

## APPENDIX 1. DESCRIPTIONS OF STRATIGRAPHIC SECTIONS.

This appendix presents descriptions of five stratigraphic sections of the lower coarse unit of the axial-fluvial facies of the Palomas Formation. These are located in the southeast part of the Cuchillo 7.5-minute quadrangle, in the city of Truth or Consequences. Colors of sediment are based on visual comparison of dry samples to the Munsell Soil Color Charts (Munsell Color, 1994). Grain sizes follow the Udden-Wentworth scale for clastic sediments (Udden, 1914; Wentworth, 1922) and are based on field estimates. Sand textures are abbreviated as follows: very fine-lower, vfL; very fine-upper, vfU; fine-lower, fL; fine-upper, fU; medium-lower, mL; medium-upper, mU; coarse-lower, cL; coarse-upper, cU; very coarse-lower, vcL; very coarse-upper, vcU. Pebble sizes are subdivided as shown in Compton (1985). The term “clast(s)” refers to the grain size fraction greater than 2 mm in diameter. Descriptions of bedding thickness follow Ingram (1954). Each stratigraphic section was measured upsection from unit 1. Numerical unit designations were established upsection for measured sections but are listed in descending stratigraphic order. GPS localities for sites are in UTM's (NAD 83, zone 13); horizontal errors for the sites are 4-8 m.

**West Poplar Street section.** This section consists of axial fluvial facies of the Palomas Formation. Abundant gravel beds in lower 7 m (lower coarse unit), but strata above consist mainly of 11 m of sand that grade up into silty sand and sand. Measured in Truth or Consequences (SW1/4 NW1/4 SW1/4 of Section 33, T13S, R4W; SE1/4 NE1/4 SE1/4 of Sec. 32, T13S, R4W; SE1/4 NE1/4 NE1/4 of Sec. 32, T13S, R4W). Measured and described by Andy Jochems on February 10, 2016, using an abney level and Jacob's staff.

Unit	Description	Thickness (m) (Unit) (Total)	
<b>Total section</b>		22.0	
<b>PALOMAS FORMATION, AXIAL FACIES</b>			
<b>Upper axial facies (&lt;10% gravel) (Tpau)</b>			
<i>Top of stratigraphic section at wpt 609 (UTM coord. 288655 m E, 3669213 m N); long-shot error from wpt 608 ≈ 3-5 m.</i>			
WP-H	<b>Opal</b> – White (N/), strongly carbonate-cemented, crystalline carbonate bed 10-50 cm thick. 1.6-1.8 m below top of unit is middle part of ~3 m thick mudstone constituting “Repenning” fossil locality (aka Truth or Consequences local fauna/LF site of Morgan and Lucas, 2012).	1.5	22.0
At Repenning site, underlying strata consists of axial sandstone and mudstones. A particularly fossiliferous, greenish mudstone lies 1-1.5 m below the opal bed.			
<i>Wpt 609 = top of unit (UTM coord. 288655 m E, 3669213 m N).</i>			
<b>MIDDLE PLEISTOCENE PIEDMONT GRAVEL (UNDERLYING A GEOMORPHIC SURFACE)</b>			
WP-G	<b>Pebble gravel</b> – White (N/), strongly carbonate-cemented pebble gravel similar to unit NP-F. Features stage II-III(+) carbonate morphology (no lamina).	1.1	20.5
<i>Wpt 608 = top of unit (UTM coord. 288690 m E, 3668302 m N); shoot 000° using horizontal dip (~900 m shot). Estimate +/- 5 m of vertical error. Possible fault displacement.</i>			
WP-F	<b>Pebble gravel</b> – Light brown (7.5YR 6/4) pebble gravel; pebbles are medium to coarse and consist of carbonate, black chert, granite, and quartzite. Matrix consists of mL-vcL sand composed of 50-65% quartz, 20-25% feldspar, and 25-30% lithic (carbonate+chert>volcanic) grains.	1.1	19.4
<b>PALOMAS FORMATION, AXIAL FACIES</b>			
<b>Upper axial facies (&lt;10% gravel); (Tpau)</b>			
WP-E	<b>Sand</b> – Light gray (10YR 7/2), mostly massive/poorly exposed, vfU-mU sand composed of 50-60% quartz, 25-30% feldspar, and 10-25% lithic (carbonate>volcanic) grains. Contains 10-15% carbonate nodules. Unit becomes clayey to sandy silt in	11.3	18.3

Unit	Description	Thickness (m) (Unit) (Total)	
	upper ~4.5 m.		
	Also features <10% clast- to matrix-supported lenses up to 50 cm thick of fine to medium pebbles. Pebbles are poorly to moderately sorted and subangular to rounded and consist of roughly equal proportions of intermediate and felsic volcanics.		
	<i>Wpt 607 (UTM coord: 288721 m E, 3668257 m N) = middle 2-3 m of unit; gravel lens description</i>		
	<i>Wpt 606 (UTM coord: 288765 m E, 3668258 m N) = middle 2-3 m of unit; shoot N75W on horizontal dip</i>		
	<i>Wpt 605 (UTM coord: 288794 m E, 3668239 m N) = lower 3 m of unit; sand description</i>		
	<b>Lower coarse unit (&lt;10% gravel) (Tpal3)</b>		
WP-D	<b>Pebble-cobble gravel</b> – Light brownish-gray (10YR 6/2), moderately carbonate-cemented, medium- to thick-bedded, lenticular, imbricated, very poorly sorted, rounded to well rounded pebble-cobble gravel. Clasts consist of 60-75% pebbles and 25-40% cobbles of lithologies similar to unit NP-B. Forms 20-35 cm of basal scour on unit NP-C.	2.0	7.0
	<i>Wpt 604 (UTM coord: 288819 m E, 3668225 m N) = bottom of unit.</i>		
WP-C	<b>Silty sand and clayey silt</b> – Very pale brown (10YR 7/3), thin- to medium-bedded, massive to weakly ripple cross-stratified silt to fU sand grading upward into clayey silt.	1.6	5.0
WP-B	<b>Sandy pebble-cobble gravel</b> – Yellowish-brown (10YR 5/4), weakly imbricated, poorly sorted, rounded to well rounded, sandy pebble-cobble gravel. Clasts consist of 80-90% pebbles and 10-20% cobbles. Matrix consists of silt to fL sand. Grades upward into silty clay of similar color in upper 10 cm.	2.4	3.4
	Clast count indicates following lithology proportions: 27% intermediate volcanics, 21% felsites, 19% Paleozoic sedimentary, 14% quartzite (undivided), 6% granite, 4% chert/jasperoid, 3% Mesozoic sedimentary, 3% Ortega quartzite, 1% miscellaneous (intrusive), and 1% Pedernal chert.		
	Paleocurrent measurement (imbrication) gives mean direction of 267°.		
	<i>Clast count site WP-B.</i>		
	<i>Wpt 603 (UTM coord: 288869 m E, 3668239 m N) = middle part of unit</i>		
WP-A	<b>Pebble-cobble gravel</b> – Gray, well-cemented, pebble-cobble gravel; see descriptions for gravels at top of Lower North Poplar Street section. Base correlated to base of cobbly bed at 7.0 m in the North Poplar Street section.	1.0	1.0
	<i>Wpt 602 UTM coord: 288901 m E, 3668249 m N) = bottom of unit; shoot S75W on horizontal dip</i>		
	<b>Base of stratigraphic section: wpt 602 (UTM coord. 288901 m E, 3668249 m N)</b>		
<b>North Poplar Street section.</b> This section consists of the lower coarse unit (axial-fluvial facies) composed of sand and >10% gravel. Upper gravel bed is notably cobbly. Measured ~90 m west of Poplar Street in Truth or Consequences (ctr of W1/2 of SW1/4 of Section 33, T13S, R4W). Measured and described by Daniel Koning on March 24, 2015, using an abney level and Jacob's staff.			
Unit	Description	Thickness (m) (Unit) (Total)	

Unit	Description	Thickness (m) (Unit) (Total)
	<b>Total section</b>	19.40
	<b>PALOMAS FORMATION, LOWER COARSE UNIT OF AXIAL FACIES</b>	
	<b>Petrofacies unit 3 (Tpal3)</b>	
NP-4	<b>Floodplain sediment -- Overlies well-cemented gravel and sandstone. Note measured.</b>	
	<i>Top of stratigraphic section at wpts 230-232 (288994 m E, 3668235 m N)</i>	
NP-3	<b>Break-outs of the NP-3 unit, measured from base of deposit –</b>	
	7.5-9.0 m: Sand and gravel, well-cemented; basalt part is comprised of pebbly sand that is horizontal-planar laminated.	
	7.0-7.5 m: Pebbly mL-vcU sand (mostly mL-mU; coarse sand grains are composed of volcanic rocks); exhibits soft-sediment deformation. Basal contact is gradational over 10 cm.	
	5.5-7.0 m: Matrix-supported sandy very coarse pebbles to fine-coarse cobbles. Trace amounts of granular rhyolites similar to the Canada Alamosa Rhyolites west and northwest of Monticello. Location of clast count and imbrication site.	
	5.1-5.5 m: Cross-stratified, mL-mU sand.	
	4.9-5.1 m: Sandy pebble-cobble bed.	
	4.2-4.9 m: Interbedded sand and sandy pebbles-cobbles.	
	2.2-4.2 m: Covered, probably sandy.	
	1.8-2.2 m: Low-angle, cross-laminated sand (mL-mU).	
	1.6-1.8 m: Cobbles.	
	0.7-1.6 m: Covered, probably sandy.	
	0.0-0.7 m: Sand and pebble beds. Sand sample 0.3 m above the base (above first segment).	
NP-3	<b>Sand and sandy pebbles-cobbles</b> – Very minor pebbly sand beds; sandy gravel and sand beds tend to be segregated. Gravel is in thin to thick, tabular beds. Gravel are subrounded (minor rounded, particularly quartzites) and dominated by coarse-very coarse pebbles and fine-coarse cobbles. Clast imbrications are to the northeast (044°-073°). Sand matrix in the gravel beds is white (10YR 8/1), with minor very pale brown (10YR 8/2), fU-mU (mostly mL), subrounded to rounded (mostly subrounded), and well sorted. Visual sand composition estimate: quartz with 10% volcanics, 10% chert and orange-colored quartz, and ~10% feldspar. Gravel beds are well-cemented. Sandstone beds are medium to thick and tabular and display internal low-angle cross-lamination.	9.0
	Prominent cobbly interval ~4 m above base of unit. Above here, there is 70% conglomerate and 30% sandstone. Max clast sizes: 14x10 cm (limestone), 11x7 cm (basalt or basaltic andesite), 11x9 cm (rhyolite), 7x5 cm (welded tuff), 13x9 cm (rhyolite), 12x10 cm plagioclase-pyroxene-phyric andesite (possibly basaltic andesite). <i>Clast count site NP-3. Paleoflow site NP-3).</i>	13.8
	Basal conglomerates have 10-20% dark andesites (plagioclase-phyric) plus observations of: 1 green conglomerate clast (very fine to medium pebbles) composed of glauconite with minor quartz and chert, one finely foliated granitic gneiss. The sandstone is well-cemented, mL-mU, and internally horizontal-planar laminated.	
	Sand sample 30-35 cm above the contact; sand is mL-mU. Adjoining clast imbrication is 000° to 005°.	
	Basal contact is a highly scoured, with 10s of dm of relief. One basal scour groove is 45 cm thick and trends 005-185°. Paleoflow measurement of 005° based on	

Unit	Description	Thickness (m) (Unit) (Total)	
	imbrication within the scour groove fill. <i>Paleoflow site NP-3base.</i>		
	<i>@4.8 m: Top of first segment (wpts 224; UTM coordinates: 288978 m E, 3668288 m N). Use the NP-3/NP-2 contact to transfer laterally southward to base of second segment (wpts 228-229; UTM coordinates 289007 m E, 3668242 m N).</i>		
	<b>Petrofacies unit 2 (Tpal2)</b>		
NP-2	<b>Sand interbedded with sandy pebbles</b> – Sand is in thin-medium, tabular beds. 10-15% very thin to thin, tabular beds of sandy very fine to very coarse pebbles. ~10% of the gravel are cobbles, which are particularly abundant in upper part of unit. Clasts are similar to those in Unit 1, but there are 0.5% pebble-size to cobble-size mudstone rip-up clasts. Sand beds are internally massive. Sand is mostly cL-vcU (minor fL-mU), subrounded to subangular, moderately to poorly sorted, and "dirty" in appearance because of fines in the matrix. Estimated sand composition: quartz, 10(?)% feldspar, and 20% colored quartz (or chert) and minor volcanic grains.	2.0	4.8
	Sand sample 1.2-1.3 m from base of deposit.		
	Near cryptomelane site (WS-494), maximum clast sizes in this unit are: 10x7 cm Mesozoic sandstone, 31x3 cm Abo vf sandstone, 10x6 cm (Mesozoic sandstone), 7x7 cm (quartzose metasandstone, 10x9 cm (quartz-phyric tuff).		
NP-1	<b>Sandy gravel</b> – Thin to thick, tabular beds of grain-supported pebbles and cobbles; lesser clast-supported textures. Upper 2 m of unit locally has large, low-angle foresets (tangential geometries) in sets up to 1 m thick (especially prominent to the south). Gravel consists of very fine to very coarse pebbles with 10-15% fine cobbles. Clasts are subangular to subrounded and poorly sorted. Sand is very pale brown (10YR 8/2) and mostly mU-vcU (lesser fU-mL), subrounded (minor subangular), and poorly to moderately sorted. Estimated sand-grain composition: quartz, minor feldspar, and 20% volcanic lithic fragments. Sand is mixed with very minor fines, giving it a "dirty" appearance. Trace pebble-size, soft-powder accumulations of MnO. Weakly cemented and moderately consolidated. Top contact is gradational over 0.5 m. <i>Clast-count site NP-1</i> , which indicates domination by felsic volcanic rocks and 5-10% green, medium- to coarse-grained sandstone and 5-10% granite. Paleoflow site NP-1a and NP-1b (was WS-497a (lower) and WS-497b (higher)). Lower paleocurrent site data indicate an average of 151° and median of 165° (n=74).	2.8	2.8
	<b>Base of stratigraphic section: wpt 223 (UTM coord. 288982 m E, 3668288 m N).</b>		

**South Poplar Street section.** This section consists of Rincon Valley Formation strata (distal piedmont clay-silt and sand) overlain by an abrupt contact with axial-fluvial gravel and sand. Measured ~90 m west of Poplar Street in Truth or Consequences (N1/2 of SW1/4 of Section 33, T13S, R4W). Measured and described by Andy Jochems on March 24, 2015, using an abney level and Jacob's staff.

Unit	Description	Thickness (m) (Unit) (Total)	
	<b>Total section</b>		19.40
	<b>PALOMAS FORMATION, LOWER COARSE UNIT OF AXIAL-FLUVIAL FACIES</b>		
	<b>Petrofacies unit 3 (Tpal3)</b>		
	<i>Top of stratigraphic section: 289037 m E, 3668169 m N</i>		

Unit	Description	Thickness (m) (Unit) (Total)	
SP-11	<b>Gravel and sand</b> – Very pale brown (10YR 7/3), massive- to weakly imbricated, very poorly sorted, angular to rounded, pebble-cobble gravel interbedded with massive to horizontally laminated sand. Clasts consist of 55% pebbles and 45% cobbles of Paleozoic sedimentary lithologies, Cretaceous sandstone, and Precambrian intrusive / metamorphic lithologies and Tertiary volcanics. Sand is poorly to moderately well sorted, subrounded to well rounded, vfU-cU, and is dominated by quartz grains (>60%). Lateral accretion sets observed in places. <b>Petrofacies unit 2 (Tpal2)</b>	1.80	19.40
SP - 10	<b>Sand</b> – Very pale brown (10YR 7/3, 8/2), massive, moderately sorted, subrounded to well rounded, fL-mU sand composed of 60% quartz, 30% feldspar, and 10% lithic grains. More strongly cemented to north.	4.50	17.60
SP -9	<b>Gravel and sand</b> – Similar to unit SP-6. Imbricated clasts imply a SSE paleocurrent direction (mean = 167°, n = 55).  <i>Base of unit at 289053 m E, 3668166 m N.</i>	1.10	13.10
SP -8	<b>Sand</b> – Very pale brown (10YR 7/3), planar cross-stratified (foresets up to 10 cm thick), moderately well sorted, subrounded to rounded, pebbly, vfU-mL sand dominated by quartz grains (>60%). Pebbles are moderately sorted, subrounded to rounded, and commonly coated by manganese. <b>Petrofacies unit 1 (Tpal1)</b>	2.80	12.00
SP -7	<b>Gravel</b> – Similar to unit SP-6 but lacks sand lenses.	2.10	9.20
SP -6	<b>Gravel and sand</b> – Very pale brown (10YR 7/3), massive to weakly imbricated, very poorly sorted, angular to rounded, pebble-cobble-boulder gravel interbedded with massive to horizontally laminated (thin) sand. Clasts consist of 40% pebbles, 40% cobbles, and 20% boulders (maximum intermediate axis ~30 cm) of ~55% Paleozoic sedimentary lithologies and 25% Cretaceous sandstone; the remainder includes Precambrian intrusive/metamorphic lithologies or Tertiary volcanics. Imbricated clasts imply a SSW paleocurrent direction (mean = 202°, n = 46). Sand occurs in lenses throughout unit and is moderately well sorted, subrounded to rounded, vfU-mL, and consists of 65% quartz, 25% feldspar, and 10% lithic grains. Lenses commonly contain mud rip-ups. In some gravel beds, sandy matrix is poorly sorted, subrounded to well rounded, vfU-cU and consists of 55% quartz, 30% feldspar, and 15% lithic grains.	1.25	7.30
Photo: 20150324_170324: Units P-5 and P-6 (1.5 m Jacob's staff for scale).			
<i>Base of unit at 289070 m E, 3668141 m N.</i>			
<b>RINCON VALLEY FORMATION, DISTAL PIEDMONT FACIES</b>			
<b>Eastern petrofacies (Trve)</b>			
SP -5	<b>Clay</b> – Reddish brown (5YR 4-5/4) and massive. Pedoturbated; common carbonate nodules and masses denote Bk horizon/paleosol. Contains single interbed of pink (7.5YR 7.3), massive silt.	1.10	6.05
SP -4	<b>Silt</b> – Pink (7.5YR 7/3) and massive.	0.25	4.95
SP -3	<b>Clay</b> – Reddish brown (5YR 4-5/4) and massive. Contains rare carbonate masses.	0.40	4.70
SP -2	<b>Silt, sand, and gravel</b> – 5-12 cm beds of light reddish brown to light brown (5-7.5YR 6/4) to pinkish white (7.5YR 8/2), interbedded silt, sand, and granule-pebble gravel. Silt contains ~10% clay. Sand is mostly replaced by calcite, but is very fine- to fine-grained where intact. Gravel consists of clast-supported granules (85%) and pebbles (15%); clasts are mostly Paleozoic sedimentary and Precambrian intrusive/metamorphic lithologies.	0.90	4.30
<b>Covered interval; likely silt and clay.</b>		2.50	3.40
SP -1	<b>Pebble gravel and silt</b> – 15-45 cm beds of light reddish brown (5YR 6/4), sandy, pebble gravel grading up into sandy silt in the upper 20 cm. Pebbles are poorly to	0.8	23.7

Unit	Description	Thickness (m) (Unit) (Total)
	<p>moderately sorted, subangular to subrounded, and consist of ~70% Paleozoic sedimentary lithologies and ~15% Precambrian granite and metamorphic lithologies; the remainder include Cretaceous sandstone, chert, and Tertiary volcanic rocks. Weakly imbricated pebbles imply a SSW paleocurrent direction (mean = 213°, n = 55). Sand is very poorly sorted, subangular to subrounded, vfU-cL, and consists of 65% lithic, 20% feldspar, and 15% quartz grains. Deposit has rare carbonate cement.</p> <p><b>Base not exposed.</b></p> <p><i>Base of stratigraphic section at 289095 m E, 3668125 m N.</i></p>	

**Main Avenue section.** This section consists of Rincon Valley Formation strata (distal piedmont clay-silt, sand, and pebble gravel) overlain by >3 m by axial-fluvial gravel. Measured at the northeast corner of the intersection of Poplar Street and Main Avenue in Truth or Consequences (SE1/4 of SW1/4 of Section 33, T13S, R4W). Measured and described by Andy Jochems on March 24, 2015, using an abney level and Jacob's staff.

Unit	Description	Thickness (m)	
		(Unit)	(Total)
<b>Total section</b>		12.00	
<b>PALOMAS FORMATION, AXIAL FACIES</b>			
<b>Petrofacies unit 1 (Tpal1)</b>			
<i>Top of stratigraphic section: UTM coord. 289219 m E, 3667867 m N</i>			
M-15	<b>Pebble-cobble gravel</b> – Very pale brown (10YR 7/3), imbricated pebble-cobble gravel with lateral accretion sets and basal-scour surface.	3.20	12.00
Photos: 20150324_105124: Unit M-15 (28 cm rock hammer for scale). <i>DJK has imbrication and clast-count measurements. Site M-15 (was WS-489).</i>			
<b>RINCON VALLEY FORMATION, DISTAL PIEDMONT FACIES</b>			
<b>Eastern petrofacies (Trve)</b>			
M-14	<b>Sand and sandy silt</b> – 2-7 cm thick beds of light brown (7.5YR 6/4), carbonate-cemented moderately well sorted, subrounded, quartzose (>70% of grains), vFL-fL sand. Grades upward into sandy silt with 10 cm thick Bk horizon (common carbonate nodules and masses).	0.60	8.80
Photos: 20150324_105252: Unit M-14 (28 cm rock hammer for scale).			
M-13	<b>Silt</b> – Light yellowish-brown (10YR 6/4), massive, and clayey. No soil development.	0.55	8.20
M-12	<b>Pebbly sand</b> – 3-7 cm thick beds of strong brown (7.5YR 4-5/6), interbedded pebbly, fL-cU sand and vfU-mL sand. 30% of bed consists of moderately sorted, finer sand. Pebbly sand is poorly sorted. All sand grains are angular to subrounded.	0.80	7.65
M-11	<b>Silt</b> – 1-3 cm thick beds that may be carbonate-cemented and pinkish gray (5YR 8/2) or unconsolidated and light reddish brown (5YR 6/4).	0.30	6.55
M-10	<b>Pebble gravel</b> – Strong brown (7.5YR 4/6), clast- to matrix-supported and moderately sorted with angular clasts. Matrix consists of poorly sorted, subangular, fL-cL sand. Massive.	0.85	6.55
<i>DJK has imbrication and clast-count measurements. Site M-10 (was WS-488).</i>			
M-9	<b>Pebbly sand</b> – Light yellowish brown (10YR 6/4), massive, moderately to moderately well sorted, subrounded, vfU-fU sand with a single lens of strongly carbonate-cemented pebble conglomerate.	0.30	5.70
M-8	<b>Clayey silt</b> – Strong brown (7.5YR 5/6) with common carbonate nodules delineating a Btk paleosol.	1.40	5.40
M-7	<b>Pebbly sand</b> – Pink (5YR 7/4), poorly to moderately sorted, subangular to rounded, fU-cU sand in 2-4 cm beds. Pebbly in lower 10 cm.	0.30	4.00
M-6	<b>Silt</b> – Light reddish brown (5YR 6/4) silt in beds up to 3 cm thick. Contains rare carbonate nodules.	0.50	3.70
M-5	<b>Mud/silt and sand</b> – Yellowish red (5YR 4/6), pebbly mud/silt and pink (5YR 7/4), poorly to moderately sorted, subangular to rounded, fU-cU sand in 2 cm beds. Sand is moderately calcareous.	0.35	3.20
Photos: 20150324_105412: Unit M-5 (28 cm rock hammer for scale).			
M-4	<b>Pebble gravel</b> – Light brown (7.5YR 6/4) gravel similar to M-2. Weakly imbricated.	0.55	2.85
M-3	<b>Pebbly silt and clay</b> – Yellowish red (5YR 4/6) and massive. Pebbles more common in upper 20 cm.	0.60	2.25

Unit	Description	Thickness (m)	
		(Unit)	(Total)
M-2	<p>Photo: 20150324_105456: Units M-1 through M-3 (1.5 m Jacob's staff for scale).</p> <p><b>Pebble gravel</b> – Light brown (7.5YR 6/4), clast- to matrix-supported and moderately sorted with angular clasts. Matrix consists of moderately sorted, subangular to rounded, fL-mU sand. Massive. <b>Sample 15CUCH285aj.</b></p>	0.60	1.65
M-1	<p><i>DJK has imbrication and clast-count measurements. Site M-2 (was WS-487)</i></p> <p><b>Silt</b> – 1-3 cm thick beds that may be carbonate-cemented and pinkish gray (5YR 8/2) or unconsolidated and light reddish brown (5YR 6/4). Contains a single, massive bed of angular pebbles with common manganese coats.</p> <p><b>Base not exposed.</b></p> <p><i>Base of stratigraphic section at 289221 m E, 3667859 m N.</i></p>	1.15	1.15



**Broadway Street stratigraphic section.** This subsection includes all three petrofacies of the lower coarse unit (axial facies of the Palomas Formation). Measured using two subsections. Located west of the intersection of Van Patten and Broadway streets in Truth or Consequences (NW1/4 of NW1/4 of Section 4, T14S, R4W). Measured and described by Andy Jochems on March 24, 2015, (north subsection) and February 10, 2016, (south subsection) using an abney level and Jacob's staff.

Unit	Description	Thickness (m)	
		(Unit)	(Total)
<b>Total section</b>		7.75	
<b>PALOMAS FORMATION, AXIAL FACIES</b>			
<b>Petrofacies unit 3 (Tpa13)</b>			
<i>Top of stratigraphic section: 288894 m E, 3667373 m N</i>			
B-9	<b>Sandy gravel</b> -- Deposit fills a 4.5-5.0 m deep paleovalley and consists of clast- to matrix-supported, subangular-rounded volcanic clasts (2/3 cobbles, 1/3 pebbles) as well as granite and chert (no quartzite observed). Calcium-carbonate-cemented and has steep buttress contacts with NB-8.	4.5-5.0	19.2
B-8	<b>Sandy gravel -- Thin to medium, mostly tabular beds. Up to 15% intermediate volcanic clasts; also quartzite and the Alamosa Canyon marker clast (plagioclase-mega-phyric clasts).</b>	6.0	19.2
<b>Petrofacies unit 2 (Tpa12)</b>			
B7	<b>Gravelly sand</b> -- Sand is rounded and fU-cU (+/-5% vcL). Gravel consists of pebbles with <20% cobbles.	8.3	13.2
<b>Petrofacies unit 1 (Tpa11)</b>			
B-6	<b>Sandy pebble-cobble gravel (continued)</b> – Cobble abundance > pebble abundance (~60-70% vs. 30-40%). <i>4.9 m is the complete thickness of petrofacies 1.</i>	4.9	4.9
<i>Step southwestward between the following two points using the base of the lower coarse unit: UTM coord. 288973 m E, 3667527 m N (top of north subsection, B-6 through B-9) and UTM coord. 288948 m E, 3667441 m N (top of south subsection, B-1 through B-6).</i>			
B-6	<b>Pebble-cobble gravel</b> – 30-100+ cm beds of moderately carbonate-cemented, pale brown to very pale brown (10YR 6/3-4), imbricated pebble-cobble gravel and planar cross-stratified (foresets ≤ 50 cm thick) gravelly sand. Latter facies constitutes 10-15% of deposit. Clasts are very poorly sorted, subangular to rounded, and consist of 45-50% pebbles and 50-55% cobbles. Sand is poorly sorted, subrounded to rounded, fL-cU, with 40% quartz, 30% lithic, and 25% feldspar grains. Matrix contains up to 5% clay chips and 15-25% of clasts exhibit reddish clay films. A 25 cm thick lens in the lower 50-75 cm of the deposit consists of light brownish-gray (10YR 6/2), well consolidated, clast- to matrix-supported, horizontally laminated (0.5-1 cm thick) to imbricated, poorly to moderately sorted, subrounded to well rounded, pebbly, fL-mU sand consisting of 60% quartz, 20% lithic (carbonate+chert±volcanic), and 20% feldspar grains. Mud rip-ups throughout deposit. Basal scour surface with up to 1.25 m of relief.	3.20	7.75
<i>Did not measure up to top of petrofacies 1.</i>			
<i>Two clast imbrication and clast count measurements. One west side is B-6w (was WS-492). On east side is B-6e.</i>			
Photo: 20150324_1034604: Unit B-6 (Dan Koning, 2 m, for scale).			
<b>RINCON VALLEY FORMATION, DISTAL PIEDMONT FACIES</b>			
<b>Eastern petrofacies (Trve)</b>			
B-5	<b>Silty clay</b> – Yellowish-red (5YR 4-5/6), massive clay with salty taste. Common, horizontally elongate carbonate nodules denote Bk horizon/paleosol. Somewhat consolidated in lower 10 cm.	0.40	4.55

Unit	Description	Thickness (m)	
		(Unit)	(Total)
	Photo: 20150324_131322: Unit B-5 (19 cm notebook for scale).		
B-4	<b>Clayey silt</b> – Brownish-yellow to yellow (10YR 6-7/6) and massive. Contains common carbonate nodules in upper 35 cm.	0.65	3.95
B-3	<b>Clayey silt</b> – Yellowish-red (5YR 5/6) and massive. Contains rare carbonate nodules in upper 30 cm.	0.75	3.30
B-2	<b>Sand and clay</b> – 7-35 cm beds of light brown (7.5YR 6/3-4) to pink (7.5YR 7/3), interbedded fU-vcL sand, vfU-mU sand, and sandy clay. Coarser sand is strongly carbonate-cemented, very poorly sorted, subangular, and consists of 50% lithic, 35% quartz, and 25% feldspar grains. Manganese staining is observed in coarse, cemented sand. Finer sand is massive, poorly sorted, subangular to subrounded, and consists of 70% lithic, 20% feldspar, and 10% quartz grains. Latter sand features angular pebbles. Silty clay is similar to unit B-1.	1.05	2.55
	<i>Imbrication measurement and clast count B-2.</i>		
B-1	<b>Clay</b> – Yellowish-red (5YR 5/6), massive, sandy clay. Sand grains are very poorly sorted, angular to subrounded, and vfU-cL in size. Occasional small carbonate nodules in upper 20 cm may denote Bk horizon/paleosol. <b>Base not exposed.</b> <i>Base of stratigraphic section at 288974 m E, 3667530 m N</i>	1.50	1.50

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