

**CORRECTIVE ACTION MANAGEMENT UNIT
(CAMU – PHASE IIIA)
FINAL INTERIM CLOSURE COVER-SOIL
AS-BUILT & VOLUME REPORT
HENDERSON, NV**

Prepared for:



ENTACT Environmental Services, LLC

699 South Friendswood Dr.
Suite 101
Friendswood, TX. 77546
(281) 996-9892

Prepared by:



Absolute Boundary & Control Solutions

6440 Sky Point Drive
Suite 140 – PMB 321
Las Vegas, NV 89131
(702) 953-7452

November 16, 2009



11/16/09

Attn: Erik Gehringer, Project Manager
ENTACT Environmental Services, LLC
699 South Friendswood Drive
Friendswood, TX. 77546

Re: CAMU –Phase IIIA – Final Interim Closure Cover-Soil As-Built & Volume

Mr. Gehringer,

This report outlines the results of the Final Interim Closure Cover-Soil As-Built Survey which was accomplished within the Phase IIIA area of the Corrective Action Management Unit (CAMU) project.

The intent of said report is to provide information such as but not limited to, Data, Calculations, Drawings, Tables, Charts, Electronic Files and other required media to satisfy the Submittal Requirements as outlined in Section 01050 of the Project Technical Specifications, Dated May, 2008.

Absolute Boundary & Control Solutions (ABCS) is pleased you have chosen us to complete these services, and assures you that every attempt has been made to prepare same in a fashion meeting or exceeding the Project Specifications. If however after your review you determine that revisions, clarifications or other modifications are needed, please do not hesitate to bring them to our attention.

In closing, thank you again for the opportunity to serve ENTACT. If you have any questions, comments or concerns, please do not hesitate to contact me.

Sincerely,

Craig A. Givant, PLS
President

(702) 953-7452
(702) 839-9750 fax

CERTIFICATION PAGE

CAMU – PHASE IIIA
FINAL INTERIM CLOSURE COVER-SOIL SURFACE
AS-BUILT & VOLUME REPORT
HENDERSON, NV

I, Craig A. Givant, a Professional Land Surveyor registered in the State of Nevada, certify (as defined by Nevada Revised Statutes 625.403) that:

1. This report and any Land Surveying Practices (N.R.S. 625.040) on which it is based were performed directly by me or under my responsible charge (N.R.S. 625.080) in accordance with the Standards and Practices Governing Land Surveyors in the State of Nevada as defined by any applicable sections of the Nevada Revised Statutes (N.R.S.) or the Nevada Administrative Code (N.A.C.).
2. By affixing my official seal and signature below I am confirming that I am a Registered Land Surveyor in the State of Nevada and thereby satisfy the requirements of Section 01050, Part 1.03, Subpart A or the Project Technical Specifications.

Craig A. Givant, PLS
PLS 14348

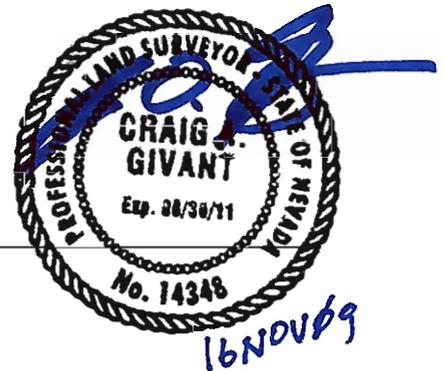


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FIELD NOTES

Phase IIIA – Final Interim Closure Cover-Soil As-Built

All Field Data necessary to determine the location and elevation of the above referenced Surface was collected electronically by Absolute Boundary & Control Solutions (ABCS).

Pertinent parameters required to be input into the software and which were obtained by means of human interaction, were verified as correct by performing field checks. These field checks and their resultant accuracies can be viewed within the Electronic Field Notes (Raw Data). The following Raw Data files were used while acquiring the As-Built information. These files have not been printed for inclusion in this report however a Portable Document File (PDF) of each raw data printout is included electronically on the attached Compact Disk (CD). It should be noted that the contents of these Raw Data files may not pertain solely to the report herein presented and may include additional data from other “tasks” performed on the same day or outdated data which was reacquired at a later date. In all cases the coordinate listing appearing herein was used to generate the reported surface(s).

1. 2009-10-19 (IIIA IC Verifiaction) - CAG.dc – Consists of 6 Pages
2. 2009-10-19 (Interim Cover Toe ASB)-TG.dc – Consists of 34 Pages

Phase IIIA – Final Waste Surface As-Built

This Surface is depicted solely within in the drawing section of this report as a comparison surface to generate volumetric calculations. Said surface was originally reported in that certain report prepared by Absolute Boundary & Control solutions under Task number 2009-10-08-01-B and therefore Field Notes and Field Data have NOT been included herein.

SURVEY DATA

As required by the project specification Absolute Boundary & Control Solutions (ABCS) utilized field survey methods which resulted in precisions equal to or better than the following:

Horizontal Coordinates: $\pm 1.0'$ (One Foot)

Vertical Coordinates: $\pm 0.10'$ (One Tenth of a Foot)

1. **Coordinate Printout of the reduced (measured) coordinates from the Field Collection Efforts.**

Point No.	Northing	Easting	Elevation	Description
84003	16776.82	14701.30	1777.05	810107
84004	16783.51	14744.22	1776.84	810106
84005	16788.89	14780.93	1776.59	810105
84006	16793.52	14812.47	1776.36	810104
84007	16800.38	14852.55	1776.03	810103
84008	16805.78	14869.81	1776.04	ic-toe
84009	16816.03	14888.20	1775.50	ic-toe
84010	16826.20	14899.51	1775.10	810102
84011	16836.69	14905.10	1775.03	ic-toe
84012	16867.86	14909.78	1774.28	810101
84013	16901.94	14911.12	1773.72	810100
84014	16922.64	14910.10	1773.31	810099
84015	16957.01	14889.38	1772.90	810098
84016	16958.46	14855.68	1772.65	810097
84017	16960.04	14823.91	1772.33	810096
84018	16961.39	14794.11	1772.12	810095
84019	16963.61	14751.63	1771.87	810094
84020	16965.51	14717.84	1771.81	810093
84021	16967.03	14705.96	1771.82	810092
84023	16899.47	14612.62	1802.04	810042
84024	16975.59	14675.52	1771.70	810091
84025	17006.74	14538.54	1770.89	810088
84026	17017.82	14397.37	1770.32	810085
84027	17014.17	14446.25	1770.58	810086
84028	17010.00	14496.60	1770.70	810087
84029	17002.28	14591.27	1771.13	810089
84030	16987.09	14639.28	1771.40	810090
84031	16697.01	14159.37	1776.41	810118

Point No.	Northing	Easting	Elevation	Description
84032	16703.31	14201.75	1776.41	810117
84033	16710.80	14251.30	1776.59	810116
84034	16716.12	14288.90	1776.66	810115
84035	16721.46	14326.87	1776.82	810114
84036	16729.14	14377.61	1776.91	810113
84037	16736.08	14425.27	1777.30	810112
84038	16744.94	14488.16	1777.58	810111
84039	16752.87	14542.99	1777.76	810110
84040	16784.03	14924.38	1774.60	cp106-10-13-09postchk
84041	16883.96	14313.50	1818.67	10-19-09chk
84042	17027.20	14375.29	1770.40	710084
84043	17060.93	14339.48	1770.16	710082
84044	16884.00	14313.49	1818.74	10-19-09chk
84045	17028.29	14372.61	1770.35	710083
84046	17093.47	14306.57	1769.97	710081
84047	17119.95	14280.40	1769.89	710080
510030	16865.24	14408.34	1802.95	10030
510031	16865.70	14472.98	1802.97	10031
510032	16865.94	14527.40	1802.99	10032
510033	16866.32	14576.59	1802.96	10033
510034	16866.63	14629.18	1803.00	10034
510035	16866.90	14689.79	1802.98	10035
510037	16926.42	14385.48	1801.23	10037
510038	16922.14	14440.07	1801.24	10038
510039	16918.42	14490.28	1801.39	10039
510040	16915.24	14532.41	1801.47	10040
510041	16912.13	14574.68	1801.56	10041
510042	16899.47	14612.62	1802.04	10042
510043	16887.38	14648.66	1802.31	10043
510044	16875.35	14684.77	1802.66	10044
510045	16873.38	14690.04	1802.83	10045
510046	16855.40	14690.46	1802.65	10046
510047	16853.32	14690.49	1802.56	10047
510048	16852.61	14688.63	1802.60	10048
510049	16842.33	14632.44	1802.28	10049
510050	16833.36	14580.98	1802.00	10050
510051	16824.82	14531.49	1801.73	10051
510052	16816.73	14478.60	1801.55	10052
510053	16807.31	14415.54	1801.23	10053
510054	16800.34	14368.13	1801.06	10054

Point No.	Northing	Easting	Elevation	Description
510055	16820.48	14694.19	1791.67	10055
510056	16830.37	14712.50	1792.03	10056
510057	16842.57	14719.38	1792.36	10057
510058	16855.05	14720.30	1792.80	10058
510059	16864.30	14719.44	1793.03	10059
510060	16874.25	14720.26	1792.79	10060
510062	16896.75	14712.43	1792.03	10062
510063	16903.04	14704.56	1791.76	10063
510064	16907.15	14694.30	1791.63	10064
510065	16887.00	14718.50	1792.34	10065
510066	16905.55	14715.09	1791.66	10066
510067	16903.67	14749.06	1791.93	10067
510068	16901.38	14792.40	1792.04	10068
510069	16900.31	14822.47	1792.17	10069
510070	16899.20	14854.24	1792.37	10070
510071	16876.77	14853.25	1792.98	10071
510072	16858.30	14852.44	1792.41	10072
510073	16846.63	14835.06	1792.13	10073
510074	16840.70	14803.77	1792.02	10074
510075	16834.91	14772.57	1791.92	10075
510076	16827.98	14736.14	1791.89	10076
510077	16868.59	14764.81	1793.02	10077
510078	16871.30	14795.06	1793.01	10078
510079	16874.34	14828.53	1793.02	10079

DRAWINGS

The following Measurement Drawings, Topographic Survey Drawings and/or Cross-Section Drawings are attached.

1. **CAMU - Phase IIIA Final Interim Closure Cover Soil As-Built, dated 10/19/2009.**

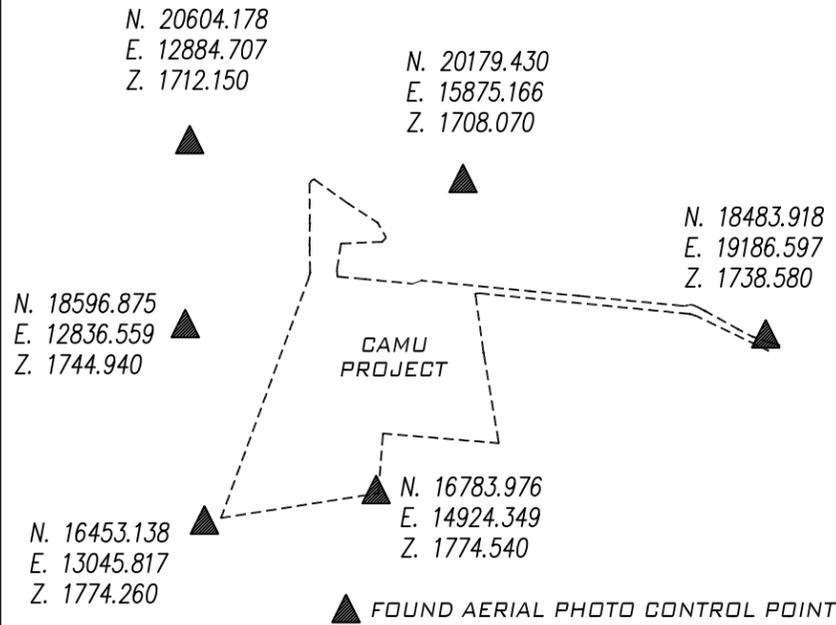
This drawing depicts the Final Interim Closure Cover Soil Surface conditions of Phase IIIA prior to the placement of Geosynthetic Materials. It also contains information regarding the control network utilized and other pertinent survey data. Due to the scale at which this drawing was prepared, the intended correlation representation may not be entirely clear. In ALL cases the Survey Data herein provided takes precedence over any graphical representation(s).

2. **CAMU - Phase IIIA Final Interim Closure Cover Soil Volume, dated 11/03/2009.**

This drawing depicts the Final Interim Closure Cover Soil Surface conditions of Phase IIIA prior to the placement of Geosynthetic Materials and the Final Waste Placement Surface as depicted and reported under ABCS Task Number 2009.10.08.01-B. This Waste Surface was modified to include the Interim Closure Cover Soil As-Built TOE locations so as to accurately calculate the volume of placed cover soil between the Toe of the Waste Surface and the Toe (Edge) of the Cover Soil Placement Also depicted is information regarding the control network utilized and other pertinent survey data. Due to the scale at which this drawing was prepared, the intended correlation representation may not be entirely clear. In ALL cases the Survey Data herein provided takes precedence over any graphical representation(s).

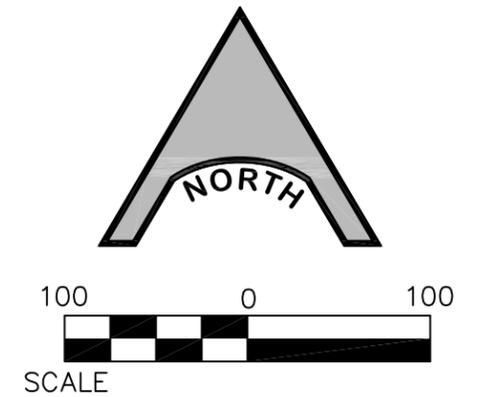
PROJECT CONTROL

1" = 2000'



SURFACE DESCRIPTION

THE SURFACE ILLUSTRATED BELOW REPRESENTS THE FINAL PHASE IIIA INTERIM CLOSURE COVEROIL PLACEMENT AS-BUILT. THIS SURFACE WAS GENERATED USING DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS (ABCS) DURING THE PHASE IIIA INTERIM COVERSOIL VERIFICATION EFFORTS AS PREVIOUSLY REPORTED.



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

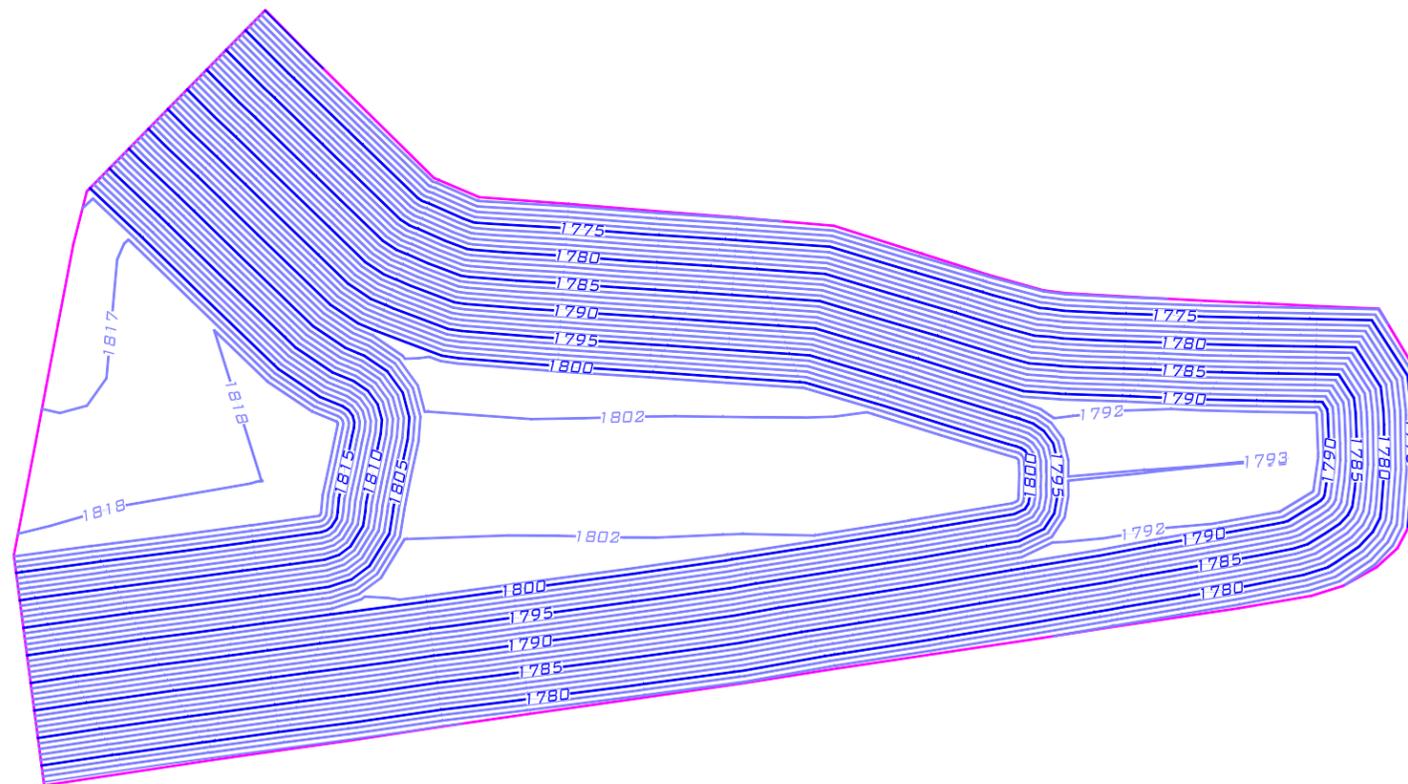
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURFACE 2 LIMITS



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)
*PHASE IIIA FINAL INTERIM CLOSURE
COVER SOIL AS-BUILT*

FIELD SURVEY DATE: OCTOBER 2009
FIELD CREW: C.G. & M.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

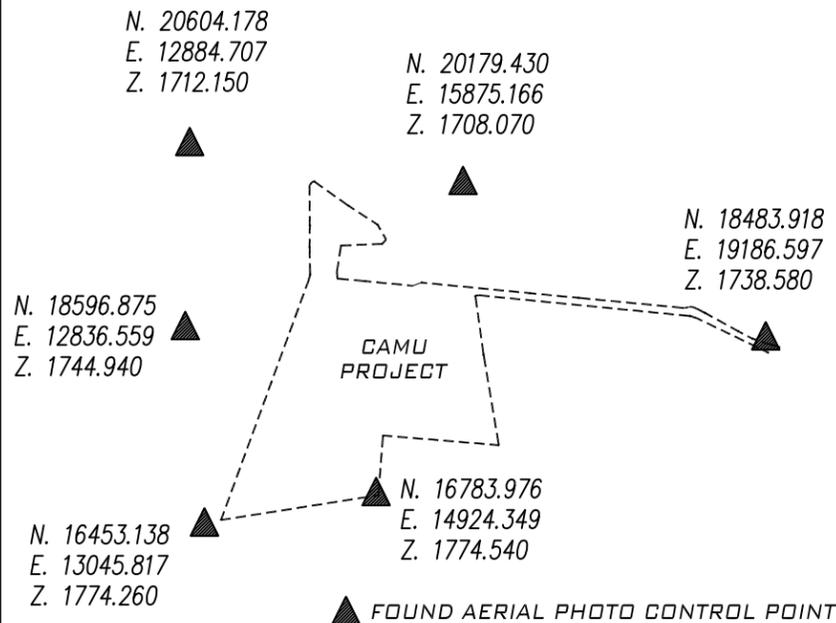
6440 SKY POINT DRIVE
SUITE 140 - PMB 321
LAS VEGAS, NV. 89131
(702) 953-7452
(702) 987-5943 FAX
WWW.AB-CS.COM

Date: October 19, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009.10.01.01-D

Sheet No. 1 of 1

PROJECT CONTROL

1" = 2000'



SURFACE 1

THE SURFACE SHOWN HEREON AS "SURFACE 1" REPRESENTS THE FINAL PHASE IIIA WASTE SURFACE WHICH WILL BE DEPICTED ON A SEPERATE REPORT. THIS SURFACE WAS MODIFIED TO INCLUDE THE INTERIM COVER TOE AS-BUILT LOCATIONS WHICH WAS REQUIRED TO ACCURATELY CALCULATE THE VOLUME OF PLACED COVERSOIL BETWEEN THE TOE OF THE WASTE SURFACE AND THE TOE (EDGE) OF THE COVERSOIL PLACEMENT.

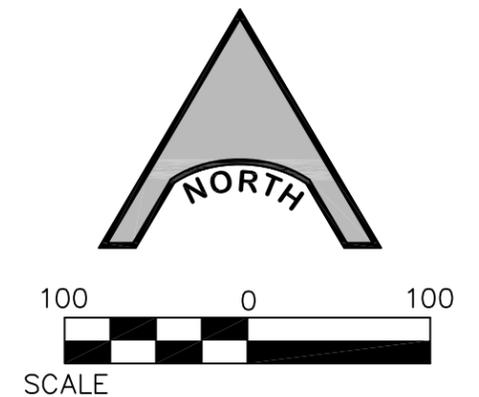
SURFACE 2

THE SURFACE ILLUSTRATED AS "SURFACE 2" REPRESENTS THE FINAL PHASE IIIA INTERIM COVEROIL PLACEMENT AS-BUILT. THIS SURFACE WAS GENERATED USING DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS (ABCS) DURING THE PHASE IIIA INTERIM COVERSOIL VERIFICATION EFFORTS AS PREVIOUSLY REPORTED.

SURFACE VOLUME COMPARISON

A COMPARISON FROM SURFACE 1 TO SURFACE 2 WAS PERFORMED VIA COMPUTER METHODS IN AUTOCAD CIVIL 3D VERSION 2009. THIS COMPARISON RESULTED IN A QUANTITY OF:

FILL: 7,457 CUBIC YARDS



BENCHMARK

CLARK COUNTY BENCHMARK (6C22 2E4), BEING A RIVET AND SQUARE ALUMINUM PLATE IN A CONCRETE CENTERLINE ISLAND, 4' WEST OF THE NOSE IN THE MIDDLE OF SUNSET ROAD, WEST SIDE OF THE INTERSECTION OF BOULDER HIGHWAY AND SUNSET ROAD.

PUBLISHED ELEVATION - 505.816 METERS = 1659.50 FEET
NAVD 1988 DATUM - PUBLISHED (2003)

BASIS OF BEARINGS

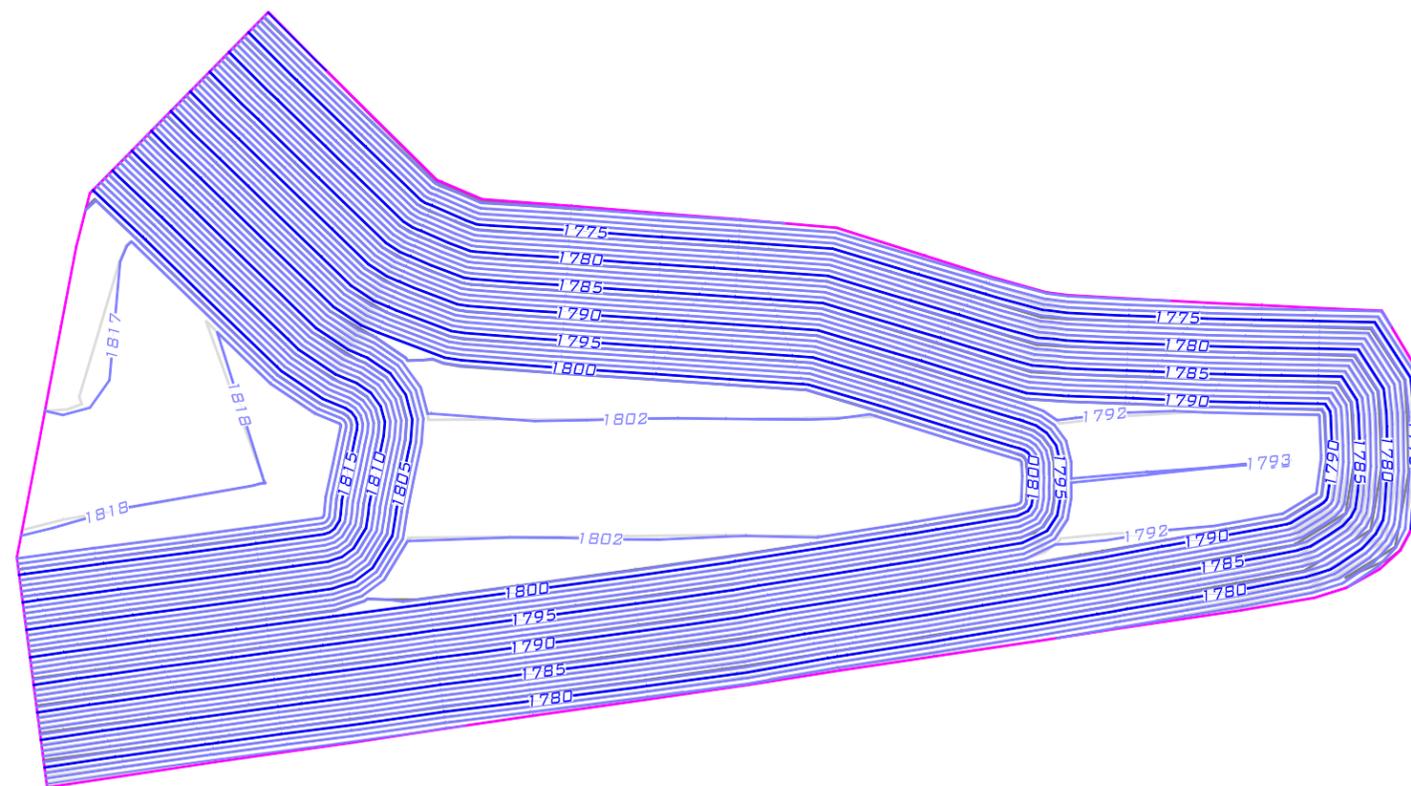
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

THE COORDINATE SYSTEM AND ASSOCIATED BEARING ROTATION INFORMATION WAS ESTABLISHED AND PROVIDED BY PBS&J.

LINE LEGEND

SURFACE 1 - MAJOR CONTOUR	_____
SURFACE 1 - MINOR CONTOUR	_____
SURFACE 2 - MAJOR CONTOUR	_____
SURFACE 2 - MINOR CONTOUR	_____
SURFACE 2 LIMITS	_____



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

**PHASE IIIA FINAL INTERIM CLOSURE
COVER SOIL VOLUME**

FIELD SURVEY DATE: OCTOBER 2009
FIELD CREW: D.G. & M.G.

PROJECT # 2008.06.23.01



ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

6440 SKY POINT DRIVE
SUITE 140 - PMB 321
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Date: November 3, 2009
Drawn: C. Givant
Checked: C. Givant
Task: 2009.10.29.01

Sheet No. 1 of 1

ELECTRONIC FILES

The Compact Disk (CD) included in the pocket at the end of this report contains the following Directories and Files:

PDF Files (.pdf)

The following files are adobe Portable Document Files which can be viewed using a readily available free version of Adobe Acrobat Reader.

1. (Report) - Phase IIIA Final IC As-Built and Volume
2. (Field Notes) - 2009-10-19 (IIIA IC Verifiaction)
3. (Field Notes) - 2009-10-19 (Interim Cover Toe ASB)

CAD Files (.dwg)

The following files are AutoCAD Drawing files created in Civil 3D 2009. Filenames proceeded by “2007” have been exported or “saved down” to a version 2007 drawing file.

1. 2009-11-16 (Phase IIIA) - Final IC As-Built
2. 2009-11-16 (Phase IIIA) - Final IC As-Built - 2007

Coordinate Files (.csv)

The following files are Comma Separated Value Files in the following format:

Point Name, Northing, Easting, Elevation, Description

1. Phase IIIA IC ASB

Raw Data Files (.dc)

The following files are Trimble Data Collector (.DC) files that contain the Raw Field Data.

1. 2009-10-19 (IIIA IC Verifiaction) - CAG
2. 2009-10-19 (Interim Cover Toe ASB)-TG