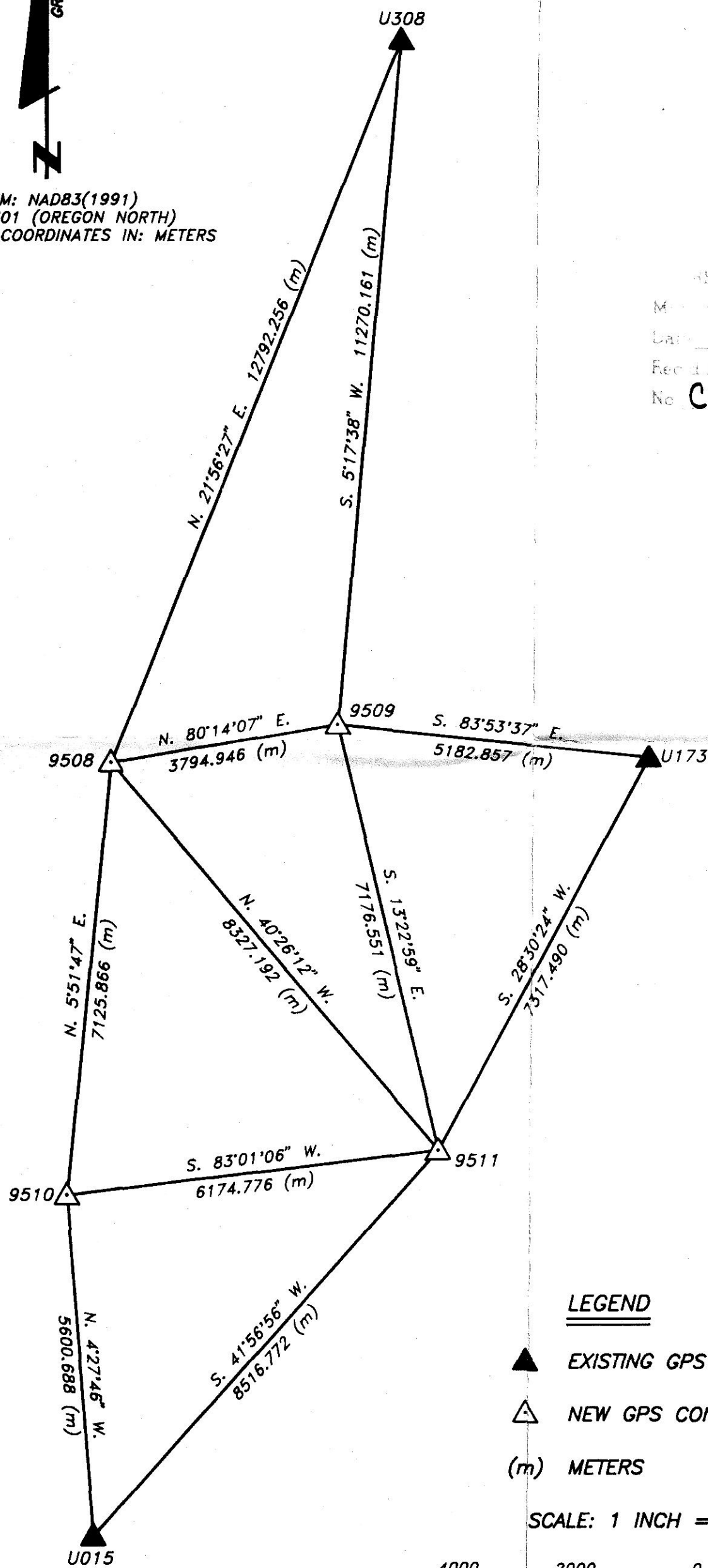


**BALM CANYON GPS CONTROL SURVEY  
FOR  
UMATILLA NATIONAL FOREST  
LOCATED IN  
TOWNSHIP 4 SOUTH, RANGE 26 EAST,  
WILLAMETTE MERIDIAN  
MORROW COUNTY, OREGON  
JUNE - SEPTEMBER, 1995**

DATUM: NAD83(1991)  
ZONE: 3601 (OREGON NORTH)  
STATE PLANE COORDINATES IN: METERS



**LEGEND**

▲ EXISTING GPS CONTROL POINT  
△ NEW GPS CONTROL POINT  
(m) METERS

SCALE: 1 INCH = 2000 METERS

4000 2000 0 6000 12000

SCALE IN METERS      SCALE IN FEET  
1 METER = 3.28084 FEET

RECEIVED BY  
DATE: 11/28/95  
BY: SKB  
NO: C-1064-E (837)

**NARRATIVE:**

THE PURPOSE OF THIS SURVEY WAS TO PROVIDE BOTH HORIZONTAL AND VERTICAL CONTROL FOR UPDATING U.S. GEOLOGICAL SURVEY'S 7 1/2 MINUTE QUADRANGLE MAP BALM CANYON.

THE SURVEY WAS CONDUCTED USING FEDERAL GEODETIC CONTROL COMMITTEE (FGCC) ORDER C, SECOND ORDER, CLASS 1 GPS SURVEY SPECIFICATIONS. ALL COORDINATES PROVIDED ARE NAD81(1991) VALUES BASED ON THE OREGON HIGH PRECISION GPS CONTROL NETWORK.

THE EQUIPMENT USED WAS THREE TRIMBLE 4000SSE, DUAL FREQUENCY, RECEIVERS WITH EXTERNAL L1 & L2 GEODETIC ANTENNAS, NIKON TRIBRACHS, AND STANDARD SURVEY TRIPODS. THE ANTENNA HEIGHTS WERE MEASURED USING WILD'S HEIGHT HOOK SYSTEM.

FAST STATIC, CARRIER PHASE MEASUREMENTS AND DATA PROCESSING WAS USED ON ALL BASELINE MEASUREMENTS AND THE BASELINES WERE EVALUATED BY EXAMINATION OF STATISTICAL QUALITY INDICATORS AND LOOP CLOSURE ANALYSIS. THE BASELINES WERE THEN ADJUSTED IN A LEAST SQUARES ADJUSTMENT PROGRAM USING THE THREE EXISTING GPS CONTROL POINTS (U015 = WRIGHT 1989, U173 = REED 1989, AND U308 = CBL-1 1990) AS FIXED CONTROL BOTH HORIZONTALLY (LATITUDE & LONGITUDE) AND VERTICALLY (ELLIPSOID HEIGHT). THE COORDINATES OF THESE POINTS WERE ESTABLISHED BY DAVID EVANS AND ASSOCIATES WORKING UNDER CONTRACT TO THE USDA-FOREST SERVICE ON A 1990 ORTHO-PHOTO CONTROL PROJECT FOR THE UMATILLA AND WALLOWA-WHITMAN NATIONAL FORESTS.

COMPUTER SOFTWARE USED IN THIS SURVEY CONSISTED OF TRIMBLE NATIVATION'S GPSURVEY (VERSION 2.00) SOFTWARE SUITE WHICH WAS USED FOR ALL PROCESSING. NATIONAL GEODETIC SURVEY'S GEOD90 WAS USED TO INTERPOLATE THE GEOID SEPERATIONS FOR EACH STATION.

DATUM: NAD83(1991)  
STATE PLANE COORDINATES: 3601 OREGON NORTH ZONE (METERS)

NO.	LATITUDE	LONGITUDE	NORTHING(m)	EASTING(m)	ELLIPSOID HEIGHT(m)	GEOID SEPARATION(m)	ORTHOMETRIC HEIGHT(m)	CONVERGENCE	SCALE FACTOR
U015	45°07'25.58826" N.	119°37'01.78271" W.	162295.091	2569450.277	1224.738	-18.610	1243.348	0°37'33.947"	0.999894889
U173	45°14'15.61605" N.	119°29'54.22794" W.	175059.682	2578635.831	1022.440	-18.932	1041.372	0°42'37.163"	0.999895304
U308	45°20'38.60641" N.	119°32'56.48180" W.	186833.108	2574522.214	645.250	-19.530	664.780	0°40'27.911"	0.999899253
9508	45°14'15.99606" N.	119°36'42.03873" W.	174967.387	2569742.415	883.219	-19.144	902.363	0°37'47.949"	0.999895307
9509	45°14'35.47786" N.	119°33'50.21969" W.	175611.019	2573482.382	777.660	-19.105	796.765	0°39'49.801"	0.999895425
9510	45°10'26.62419" N.	119°37'18.94701" W.	167878.799	2569014.485	1111.897	-18.840	1130.737	0°37'21.775"	0.999894587
9511	45°10'48.68398" N.	119°32'37.84071" W.	168629.354	2575143.476	1034.718	-18.742	1053.460	0°40'41.131"	0.999894603

**U015**  
WRIGHT 1989 (SECTION 20, T. 5 S., R. 26 E.)

FOUND A 3 1/4" ALUMINUM CAP SET FLUSH WITH THE GROUND, MARKED AS SHOWN.



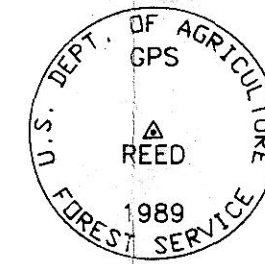
**9508**  
GUARD 1995 (SECTION 8, T. 4 S., R. 26 E.)

SET UNDERNEATH A CATTLE GUARD IN THE CENTER OF SPRING HOLLOW ROAD, A 5/8" BY 7" REBAR, WITH 3 1/4" ALUMINUM CAP, SET IN CONCRETE FLUSH WITH THE GROUND, MARKED AS SHOWN.



**U173**  
REED 1989 (SECTION 7, T. 4 S., R. 27 E.)

FOUND A 3 1/4" ALUMINUM CAP SET FLUSH WITH THE GROUND, MARKED AS SHOWN.



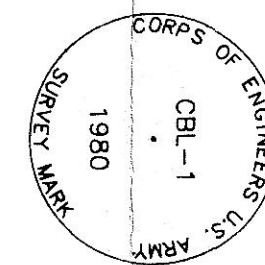
**9509**  
PECK 1995 (SECTION 3, T. 4 S., R. 26 E.)

SET IN THE CENTER OF RHEA CREEK ROAD AT THE END OF A YELLOW CENTER STRIP IN FRONT OF HAROLD K. PECK'S DRIVEWAY, A PK NAIL, WITH 2 1/2" WASHER, MARKED AS SHOWN.



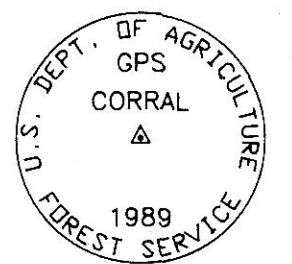
**U308**  
CBL-1 1980 (SECTION 2, T. 3 S., R. 26 E.)

FOUND A 3 1/2" BRASS CAP SET 2" BELOW GROUND, MARKED AS SHOWN.



**9510**  
CORRAL 1995 (SECTION 31, T. 4 S., R. 26 E.)

SET IN THE CENTER OF A 3' BY 3' ROCK CAIRN LOCATED AT THE S.W. CORNER OF A LARGE CORRAL, A 5/8" BY 24" REBAR, WITH A 3 1/4" ALUMINUM CAP, SET IN CONCRETE, MARKED AS SHOWN.



**9511**  
GUARD 2 1995 (SECTION 35, T. 4 S., R. 26 E.)

IN THE CENTER OF A CATTLE GUARD ON THE BALM CANYON ROAD, CHISELED "+" IN THE CENTER RAIL OF THE CATTLE GUARD.

I, DAVID A. SCHLAICH, A REGISTERED LAND SURVEYOR IN THE STATE OF OREGON, HEREBY CERTIFY THAT THIS PLAT AND THE NOTES HEREON ARE A TRUE AND CORRECT REPRESENTATION OF A GPS CONTROL SURVEY I CONDUCTED IN JUNE THROUGH SEPTEMBER OF 1995, AT THE REQUEST OF THE UMATILLA NATIONAL FOREST, IN ACCORDANCE WITH THE STATUTES OF THE STATE OF OREGON.

*David A. Schlaich*  
DAVID A. SCHLAICH -- RLS 2308  
UMATILLA NATIONAL FOREST  
2517 S.W. HAILEY AVENUE  
PENDLETON, OREGON 97801  
PHONE: (541) 278-3747

REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

OREGON  
JULY 16, 1987  
DAVID A. SCHLAICH  
2308

RENEWES 06/30/96

REVIEWED BY:  
*Hennis V. Layland* 11/16/95  
SIGNATURE DATE  
I CERTIFY THAT THIS SURVEY WAS PERFORMED AT THE REQUEST OF THE UMATILLA NATIONAL FOREST SUPERVISOR  
*John P. Klein* 11/17/95  
SIGNATURE DATE