UNITED STATES AND MEXICO

Ciudad Juarez, Chihuahua September 30, 2009

JOINT REPORT OF THE PRINCIPAL ENGINEERS TO DELINEATE THE INTERNATIONAL BOUNDARY ON THE 2008 AERIAL PHOTOGRAPHIC MOSAIC OF THE RIO GRANDE

To the Honorable Commissioners
International Boundary and Water Commission
United States and Mexico
El Paso, Texas and Ciudad Juarez, Chihuahua

Sirs:

Pursuant to your instructions, we are pleased to report to you regarding the delineation of the International Boundary Line on the aerial photographic mosaic of the Rio Grande prepared by the Commission in compliance with Article II, paragraph C, of the "Treaty to Resolve Pending Boundary Differences and Maintain the Rio Grande and Colorado River as the International Boundary," dated November 23, 1970, also referred to in this document as the "1970 Boundary Treaty".

1. <u>DESCRIPTION OF WORK</u>

One hundred and twelve (112) photomaps of the aerial photographic mosaic of the Rio Grande have been prepared on the basis of the 2004 ortho-rectified imagery of the Rio Grande. The Commission received technical expertise from the United States Geological Survey, which created a template that was used to prepare the 2008 Aerial Photographic Mosaic of the Rio Grande. The Mexican Section was assigned the responsibility of producing the aerial photographic mosaic of the Rio Grande in final form. The final version of the photomaps was prepared by Mexico's National Institute of Statistics and Geography, using a Transverse Mercator Projection on a scale of 1:25,000. In the margins of each photomap, this Transverse Projection has been marked at intervals of one kilometer, and the geographic grid has been marked at intervals of 2 minutes, 30 seconds. The United States Section was assigned the responsibility of taking aerial photographs and providing the digital images at a 1:5,000 scale that were used to delineate the boundary line. We consider that this division of work satisfactorily fulfills the provision in the 1970 Boundary Treaty that each of the Governments shall bear half of the costs and other expenses for the surveys and photomaps relating to the boundaries.

2. <u>DELINEATION OF THE INTERNATIONAL BOUNDARY LINE ON THE 2008 AERIAL PHOTOGRAPHIC MOSAIC OF THE RIO GRANDE BASED ON THE 2004 PHOTOMAPS</u>

The location of the International Boundary Line of the Rio Grande was carefully and jointly determined by the two Sections of the Commission using the digital imagery at a scale of 1:5,000, marking it along the middle of the channel occupied by normal flow; and where two or more

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channels existed, it was marked along the middle of the channel with the greater width over its length, in accordance with the provisions of Article II, paragraph A, of the 1970 Boundary Treaty. The International Boundary delineated on the 1:5,000-scale digital images was transferred to 1:25,000-scale photomaps. Each Section of the Commission selected the geographical features that would be shown in its territory, which are identified by the proper names used in the respective country.

With respect to Amistad and Falcon International Reservoirs, we have delineated the International Jurisdictional Line in accordance with Commission Minutes No. 199 and No. 232 entitled, "Establishment of Jurisdictional Line in Falcon Reservoir," dated December 15, 1953, and "Demarcation of a Jurisdictional Line in Amistad Reservoir," dated May 9, 1968, respectively, pursuant to the stipulations of Article 21 of the "Treaty Between the United States of America and Mexico for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande," signed February 3, 1944.

2.1 <u>RESOLUTION OF ISSUES IN REACHES LEFT PENDING IN THE 1989 AERIAL PHOTOGRAPHIC MOSAIC OF THE RIO GRANDE APPROVED UNDER MINUTE NO. 278</u>

With this Joint Report of the Principal Engineers, we recognize the reaches of the Rio Grande from the 1989 Aerial Photographic Mosaic of the Rio Grande developed with images taken in 1982-83 that were pending approval by the Commission under Minute No. 278, and recommend accepting the location of the boundary line in the Rio Grande, as identified in the 2004 ortho-rectified imagery used to prepare the 2008 Aerial Photographic Mosaic of the Rio Grande.

We recognize the changes in the reaches of the Rio Grande, as per the 1976 Aerial Photographic Surveys, approved under Minute No. 253, in comparison with the Aerial Photographic Survey of 1982-83, approved under Minute No. 278, represent the first cases in which Article III of the 1970 Boundary Treaty is being applied, and further recognize that neither country restored the river to its prior position. The reaches along the Rio Grande that were pending approval where shifts in the river have occurred, should be addressed in accordance with the provisions of Article III of the 1970 Boundary Treaty and the location of the river becomes the International Boundary Line as shown in the 2008 Aerial Photographic Mosaic of the Rio Grande.

In order to quantify the area of land that has changed from one country to the other, the areas were calculated and a table was developed quantifying each area as shown in APPENDIX I of this Joint Report, which shows the transfer of 63.53 acres (25.71 hectares) from Mexico to the United States and 107.81 acres (43.63 hectares) from the United States to Mexico at the locations listed in APPENDIX I of this Joint Report. We recommend that, in accordance with Article III of the 1970 Boundary Treaty, sovereignty over the tracts of land that according to APPENDIX I changed for each country should pass to the country on whose side of the river said areas ended up, as shown in the 2008 Aerial Photographic Mosaic of the Rio Grande.

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2.2 <u>CASES OF REACHES WHERE THE LOCATION OF THE INTERNATIONAL BOUNDARY LINE REMAINS PENDING ON THE NEW 2008 AERIAL PHOTOGRAPHIC MOSAIC OF THE RIO GRANDE DEVELOPED WITH THE 2004 ORTHO-RECTIFIED IMAGES</u>

In the reaches of the Rio Grande where we recognize that the location of the International Boundary Line has shifted, its delineation on the main channel of the river is pending, and we have placed the following note on the corresponding photomaps of the 2008 Aerial Photographic Mosaic of the Rio Grande developed with the 2004 ortho-rectified images:

"The location of the International Boundary Line in this reach is pending the judgment of the International Boundary and Water Commission, United States and Mexico, under the provisions of the 1970 Boundary Treaty. The line shown corresponds to that approved under Minute No. 278."

The reaches where the Rio Grande has changed its course causing areas of land to shift from one country to the other are listed in APPENDIX II of this Joint Report, which identifies the 138 islands and/or cuts in the international boundary that are pending approval by the Commission on the 2008 Aerial Photographic Mosaic of the Rio Grande. In APPENDIX II, the table shows 67 changes with a total of 1,251.21 acres (506.34 hectares) from the United States to Mexico, and 71 changes with a total of 1,275.9 acres (516.34 hectares) from Mexico to the United States. We recognize that an evaluation is pending to determine if rectification or an official transfer of these areas is required in accordance with Article III of the 1970 Boundary Treaty.

We have made a complete review of each of the photomaps that make up the 2008 Aerial Photographic Mosaic of the Rio Grande, and we find that the International Boundary delineated in the Rio Grande, as verified by former United States Commissioner Carlos Marin and former Mexican Commissioner J. Arturo Herrera Solis, is outlined with precision, in accordance with the stipulations of the 1970 Boundary Treaty.

A set of originals in digital format, a set in geographic information system format, and 10 copies of each of the 2008 Aerial Photographic Mosaic of the Rio Grande have been prepared for each Section of the Commission.

RECOMMENDATIONS IN CONFORMITY WITH THE 1970 BOUNDARY TREATY

Respectfully, we recommend to the Commissioners the following:

A. That the changes that were pending from the 1989 Aerial Photographic Mosaic of the Rio Grande developed with the photomaps of the 1982-1983 ortho-rectified images be accepted, and based on these changes, as referenced in paragraph 2.1 of this Joint Report, sovereignty over 63.53 acres (25.71 hectares) be transferred from Mexico to the United States and sovereignty over 107.81 acres (43.63 hectares) be transferred from the United States to Mexico at the locations listed in APPENDIX I of this Joint Report.

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- B. That according to point A above, the United States should receive a credit of 44.28 acres (17.92 hectares) that will remain pending and to be compensated to the United States in future adjustments of the International Boundary Line within the lands adjacent to the Rio Grande in accordance with Article III of the 1970 Boundary Treaty.
- C. That there remain 138 pending cases where the International Boundary Line has changed on the 2008 Aerial Photographic Mosaic of the Rio Grande using the 2004 ortho-rectified imagery as specified in Section 2.2 of this Joint Report.
- D. That the delineation of the International Boundary on the 2008 Aerial Photographic Mosaic of the Rio Grande, which consists of the 112 photomaps of the Rio Grande taken in the year 2004, in compliance with Article II, paragraph C, of the 1970 Boundary Treaty, be approved.

Respectfully,

Alfredo J. Riera

Principal Engineer

United States Section

Luis Antonio Rascón Mendoza

Principal Engineer
Mexican Section

INTERNATIONAL BOUNDARY AND WATER COMMISSION UNITED STATES AND MEXICO

APPENDIX I OF THE JOINT REPORT OF THE PRINCIPAL ENGINEERS TO DELINEATE THE INTERNATIONAL BOUNDARY ON THE 2008 AERIAL PHOTOGRAPHIC MOSIAC OF THE RIO GRANDE

The following table lists the locations of the changes and their areas in acres (ac) and hectares (ha) of the islands and/or cut(s) in the photomaps of the 2008 Aerial Photographic Mosaic of the Rio Grande in the reaches of the International Boundary Line that were pending approval under Minute No. 278 and that changed for each country.

Island/Cut	Photomap	Location o	on of change Areas that transferre				to:
	Number	Longitude	Latitude	Mexico		United States	
		Longitude Latitude		ac	ha	ac	ha
Cut Red Light	96	105° 09' 56.056"	30° 46' 35.058"			42.00	17.00
Cut La Rata	88	104° 41′ 42.117″	30° 02' 12.264"			8.65	3.50
1 Island	29 y 30	99° 30' 24.105"	27° 21' 15.388"	10.38	4.20		
2 Island	32	99° 35' 02.101"	27° 36' 16.799"	10.46	4.23		
5 Island	34	99° 45' 18.477"	27° 42' 40.298"	55.42	22.43		
6 Island	35	99° 49' 29.136"	27° 45' 54.532"	15.69	6.35		
7 Island	43	100° 30' 30.843"	28° 42' 36.460"			4.98	2.02
8 Island	45	100° 38' 48.879"	28° 58' 19.119"	5.98	2.42		
13 Island	19	99° 09' 12.306"	26° 31' 51.296"			5.10	2.06
14 Island	19	99° 09' 42.242"	26° 32' 02.290"	9.88	4.00		
15 Island	17 y 18	99° 05' 10.200"	26° 24' 04.058"			2.80	1.13
	Total					63.53	25.71

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APPENDIX II OF THE JOINT REPORT OF THE PRINCIPAL ENGINEERS TO DELINEATE THE INTERNATIONAL BOUNDARY ON THE 2008 AERIAL PHOTOGRAPHIC MOSAIC OF THE RIO GRANDE

The following table shows the locations of the changes and their areas in acres (ac) and hectares (ha) of the island and/or cuts in the photomaps of the 2008 Aerial Photographic Mosaic of the Rio Grande that are pending the location of the International Boundary Line of the Rio Grande that need to be addressed in accordance with the 1970 Boundary Treaty.

Island/Cut	Dhotomon	Areas that changed to:					
	Photomap Number	Longitude	Latitude	Mexi	со	United States	
		Longitude	Latitude	ac	ha	ac	ha
1 Island	170-169	99° 26' 0.657"	27° 12' 38.398"			8.42	3.41
2 Island	151	100° 39' 45.507"	29° 03' 23.080"	5.14	2.08		
3 Island	150-149	100° 45' 56.557"	29° 11' 23.213"	2.40	0.97		
4 Island	140	101° 45' 23.619"	29° 46' 44.289"	11.82	4.78		
5 Island	140	101° 47' 39.56"	29° 46' 45.99"			5.72	2.31
6 Island	139	101° 49' 41.134"	29° 47' 20.030"	10.49	4.25		
7 Cut	139	101° 53' 00.072"	29° 47' 38.983"			12.61	5.10
8 Cut	132	102° 43' 58.698"	29° 38' 29.533"			3.2	1.29
9 Cut	130-129	102° 50' 34.787"	29° 21' 47.296"			1.42	0.57
10 Cut	127-128	102° 56' 44.065"	29° 11' 06.375"			13.10	5.30
11 Cut	127-128	102° 57' 08.704"	29° 10' 27.786"			12.85	5.20
12 Cut	127-128	102° 57' 53.728"	29° 10' 53.374"	4.70	1.90		
13 Cut	127	103° 00' 44.565"	29° 08' 15.608"			27.29	11.04
14 Cut	127	103° 00' 51.000"	29° 08' 03.248"	21.67	8.77		
15 Cut	127	103° 00' 47.675"	29° 07' 39.575"			35.41	14.33
16 Cut	127-126	103° 01' 09.392"	29° 07' 29.706"	34.26	13.86		
17 Cut	126	103° 01' 33.194"	29° 07' 3.959"			11.39	4.61
18 Cut	126	103° 01' 56.912"	29° 06' 53.005"	7.40	2.99		
19 Cut	126	103° 02' 10.535"	29° 06' 45.197"	14.13	5.72		
20 Cut	126	103° 02' 02.554"	29° 06' 25.980"			26.28	10.64
21 Cut	126	103° 03' 00.532"	29° 05' 56.399"	5.29	2.14		
22-Island	125	103° 10' 21.011"	28° 58' 48.305"	3.59	1.45		
23 Cut	125	103° 10' 30.176"	28° 58' 41.507"			4.84	1.96
24 Cut	125	103° 10' 43.966"	28° 58' 48.263"	26.89	10.88		
25 Cut	125-124	103° 14' 12.869"	28° 58' 58.923"			8.90	3.60
26 Cut	124	103° 15' 06.205"	28° 58' 55.748"	8.94	3.62		
27 Cut	124	103° 15' 28.679"	28° 59' 25.318"			9.69	3.92

1-1- 4-	Photomap	Location o	of change	Areas that changed to:				
Island/Cut	Number	Longitude	Latitude		cico	United	States	
20.0.4	404			ac	ha	ac	ha	
28 Cut	124	103° 16' 46.149"	28° 58' 39.454"			5.38	2.18	
29 Cut	124	103° 17' 13.635"	28° 58' 44.393"			27.63	11.18	
30 Cut	124	103° 17' 06.067"	28° 58' 56.456"	3.35	1.36			
31 Cut	124	103° 17' 27.422"	29° 00' 13.217"			4.54	1.84	
32 Cut	124	103° 18' 04.175"	29° 00' 26.544"	14.88	6.02			
33 Cut	124	103° 18' 17.745"	29° 00' 21.332"			4.67	1.89	
34 Cut	124	103° 18' 45.902"	29° 00' 47.888"	5.43	2.20			
35 Cut	124	103° 20' 00.304"	29° 01' 43.172"			5.47	2.21	
36 Cut	124	103° 19' 44.639"	29° 01' 52.275"	11.65	4.71			
37 Cut	124	103° 20' 13.122"	29° 02' 37.138"			4.28	1.73	
38 Cut	124-123	103° 20' 30.197"	29° 02' 43.194"	8.67	3.51			
39 Cut	123	103° 20' 45.770"	29° 02' 39.979"			25.69	10.40	
40 Cut	123	103° 21' 13.136"	29° 01' 23.482"			8.78	3.55	
41 Cut	123	103° 22' 40.853"	29° 01' 24.925"			4.75	1.92	
42 Cut	123	103° 23' 15.816"	29° 01' 23.679"			4.37	1.77	
43 Cut	123	103° 23' 16.746"	29° 01' 57.319"	3.66	1.48			
44 Cut	123	103° 24' 10.841"	29° 01' 59.692"	3.57	1.44			
45 Cut	123	103° 24' 31.976"	29° 02' 21.077"	7.40	2.99			
46 Cut	123	103° 24' 57.821"	29° 02' 18.459"			4.87	1.97	
47 Cut	123	103° 25' 11.717"	29° 02' 32.049"	20.01	8.10			
48 Cut	123	103° 25' 48.221"	29° 02' 49.460"	15.09	6.11			
49 Cut	123	103° 25' 59.596"	29° 03' 09.637"			16.76	6.78	
50 Cut	123	103° 26' 25.740"	29° 03' 28.837"			5.24	2.12	
51 Cut	123	103° 27' 34.122"	29° 04' 03.682"			3.08	1.25	
52 Cut	123	103° 27' 46.340"	29° 04' 00.196"	9.54	3.86			
53 Cut	123	103° 28' 33.415"	29° 05' 23.86"	9.77	3.95			
54 Cut	123	103° 28' 50.036"	29° 05' 32.131"			11.90	4.82	
55 Cut	122	103° 29' 32.643"	29° 06' 20.394"			6.11	2.47	
56 Cut	122	103° 29' 46.775"	29° 06' 32.041"			9.95	4.03	
57 Cut	122	103° 30' 08.916"	29° 06' 34.924"	111.52	45.13			
58 Cut	122	103° 30' 15.758"	29° 07' 3.177"			57.51	23.27	
59 Cut	122	103° 30' 41.345"	29° 07' 12.464"	18.77	7.60			
60 Cut	122	103° 31' 11.298"	29° 07' 13.718"			19.61	7.94	
61 Cut	122	103° 31' 28.366"	29° 07' 22.774"	12.52	5.07			
62 Cut	122	103° 31' 24.878"	29° 07' 55.524"			2.61	1.06	

	Photomap	Areas that changed to:					
Island/Cut	Number	Longitude Latitude		Mexico		United States	
		Longitudo	Latitude	ac	ha	ac	ha
63 Cut	122	103° 31' 24.321"	29° 08' 6.705"	7.25	2.93		
64 Cut	122	103° 32' 04.033"	29° 08' 31.513"	5.85	2.37		
65 Cut	122	103° 32' 31.392"	29° 08' 43.018"	19.80	8.01		
66 Cut	122	103° 33' 09.563"	29° 08' 50.724"			5.97	2.42
67 Cut	122	103° 33' 20.701"	29° 09' 25.692"			11.21	4.54
68 Cut	122	103° 33' 35.287"	29° 09' 18.836"	4.53	1.83		
69 Cut	122	103° 34' 10.288"	29° 09' 14.807"	29.52	11.95		
70 Cut	122	103° 34' 47.445"	29° 08' 58.765"			3.66	1.48
71 Cut	122	103° 35' 10.711"	29° 08' 59.928"	7.37	2.98		
72 Cut	120	103° 46' 38.647"	29° 15' 04.730"			5.63	2.28
73 Cut	120	103° 46' 44.407"	29° 15' 17.498"	3.25	1.32		
74 Cut	120	103° 48' 29.298"	29° 16' 06.419"			1.43	0.58
75 Cut	120	103° 50' 32.705"	29° 16' 43.916"	3.29	1.33		
76 Island	120	103° 50' 50.724"	29° 16' 45.989"			3.26	1.32
77 Island	120	103° 51' 39.515"	29° 16' 47.734"	2.03	0.82		
78 Cut	120-119	103° 53' 30.554"	29° 16' 51.593"	4.03	1.63		
79 Cut	117	104° 07' 36.804"	29° 22' 44.079"			24.29	9.83
80 Cut	117	104° 07' 55.757"	29° 22' 55.184"	11.88	4.81		
81 Cut	117	104° 08' 13.599"	29° 22' 59.298"	2.57	1.04		
82 Cut	117	104° 08' 22.063"	29° 22' 46.135"			34.54	13.98
83 Cut	117	104° 08' 35.973"	29° 22' 51.114"	8.08	3.27		
84 Cut	117	104° 08' 34.595"	29° 23' 09.171"	7.34	2.97		
85 Cut	117	104° 08' 47.364"	29° 23' 10.937"			19.13	7.74
86 Cut	117	104° 09' 4.828"	29° 23' 20.539"	10.10	4.09		
87 Cut	117	104° 09' 29.405"	29° 23' 27.379"			23.43	9.48
88 Cut	117	104° 09' 54.137"	29° 23' 34.789"			3.17	1.28
89 Cut	117	104° 09' 55.453"	29° 24' 01.405"	12.70	5.14		
90 Cut	117	104° 10' 08.922"	29° 24' 11.195"			24.80	10.04
91 Cut	117	104° 10' 14.403"	29° 24' 26.079"	14.32	5.80		
92 Cut	117	104° 10' 37.391"	29° 24' 36.659"			20.62	8.34
93 Cut	117	104° 10' 55.961"	29° 25' 05.696"			49.62	20.08
94 Cut	117	104° 10' 52.318"	29° 25' 21.991"	4.42	1.79		
95 Cut	117	104° 11' 05.737"	29° 25' 42.992"			12.70	5.14
96 Cut	117	104° 11' 36.733"	29° 26' 21.944"	13.67	5.53		
97 Cut	117	104° 11' 48.708"	29° 26' 34.180"			4.30	1.74

	Photomap	Location o	of change	Α	Areas that changed to:				
Island/Cut	Number	Longitude Latitude -	Mexico		United States				
				ac	ha	ac	ha		
98 Cut	117-116	104° 12' 01.626"	29° 26' 39.873"	3.19	1.29				
99 Cut	117-116	104° 12' 14.364'	29° 26' 45.320"	•		4.24	1.72		
100 Cut	116	104° 12' 37.586"	29° 26' 57.706"			3.22	1.30		
101 Cut	116	104° 12' 53.916"	29° 27' 13.922"			3.11	1.26		
102 Cut	116	104° 12' 46.116"	29° 27' 51.957"	3.01	1.22				
103 Cut	116-115	104° 12' 45.400"	29° 29' 02.772"			19.66	7.96		
104 Cut	116-115	104° 16' 01.257"	29° 30' 50.499"			11.46	4.64		
105 Cut	116-115	104° 16' 34.186"	29° 31' 02.605"			12.00	4.86		
106 Cut	116-115	104° 33' 10.938"	29° 44' 17.963"	2.84	1.15				
107 Cut	112	104° 33' 01.693"	29° 44' 26.348"	1.44	0.58				
108 Cut	112	104° 33' 05.767"	29° 44' 28.530"			5.36	2.17		
109 Cut	112	104° 35' 22.800"	29° 47' 47.351"	0.93	0.38				
110 Cut	111	104° 37' 16.569"	29° 50' 35.117"			2.40	0.97		
111 Cut	110	104° 40' 50.377"	29° 55' 44.700"	31.83	12.88				
112 Cut	110	104° 41' 00.652"	29° 58' 06.651"			19.89	8.05		
113 Cut	110	104° 41' 30.650"	29° 59' 28.055"	18.13	7.34				
114 Cut	110	104° 41' 24.426"	29° 59' 49.692"			84.99	34.39		
115 Cut	110-109	104° 42' 03.510"	30° 01' 18.791"	55.92	22.63				
116 Cut	109	104° 42' 23.198"	30° 02' 57.683"			4.45	1.80		
117 Cut	109	104° 41' 18.203"	30° 05' 10.855"	7.65	3.10				
118 Cut	106	104° 45' 23.346"	30° 16' 19.797"			8.02	3.24		
119 Cut	106	104° 45' 37.443"	30° 17' 05.839"			171.93	69.58		
120 Cut	106	104° 48' 42.973"	30° 20' 23.324"			69.27	28.03		
121 Cut	105	104° 52' 06.342"	30° 27' 39.447"	3.39	1.37				
122 Cut	104	104° 52 55.117"	30° 31' 42.302"			60.34	24.42		
123 Cut	104	104° 53 45.582"	30° 33' 34.046"			15.87	6.42		
124 Cut	104	104° 55' 11.495"	30° 35' 41.606"			38.82	15.71		
125 Cut	104	104° 56' 12.147"	30° 36' 13.918"			47.57	19.25		
126 Cut	104	104° 56' 57.359"	30° 36' 16.751"	27.50	11.13				
127 Cut	103	104° 59' 42.944"	30° 40' 10.114"			26.73	10.82		
128 Cut	103	105° 00' 19.209"	30° 41' 01.282"			3.23	1.31		
129 Island	102-101	105° 08' 01.797"	30° 45' 09.389"	223.14	90.30				
130 Cut	101-100	105° 16' 26.923"	30° 48' 28.250"			1.26	0.51		
131 Cut	100-99	105° 18' 42.878"	30° 48' 47.303"	2.55	1.03				
132 Cut	99	105° 19' 41.806"	30° 49' 34.829"	23.83	9.64				

Island/Cut	Photomap	Location o	of change	Areas that changed to:			
	Number	lumber	Longitude Latitude -	Mexico		United States	
		Longitude		ac	ha	ac	ha
133 Cut	99	105° 20' 09.160"	30° 50' 01.226"	3.79	1.53		
134 Cut	99	105° 21' 11.233"	30° 50' 10.818"	5.33	2.16		
135 Cut	99	105° 22' 35.753"	30° 50' 58.764"	224.75	90.95		
136 Cut	99	105° 23' 50.924"	30° 52' 35.287"	4.42	1.79		
137 Cut	98	105° 26' 56.534"	30° 55' 04.379"	2.68	1.08		
138 Cut	98	105° 29' 19.664"	30° 56' 30.817"	20.34	8.23		
Total			1251.21	506.34	1275.90	516.34	