUNICIPAL WATER TANK        APPROX. 1.3 KM 1602629.4
|
 BV1123| BV0428 SHUBUTA AZ MK                                       1614831.7
|
 BV1123| BV0431 SHUBUTA RM 2                          23.667 METERS 16215
|
 BV1123|---------------------------------------------------------------------
|
 BV1123
 BV1123                          SUPERSEDED SURVEY CONTROL
 BV1123
 BV1123  NAD 83(2007)-  31 52 17.60519(N)    088 42 12.56162(W) AD(2002.00) 0
 BV1123  ELLIP H (02/10/07)   31.214  (m)                       GP(2002.00)
 BV1123  ELLIP H (04/15/02)   31.185  (m)                       GP(       ) 4
2
 BV1123  ELLIP H (02/15/02)   31.180  (m)                       GP(       ) 4
1
 BV1123  NAD 83(1993)-  31 52 17.62052(N)    088 42 12.56189(W) AD(       ) 1
 BV1123  NAD 83(1993)-  31 52 17.60497(N)    088 42 12.56223(W) AD(       ) B
 BV1123  ELLIP H (01/12/94)   31.275  (m)                       GP(       ) 4
1
 BV1123  NAD 83(1992)-  31 52 17.61587(N)    088 42 12.56119(W) AD(       ) 3
 BV1123  NAD 83(1986)-  31 52 17.62052(N)    088 42 12.56189(W) AD(       ) 3
 BV1123  NAD 27      -  31 52 17.06100(N)    088 42 12.42700(W) AD(       ) 3
 BV1123  NAVD 88 (01/12/94)   58.15   (m)          190.8    (f) LEVELING    3
 BV1123  NAVD 88 (06/15/91)   58.146  (m)          190.77   (f) SUPERSEDED  1
2
 BV1123  NGVD 29 (??/??/??)   58.123  (m)          190.69   (f) ADJUSTED    1
2
 BV1123
 BV1123.Superseded values are not recommended for survey control.
 BV1123
 BV1123.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 BV1123.See file dsdata.txt to determine how the superseded data were
derived.
 BV1123
 BV1123_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCA3886127463(NAD 83)
 BV1123
 BV1123_MARKER: DS = TRIANGULATION STATION DISK
 BV1123_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 BV1123_SP_SET: CONCRETE POST
 BV1123_STAMPING: SHUBUTA 1956 1979
 BV1123_MARK LOGO: NGS
```

```
 BV1123_PROJECTION: RECESSED 25 CENTIMETERS
 BV1123_MAGNETIC: N = NO MAGNETIC MATERIAL
 BV1123_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 BV1123+STABILITY: SURFACE MOTION
 BV1123_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 BV1123+SATELLITE: SATELLITE OBSERVATIONS - May 01, 2000
 BV1123
 BV1123  HISTORY     - Date     Condition        Report By
 BV1123  HISTORY     - 1979     MONUMENTED       NGS
 BV1123  HISTORY     - 1980     GOOD             NGS
 BV1123  HISTORY     - 19910403 GOOD             MSHD
 BV1123  HISTORY     - 19921120 GOOD             MSHD
 BV1123  HISTORY     - 19930503 GOOD
 BV1123  HISTORY     - 20000501 GOOD             NGS
 BV1123
 BV1123                          STATION DESCRIPTION
 BV1123
 BV1123'DESCRIBED BY NATIONAL GEODETIC SURVEY 1980
 BV1123'1.2 KM NW FROM SHUBUTA.
 BV1123'1.2 KILOMETERS (0.75 MILE) NORTHWEST ALONG US HIGHWAY 45 FROM THE
 BV1123'INTERSECTION OF MAIN STREET AT SHUBUTA, AT THE JUNCTION OF A GRAVEL
 BV1123'DRIVE LEADING TO A WOODYARD, 36 METERS (118 FEET) NORTHEAST OF THE
 BV1123'CENTER LINE OF THE HIGHWAY, 33 METERS (108 FEET) WEST-NORTHWEST OF A
 BV1123'POWER POLE, 27.4 METERS (90 FEET) WEST OF THE WEST STEEL GUARD POST
 BV1123'AROUND A GAS METER, 31.1 METERS (102 FEET) EAST-SOUTHEAST OF A LONE
 BV1123'8-INCH PINE TREE, 7.2 METERS (23.5 FEET) SOUTH-SOUTHEAST OF THE
CENTER
 BV1123'OF THE GRAVEL DRIVE.
 BV1123'THE MARK IS 1 METERS  NW FROM A WITNESS POST.
 BV1123'THE MARK IS 1 M BELOW HIGHWAY.
 BV1123
 BV1123                          STATION RECOVERY (1991)
 BV1123
 BV1123'RECOVERY NOTE BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1991
 BV1123'THE STATION IS LOCATED ABOUT 0.75 MI (1.21 KM) NORTH OF SHUBUTA, IN
 BV1123'THE EDGE OF THE ENTRANCE TO A WOOD YARD AND IS IN SECTION 4, T 10N,
 BV1123'R7W.
 BV1123'TO REACH FROM THE INTERSECTION OF U.S. HIGHWAY 45 AND EUCUTTA STREET
 BV1123'IN SHUBUTA, GO NORTH ON U.S. HIGHWAY 45 FOR 0.75 MI (1.21 KM) TO THE
 BV1123'ENTRANCE TO THE WOOD YARD AND THE MARK ON THE RIGHT.
 BV1123'MARK IS A STANDARD DISK SET IN THE TOP OF A ROUND CONCRETE POST,
ABOUT
 BV1123'6.0 FT (1.8 M) BELOW THE LEVEL OF THE HIGHWAY, 10 INCHES BELOW THE
 BV1123'GROUND, 117.0 FT (35.7 M) EAST-NORTHEAST OF THE CENTER OF HIGHWAY 45,
 BV1123'108.0 FT (32.9 M) NORTHWEST OF A POWER POLE, 103.5 FT (31.5 M)
 BV1123'SOUTHEAST OF AN 18 INCH OAK, 89.5 FT (27.3 M) WEST OF THE NORTHWEST
 BV1123'STEEL GUARD POST FOR A GAS METER, 85.5 FT (26.1 M) EAST-NORTHEAST OF
 BV1123'TELEPHONE CABLE POLE NO F1126 AND 14.0 FT (4.3 M) SOUTHEAST OF THE
 BV1123'CENTER OF THE ENTRANCE TO THE WOOD YARD.
 BV1123
 BV1123                          STATION RECOVERY (1992)
 BV1123
 BV1123'RECOVERY NOTE BY MISSISSIPPI STATE HIGHWAY DEPARTMENT 1992
 BV1123'STATION IS LOCATED ABOUT 12.0 MI (19.3 KM) SOUTH OF QUITMAN, 0.75 MI
 BV1123'(1.21 KM) NORTHWEST OF SHUBUTA, AT SITE OF A LARGE WOODYARD, ON
 BV1123'NORTHEAST RIGHT OF WAY OF U.S. HIGHWAY 45.
 BV1123'TO REACH FROM THE COURTHOUSE IN QUITMAN, GO SOUTH ON U.S. HIGHWAY 45
```

BV1123'FOR 12.3 MI (19.8 KM) TO A SIDE ROAD TO WOODYARD AND STATION ON THE
BV1123'LEFT.
BV1123'STATION IS A STANDARD NGS DISK, STAMPED---SHUBUTA 1956 1979---SET IN
BV1123'TOP OF A ROUND CONCRETE MONUMENT, 10 INCHES BELOW THE SURFACE OF THE
BV1123'GROUND. IT IS 118.0 FT (36.0 M) NORTHEAST OF THE CENTER OF HIGHWAY
BV1123'45, 108.0 FT (32.9 M) WEST NORTHWEST OF A POWER POLE, 90.0 FT
BV1123'(27.4 M) WEST OF THE WEST STEEL GUARD POST AROUND GAS METER, 25.0 FT
BV1123'(7.6 M) SOUTH SOUTHEAST OF THE CENTER OF GRAVEL ROAD, 17.0 FT
BV1123'(5.2 M) SOUTH SOUTHWEST OF SOUTH IRON GATE POST, 9.5 FT (2.9 M) WEST
BV1123'SOUTHWEST OF IRON FENCE AND CARSONITE WITNESS POST.
BV1123
BV1123   STATION RECOVERY (1993)
BV1123
BV1123'RECOVERED 1993
BV1123'RECOVERED IN GOOD CONDITION.
BV1123
BV1123   STATION RECOVERY (2000)
BV1123
BV1123'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2000
BV1123'RECOVERED AS DESCRIBED. TURN EAST OFF OF THE HIGHWAY ON TO HALL
BV1123'STREET.

*** retrieval complete.
Elapsed Time = 00:00:03

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

```
PROGRAM = datasheet95, VERSION = 8.5
1        National Geodetic Survey,   Retrieval Date = DECEMBER  8, 2014
 DN4011
***********************************************************************
 DN4011  HT_MOD      -  This is a Height Modernization Survey Station.
 DN4011  DESIGNATION -  US 45
 DN4011  PID         -  DN4011
 DN4011  STATE/COUNTY-  MS/WAYNE
 DN4011  COUNTRY     -  US
 DN4011  USGS QUAD   -  DENHAM (1982)
 DN4011
 DN4011                        *CURRENT SURVEY CONTROL
 DN4011
_____________________________________________________________________
 DN4011* NAD 83(2011) POSITION- 31 42 29.11294(N) 088 37 22.88226(W)
ADJUSTED
 DN4011* NAD 83(2011) ELLIP HT-    71.567 (meters)        (06/27/12)
ADJUSTED
 DN4011* NAD 83(2011) EPOCH   -  2010.00
 DN4011* NAVD 88 ORTHO HEIGHT -    98.38  (meters)      322.8   (feet) GPS
OBS
 DN4011* NAVD 88 EPOCH        -  2009.55
 DN4011  **This station is located in a suspected subsidence area (see
below).
 DN4011
_____________________________________________________________________
 DN4011  GEOID HEIGHT    -        -26.82  (meters)
GEOID12A
 DN4011  NAD 83(2011) X  -    130,514.341 (meters)                    COMP
 DN4011  NAD 83(2011) Y  - -5,429,633.443 (meters)                    COMP
 DN4011  NAD 83(2011) Z  -  3,332,975.373 (meters)                    COMP
 DN4011  LAPLACE CORR    -         -1.77  (seconds)
DEFLEC12A
 DN4011
 DN4011  FGDC Geospatial Positioning Accuracy Standards (95% confidence, cm)
 DN4011  Type                                          Horiz  Ellip  Dist(km)
 DN4011  ----------------------------------------------------------------
 DN4011  NETWORK                                        0.86   1.18
 DN4011  ----------------------------------------------------------------
 DN4011  MEDIAN LOCAL ACCURACY AND DIST (008 points)   1.16   1.30     32.47
 DN4011  ----------------------------------------------------------------
 DN4011  NOTE: Click here for information on individual local accuracy
 DN4011  values and other accuracy information.
 DN4011
 DN4011
 DN4011.The horizontal coordinates were established by GPS observations
 DN4011.and adjusted by the National Geodetic Survey in June 2012.
 DN4011
 DN4011.NAD 83(2011) refers to NAD 83 coordinates where the reference
 DN4011.frame has been affixed to the stable North American tectonic plate.
See
```

```
 DN4011.NA2011 for more information.
 DN4011
 DN4011.The horizontal coordinates are valid at the epoch date displayed
above
 DN4011.which is a decimal equivalence of Year/Month/Day.
 DN4011
 DN4011 ** This station is in an area of known vertical motion.  Due to the
 DN4011 ** variability of land subsidence, uplift, and crustal motion, NGS
has,
 DN4011 ** determined the orthometric heights for marks in these suspect
 DN4011 ** subsidence areas should be considered valid only at the epoch date
 DN4011 ** associated with the orthometric height.  These heights must always
 DN4011 ** be validated when used as control.  All previously superseded
 DN4011 ** orthometric heights are now considered suspect and are available
 DN4011 ** in the superseded section.  NGS does not recommend using suspect
 DN4011 ** or superseded heights as control.
 DN4011
 DN4011.The orthometric height was determined by GPS observations and a
 DN4011.high-resolution geoid model using precise GPS observation and
 DN4011.processing techniques.
 DN4011
 DN4011.The X, Y, and Z were computed from the position and the ellipsoidal
ht.
 DN4011
 DN4011.The Laplace correction was computed from DEFLEC12A derived
deflections.
 DN4011
 DN4011.The ellipsoidal height was determined by GPS observations
 DN4011.and is referenced to NAD 83.
 DN4011
 DN4011. The following values were computed from the NAD 83(2011) position.
 DN4011
 DN4011;                    North         East     Units Scale Factor
Converg.
 DN4011;SPC MS E     -   244,801.583   319,934.626   MT  0.99995490   +0 06
37.9
 DN4011;SPC MS E     -   803,153.19  1,049,652.19   sFT  0.99995490   +0 06
37.9
 DN4011;UTM  16      - 3,509,225.161   346,203.831   MT  0.99989173   -0 51
11.6
 DN4011
 DN4011!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DN4011!SPC MS E     -   0.99998876  x   0.99995490  =   0.99994366
 DN4011!UTM  16      -   0.99998876  x   0.99989173  =   0.99988049
 DN4011
 DN4011                          SUPERSEDED SURVEY CONTROL
 DN4011
 DN4011  NAD 83(2007)-  31 42 29.11315(N)    088 37 22.88211(W) AD(2002.00) A
 DN4011  ELLIP H (09/06/11)   71.563  (m)                       GP(2002.00) 4
1
 DN4011
 DN4011.Superseded values are not recommended for survey control.
 DN4011
 DN4011.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 DN4011.See file dsdata.txt to determine how the superseded data were
derived.
 DN4011
```

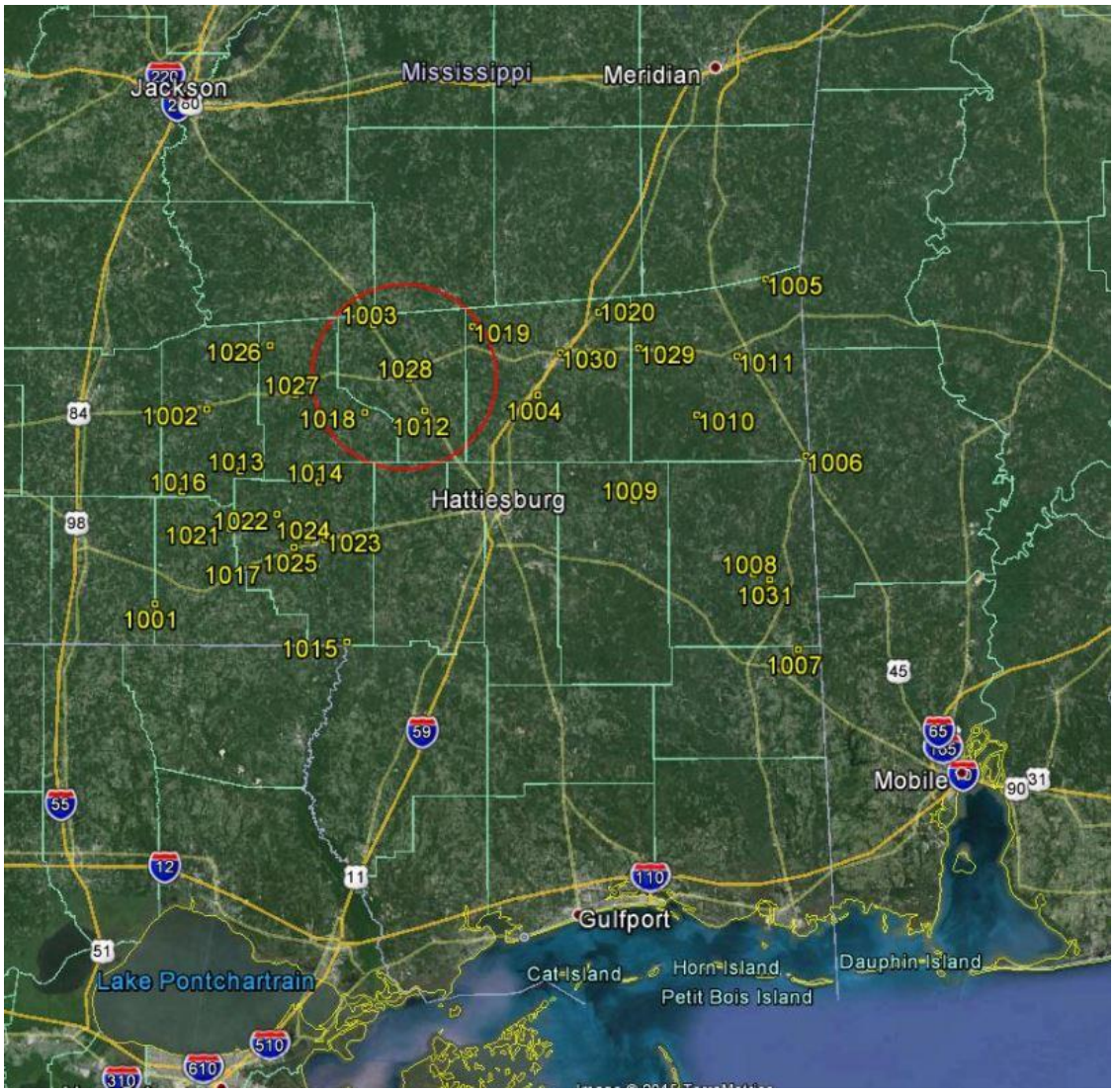
```
 DN4011_U.S. NATIONAL GRID SPATIAL ADDRESS: 16RCA4620309225(NAD 83)
 DN4011
 DN4011_MARKER: DD = SURVEY DISK
 DN4011_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 DN4011_STAMPING: US45 2008
 DN4011_MARK LOGO: MSDOT
 DN4011_PROJECTION: FLUSH
 DN4011_MAGNETIC: N = NO MAGNETIC MATERIAL
 DN4011_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 DN4011+STABILITY: SURFACE MOTION
 DN4011_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 DN4011+SATELLITE: SATELLITE OBSERVATIONS - December 16, 2008
 DN4011
 DN4011  HISTORY     - Date     Condition        Report By
 DN4011  HISTORY     - 20081216 MONUMENTED       MSDOT
 DN4011
 DN4011                          STATION DESCRIPTION
 DN4011
 DN4011'DESCRIBED BY MS DEPT TRANS 2008 (PAB)
 DN4011'THE MARK IS LOCATED IN THE NORTHEASTERN PART OF WAYNESBORO IN A
GRASSY
 DN4011'AREA IN THE SOUTHEAST QUADRANT OF THE U.S. HIGHWAY 84 AND U.S.
HIGHWAY
 DN4011'45 INTERCHANGE.
 DN4011'
 DN4011'TO REACH FROM THE INTERSECTION OF U.S. HIGHWAY 84 AND U.S. HIGHWAY
45,
 DN4011'TRAVEL ALONG EAST U.S. HIGHWAY 84 FOR 0.1 MI (0.2 KM) TO THE MARK ON
 DN4011'THE RIGHT.
 DN4011'
 DN4011'THE MARK IS A M.D.O.T DISK SET IN THE TOP OF A 12-INCH ROUND CONCRETE
 DN4011'POST FLUSH WITH THE GROUND.  IT IS 630.0 FT (192.0 M) EAST-NORTHEAST
 DN4011'OF THE EAST (NORTH-BOUND) BRIDGE ON U.S. HIGHWAY 45, 75.0 FT (22.9 M)
 DN4011'SOUTH OF THE SOUTH PAVEMENT EDGE OF THE SOUTH (EAST-BOUND) LANE OF
 DN4011'U.S. HIGHWAY 84, 75.0 FT (22.9 M) SOUTH-SOUTHWEST OF A SIGN-POST,
71.0
 DN4011'FT (21.6 M) NORTH-NORTHWEST OF THE NORTH PAVEMENT EDGE OF AN ENTRANCE
 DN4011'RAMP, 2.0 FT (0.6 M) NORTHWEST OF A FIBERGLASS WITNESS POST AND ABOUT
 DN4011'15 FT (4.6 M) ABOVE THE SURFACE OF THE HIGHWAY.

 *** retrieval complete.
 Elapsed Time = 00:00:03
```

SECTION 5: GPS CONTROL DIAGRAM

This section contains a graphical representation of the new and existing control stations used for the project.

MS Control Points



Not to Scale