

**CORRECTIVE ACTION MANAGEMENT UNIT
(CAMU – PHASE IIIA)
FINAL WASTE SURFACE AS-BUILT
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 Waste Surface As-Built

Mr. Gehringer,

This report outlines the results of the Final Waste Surface 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 WASTE SURFACE AS-BUILT
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 Waste Surface 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. 2009-8-1 (Ph2+ph3A Waste ASB Update)-TG.dc – Consists of 63 Pages
2. 2009-10-1 (CAMU Waste As-Built to date)-TG.dc – Consists of 55 Pages
3. 2009-10-11 (CAMU Waste As-Built to date)-TG.dc – Consists of 59 Pages

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
23095	14153.98	16738.68	1789.03	mid
23096	14195.86	16746.64	1789.79	mid
23097	14244.92	16758.29	1791.52	mid
23098	14282.59	16763.14	1791.42	mid
23099	14320.75	16765.81	1790.62	mid
23100	14372.10	16770.98	1790.10	mid
23101	14419.87	16776.00	1789.66	mid
23102	14483.01	16784.24	1789.54	mid
23103	14536.59	16793.38	1790.11	mid
23104	14586.72	16798.39	1789.16	mid
23105	14638.24	16806.58	1789.09	mid
23106	14695.47	16812.79	1788.03	mid
23107	14737.87	16818.56	1787.56	mid
23108	14774.45	16824.52	1787.36	mid
23109	14806.87	16823.79	1785.22	mid
23114	16820.68	14694.12	1790.73	1st Toe
23115	16825.25	14705.34	1790.95	1st Toe
23116	16828.19	14736.21	1790.79	1st Top
23117	16834.95	14772.50	1790.94	1st Top
23118	16840.86	14803.80	1791.02	1st Top
23119	16846.69	14835.00	1791.13	1st Top
23120	14841.82	16828.64	1784.76	mid
23125	14875.95	16842.36	1782.70	mid
23126	16858.39	14852.33	1791.45	1st Top
23127	16876.66	14853.10	1791.98	1st crown
23128	14879.84	16872.49	1783.11	mid
23133	14876.06	16900.19	1783.98	mid

Point No.	Northing	Easting	Elevation	Description
23134	16899.12	14854.08	1791.28	1st Top
23135	14878.36	16909.36	1782.99	mid
23136	14866.32	16918.99	1784.50	mid
23137	14854.72	16923.99	1782.99	mid
23142	14823.02	16926.45	1782.47	mid
23143	16900.36	14822.32	1791.14	1st Top
23144	16901.56	14792.37	1791.02	1st Top
23145	14792.93	16922.08	1784.19	mid
23146	14749.96	16924.17	1783.98	mid
23147	16903.61	14749.05	1790.88	1st Top
23148	16905.40	14715.17	1790.71	1st Top
23149	14716.03	16926.08	1783.81	mid
23150	14698.46	16928.09	1783.47	mid
23151	16907.01	14694.35	1790.59	1st Toe
23152	16902.96	14704.53	1790.76	1st Toe
23153	16896.80	14712.14	1790.95	1st Toe
23154	16887.00	14718.31	1791.29	1st Toe
23155	16874.21	14720.13	1791.63	1st Toe
23156	16864.29	14719.39	1791.94	1st Toe-crown
23157	16855.09	14720.09	1791.68	1st Toe
23158	16842.62	14719.24	1791.29	1st Toe
23159	16830.43	14712.43	1790.93	1st Toe
23160	16868.48	14764.84	1791.97	1st crown
23161	16871.26	14795.01	1791.95	1st crown
23162	16874.39	14828.45	1791.95	1st crown
23163	16855.32	14690.33	1801.62	2nd Top
23164	16853.35	14690.28	1801.53	2nd Top
23165	16852.78	14688.72	1801.49	2nd Top
23166	16866.92	14689.83	1801.99	2nd Crown
23167	16873.29	14689.88	1801.74	2nd Top
23168	16875.18	14684.68	1801.72	2nd Top
23171	16842.53	14632.52	1801.25	2nd Top
23172	16833.47	14581.03	1800.98	2nd Top
23173	16825.06	14531.53	1800.71	2nd Top
23174	16816.83	14478.67	1800.46	2nd Top
23175	16807.42	14415.57	1800.20	2nd Top
23176	16800.50	14368.16	1800.04	2nd Top
23177	16793.08	14317.07	1799.78	3rd Toe
23178	16943.47	14339.66	1799.58	3rd Toe
23179	16928.02	14376.24	1800.08	2nd Top

Point No.	Northing	Easting	Elevation	Description
23180	16926.21	14385.53	1800.14	2nd Top
23181	16922.05	14440.06	1800.27	2nd Top
23182	16918.27	14490.40	1800.39	2nd Top
23183	16915.15	14532.42	1800.48	2nd Top
23184	16911.95	14574.64	1800.59	2nd Top
23185	16899.39	14612.38	1800.99	2nd Top
23186	16887.19	14648.71	1801.34	2nd Top
23187	16866.58	14629.22	1801.94	2nd Crown
23188	16866.25	14576.66	1801.99	2nd Crown
23189	16865.97	14527.54	1801.97	2nd Crown
23190	16865.67	14473.03	1801.98	2nd Crown
23191	16865.30	14408.25	1801.97	2nd Crown
23192	14358.14	16987.01	1783.84	mid
23193	14387.92	16977.93	1783.01	mid
23194	14391.98	16977.30	1782.98	mid
23195	14443.41	16971.38	1783.78	mid
23196	14493.71	16967.13	1784.09	mid
23197	14535.89	16966.80	1783.24	mid
23198	14583.77	16961.97	1783.74	mid
23199	14627.26	16948.24	1783.92	mid
23200	14664.26	16938.68	1783.43	mid
23206	16931.30	14355.64	1799.95	3rd Toe
23207	16915.54	14364.97	1800.46	3rd Toe
23208	16898.34	14367.94	1800.97	3rd Toe
23209	16884.10	14365.55	1801.42	3rd Toe
23210	16865.20	14359.97	1801.98	3rd Toe-crown
23211	16846.87	14357.69	1801.42	3rd Toe
23212	16831.73	14356.80	1800.96	3rd Toe
23213	16808.65	14345.32	1800.28	3rd Toe
23214	16798.59	14332.93	1799.97	3rd Toe
23215	16845.75	14309.04	1817.62	3rd Top
23216	16855.41	14310.79	1817.33	3rd FL
23217	16873.82	14314.36	1817.44	3rd Top
23218	16893.97	14318.16	1817.56	3rd Top
23219	16899.59	14305.23	1817.45	3rd Top
23220	16916.58	14281.03	1817.27	3rd Top
23221	16959.04	14238.57	1816.94	3rd Top
23222	16992.45	14207.38	1816.11	3rd Top
23223	17020.88	14182.76	1814.87	3rd Top
23224	16991.92	14175.35	1815.39	3rd Top

Point No.	Northing	Easting	Elevation	Description
23225	16948.46	14167.08	1815.59	3rd Top
23226	16883.25	14154.56	1816.17	3rd Top
23227	16822.60	14142.84	1817.27	3rd Top
23228	16828.60	14185.01	1817.35	3rd Top
23229	16835.53	14234.60	1817.45	3rd Top
23230	16840.88	14272.16	1817.57	3rd Top
23231	16863.32	14276.79	1816.98	3rd FL
23232	16886.87	14222.64	1816.43	3rd FL
23233	16907.86	14174.23	1815.96	3rd FL
23234	14300.95	16940.84	1806.85	mid
23235	14346.96	16996.87	1782.76	mid
23236	14314.34	17035.71	1780.93	mid
23237	14274.05	16994.93	1800.07	mid
23238	14244.60	17030.39	1798.37	mid
23239	14282.37	17068.92	1780.42	mid
23240	14260.41	17099.72	1778.17	mid
23241	17118.88	14279.40	1769.20	toe-1
23243	14220.48	17059.16	1797.02	mid
23408	16704.82	14201.46	1775.78	933117
23409	16712.12	14251.04	1775.98	933116
23410	16723.03	14326.41	1776.28	933114
23411	16730.39	14377.43	1776.53	933113
23412	16737.35	14425.01	1776.66	933112
23413	16746.52	14488.05	1776.98	933111
23414	16754.53	14542.75	1777.05	933110
23415	16769.71	14644.30	1776.63	933108
23416	16778.14	14701.03	1776.47	933107
23420	17005.49	14538.46	1770.43	933088
23421	17012.71	14446.09	1769.97	933086
23422	17060.13	14338.47	1769.52	933082
23423	17092.58	14305.65	1769.40	933081
23430	16827.04	14898.18	1774.46	733102
23431	16868.05	14908.28	1773.57	733101
23432	16922.14	14908.50	1772.74	733099
23433	16954.62	14887.98	1772.45	733098
23434	16956.69	14855.69	1772.10	733097
23435	16958.55	14823.88	1771.71	733096
23436	16959.96	14794.07	1771.57	733095
23437	16962.13	14751.60	1771.32	733094
23438	16964.14	14717.79	1771.11	733093

Point No.	Northing	Easting	Elevation	Description
23439	16901.88	14908.88	1773.04	733100
23440	16801.81	14852.04	1775.33	733103
23441	16795.42	14811.91	1775.63	733104
23442	16790.49	14780.48	1775.89	733105
23443	16784.76	14743.94	1776.17	733106
23444	16762.08	14592.53	1776.85	733109
23446	16698.68	14159.21	1775.59	733118
23448	16964.84	14705.56	1771.14	733092
23449	16974.47	14675.09	1770.98	733091
23450	16985.98	14638.77	1770.79	733090
23451	17001.11	14590.95	1770.55	733089
23452	17008.80	14496.46	1770.19	733087
23453	17016.67	14396.96	1769.88	733085
23454	17027.34	14371.86	1769.74	733083
23455	17025.95	14374.72	1769.71	733084
23456	17118.98	14279.48	1769.14	733080

DRAWINGS

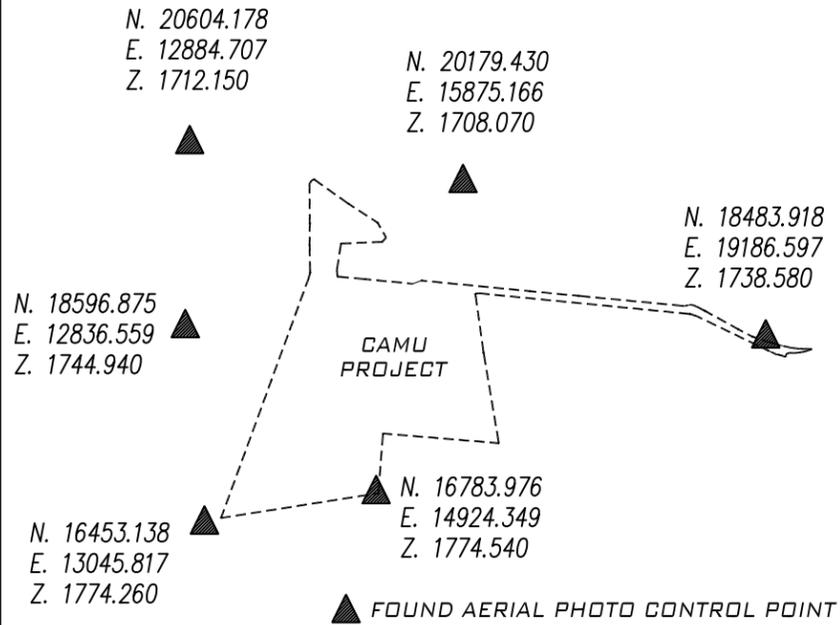
The following Measurement Drawings, Topographic Survey Drawings and/or Cross-Section Drawings are attached.

1. **CAMU - Phase IIIA Final Waste As-Built, dated 10/12/2009.**

This drawing depicts the Final Waste Surface conditions of Phase IIIA prior to the placement of Interim Closure Cover soil. 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).

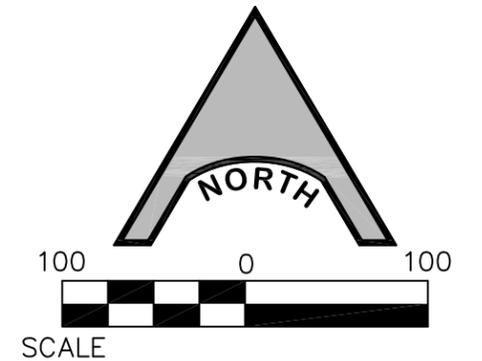
PROJECT CONTROL

1" = 2000'



SURFACE DETAILS

THE SURFACE SHOWN BELOW WAS GENERATED BASED UPON AS-BUILT DATA COLLECTED BY ABSOLUTE BOUNDARY & CONTROL SOLUTIONS. IT REPRESENTS THE FINAL CAMU PHASE IIIA WASTE PLACEMENT.



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

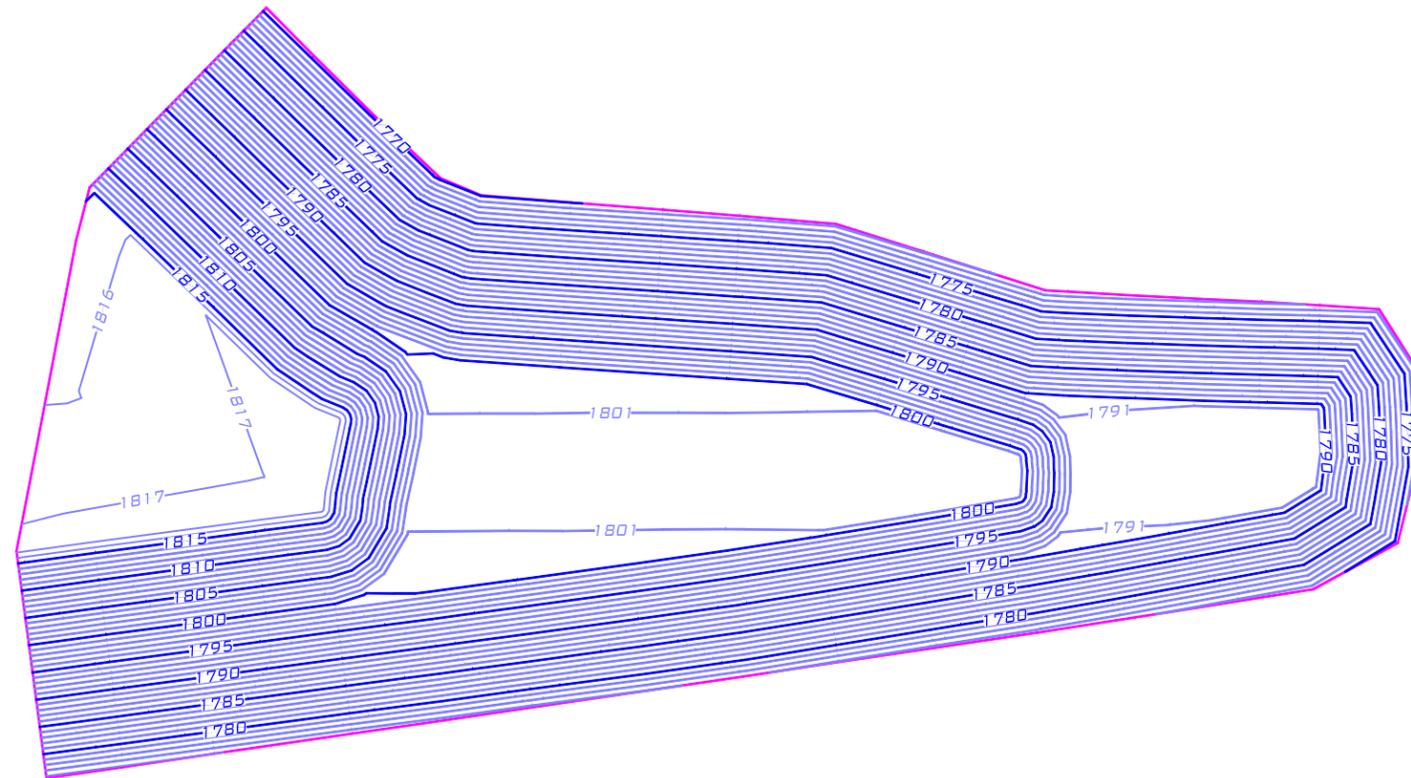
SOUTH 85°36'52" WEST, BEING THE BEARING BETWEEN CLARK COUNTY GIS CONTROL POINTS "CC-GIS 848" AND "CC-GIS W51", AS SHOWN ON THE MAP IN FILE 88 OF SURVEYS, PAGE 53, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

COORDINATE SYSTEM

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

LINE LEGEND

- MAJOR CONTOUR
- MINOR CONTOUR
- SURVEY LIMITS



NO.	REVISION	DATE
△		
△		
△		
△		

CORRECTIVE ACTION MANAGEMENT UNIT - (CAMU)

PHASE IIIA

FINAL WASTE AS-BUILT

FIELD SURVEY DATE: JULY THRU OCTOBER, 2009
FIELD CREW: C.G., M.C., T.G.

PROJECT # 2008.06.23.01

ABSOLUTE BOUNDARY & CONTROL SOLUTIONS

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

Date:	October 12, 2009
Drawn:	C. Givant
Checked:	C. Givant
Task:	2009.10.08.01
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 Waste Surface As-Built
2. (Field Notes) - 2009-8-1 (Ph2+ph3A Waste ASB Update)
3. (Field Notes) - 2009-10-1 (CAMU Waste As-Built to date)
4. (Field Notes) - 2009-10-11 (CAMU Waste As-Built to date)

CAD Files (.dwg)

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

1. 2009.10.12 (IIIA - Final Waste)
2. 2009.10.12 (IIIA - Final Waste) - 2007

Coordinate Files (.csv)

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

Point Name, Northing, Easting, Elevation, Description

1. IIIA Final Waste Surface

Raw Data Files (.dc)

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

1. 2009-8-1 (Ph2+ph3A Waste ASB Update)-TG
2. 2009-10-1 (CAMU Waste As-Built to date)-TG
3. 2009-10-11 (CAMU Waste As-Built to date)-TG