1 / 60	Age	Form	Mem	Lithology	Lithologic description	Comments	Box
1–34	Pleistocene				TILL, gray, very stony but mostly matrix supported Clasts are angular fine pebbles to cobbles Matrix is silty fine sand	Lodgment till	1
35–36					Black shale, mostly structureless, fossils are rare until the	Breaks, 35-37 broken pieces, 37 7 (H, calcite	

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37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62		Marcellus Formation	Oatka Creek-Chittenango Shale		base where there are thin, grey limestone beds composed of styliolina fissurella (3-5 mm) Fossil-rich marker bed @ 60 2 ft	precip), 38 1 (H&L), 38 5 (H&L), 38 5-40 0 (V), 39 0 (H), 39 5 (H), 39 3-40 0 (V), 40 0 (H), 41-45 (V), 42-45 broken, 45 5 (L, calc precip), 46-50 broken w/ many vertical, low angle, and horz fractures and w/ mineral deposits in some fractures, 50 & 50 5 (L), 52 56 highly broken and fractured, 56 9 (H), 57 2 (H), 57 6 (H), 56 9-58-7 (V, sealed), 58-59 2 (V), 58 5 (L), 59 2 (H), 62 4 (L)	2 3 4
63 64			Cherry V		Limestone, dark gray, massive, stylioninid-rich, marker @ 64 2	Breaks- 64 2-64 9 (V) Irreg breaks along stylolites @ 63 2 & 64 0	
65 66 67 68 69 70 71 72 73			Union Springs		Upper part- black shale, lower part- interbedded dark gray limestone and black shale with several styliolinitic-rich beds Bottom contact on top of 2 in thick blk shale bed	Breaks- 65 0, 65 6 (H), 66 2, 66 7 (L), 67 6 (H), 68 0 (L), broken zone 68 4- 68 6?, 69 0, 69 3, 70 1, (H), 70 4 (L), 70 7 (H), 72 (H), 72 4 (L), 73 0 (H), 73 4 (H) 73 9 (H), 74 3 (H), 74 6 (H), 74 9 (H), 75 2 (H), 76 5 (H), broken zone 75 2-75 3 (?)	5

74–76	Middle Devonian					6a
77–80		Formation	Seneca	Limestone, dark gray to black, with thin black shale, chert, fossiliferous (chonitid, stylolinid, & rugose coral)	Breaks- 77 5, 78 8, 78 9, 80 6 & 80 7 (H), all breaks along thin shale beds, 75 2-77 6 (V)	
81				Tioga Bentonite	Light gray	6b
82–97				Dark gray to black lime mudstone Some stylolites and thin shaly partings Chonitid brachipods and stylolinids Chert nodule at 86 8	Breaks- 77 6, 78 9, 79 0, 80 7, 80 8 (all breaks are horiz and along thin shaly laminates), 81 3 (H), 81 1-81 3 (V), solutioned vug @ 81 9 thin vert and horiz fracture intersect (mineral deposits), 83 7, 84 2 (H, shaly parting), 85 5 (H, residue?), 85 6, 86 3, 87 8, 88 6, 92 0, 92 3, 94 0 (all H), 94 0-94 4 (L), 94 5 (tr bentonite?), 95 0, 95 6 (H), highly fractured zone 97 5-98 1	7
98				Tioga Bentonite (B)	Dark gray shale overlies bentonite	
99–111				Limestone, medium gray, with thin shaly beds, some dark gray chert The basal part contains scattered fossil debris and the upper part becomes more fossil rich (mostly brachipods)	Breaks- 98 6, 99 0, & 99 2 (H), 99 8 (H, shale parting), 101 6 (shale parting), 102 0 (H), 103 0 & 103 7 (shale parting), 103 7-104 3 (V), 105 2 (H), 106 6 (top of 4 in thick cherty zone), 107 1 (soft shale or weathered residual), 108 2 (H), 110 2 (H), 110 8 (H, red-orange stains), 113 0-113 5 (H&V highly fractured, water transmitting, solution features), 114 2 (H), 115 2-115 5 (H & V, highly fractured, water transmitting, solution features), 117 0 & 117 3 (H), 119 0 (shale parting), 119 0-119 1 (H, highly weathered, solutioned zone), 121 0 (alot of micro fractures), 121 5-122 7 (highly fractured zone, solutioned, some sealing by residual debris), 123 0-125 5 (V, sealed with weathered residue), 125 9-126 9 (highly fractured), 127 3, 128 2 & 128 4 (H), 130 5 (H, top of Nedrow)	8

112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130		Onondaga	Moorehouse				9 10
131 132 133 134 135 136 137 138 139 140			Nedrow		Top of Nedow is at top of upper of two black to dark gray shaly limestone marker beds (Brett and Ver Straeten, 2000) Thin, interbedded medium gray shale and gray, argillaceous, noncherty limestone Pyritic	Breaks- 131 4 (H, solutioning), 133 1, 133 9 & 134 8 (H), 135 8 (thin bentonite bed?), 136 2 (H), 136 6 (L, stains), 137 8-138 0 (intersect of 2 angle fractures, solutioning), 138 3 (H), 139 5 & 139 6 (L)	11
141 142 143 144 145 146 147 148			Edgecliff		Thick bedded to massive, light gray limestone Phosphatic nodules at base of unit give a gamma spike @ 150 1 ft Crinoidal debris and rugose corals Oriskany is absent 1 ft of Springvale Sandstone at base of unit	Breaks- 141 1 & 142 7 (H), 144 1 (H, stains), 144 6 & 145 7 (H, shale parting),	11

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151	Devonian	Manlius Formation	Olney		From 150 1-157 4- medium-bedded, fine-grained, bluish-gray limestone separated by thin wavy dark gray-black bituminous laminates Possible erosion surface at 157 4 ft From 157 2-164 8 is light gray, hard, massive, dolomitic grainstone with some bituminous grains Contains two sharply contrasting black laminates at 162 1 and 163 8 ft 164 8-168 0- Thin bedded, medium gray dolostone 168-170 8- thin-bedded medium gray dolostone with disrupted laminates 170 8-173 6 thin-bedded, medium-dark gray dolostone 173 6-177 6- Planar laminated medium gray dolostone 177 6-182 3 medium gray dolostone with stromatolites	Breaks- 152 (H, stained), 153 0, 154 6 & 154 9 (H), 156 1 & 156 3 (H), 156 3-156 6 (L), 156 7 (H), 157 3 (H), 162 4 (L), 165 2-165 9 (set of 3 vert fractures), 166 5 (H), 167 1-167 6 (L), 167 7 (H), 167 9 (H, shale parting), 168 2 & 168 4 (H), 169 2 & 170 1 (H), 170 8 (H, at base of brecciated zone w/ shale bed), 173 3, 174 1 & 174 2 (H), 174 4 (H), 174 9- 175 6 (H & L cluster), 175 9, 176 2 & 176 4 (H), 177 1 & 177 4 (H), 177 1-177 6 (V, sealed w/calcite), 177 6 (H) 179 8 (H&L), 182 1 (shale parting)	12
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183					182 3-190 0 medium gray, thinly laminated, shaly dolostone Brecciated at bottom Very shaly zone between 182 6-184 0 ft that has numerous breaks along shale bedbing planes 190 0-196 - massive, medium-light gray dolostone No fossils Cyrstalline texture Brittle- fractured- both vertical and horizontal. 196.0-205.0 massive-bedded.	Breaks-182 6-184 1 highly fractured zone along shale partings, 185 1 & 185 5 (H), 185 2-185 9 (H & A), 186 1, 186 8 & 186 8 (shale partings), 187 4, & 187 6 (H), 188 1 & 188 3 (H, shale partings), 189 0-189 7 many horz fracts, 190 4 (LA), 190.4-195.0 (V, lined w/ mineral deposits).	
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187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216	Lower	Rondout Formation	Chyrsler		medium gray dolostone, irregular bedding, contains irregulr wispy black markings due to local concentration of bituminous material 205-216-5 more evenly bedded, fine-grained, gray dolostone, bottom bedding becomes more wavy and calcareous	190 8 & 192 0 (H, along shale parting), 193 3 & 194 0 (H), 195 3 (H, along shale parting), 197 1 (H), 199 6 & 200 6 (H), 203 7 & 204 2 (H), 207 1 (H), 207 2-207 5 (vugs), 209 9 (H), 210 7 (H), 211 7 & 212 6 (H, shale partings), 213 0 & 213 4 (H, shale partings), 213 7 (H), 214 9 & 215 9 (H)	16 17 18
217 218 219 220 221 222 223		Formation			Dolomitic limestone- medium gray, medium bedded, wavy dark gray-black laminates, fossiliferous 231 2-225 5 stromatopora-rich zone	Breaks- 217 0 (H, solutioned and mineral deposits), 217 8 (H), 218 8 & 219 5 (solutioned and mineral deposits), 219 8 & 219 9 (H, shale parting), 221 2 (H, shale parting), 221 7 (LA), 223 6 & 224 8 (H), 225 5 (H, solutioned and mineral deposits), 225 7 (shale parting), 227 4, 227 7 & 228 5(H)	19

224–229	Upper Silurian	Cobleskill				20
229–237	Upper Silurian	Bertie Group	Oxbow	Dolostone (waterlime)- fine-grained, thin bedded, light to medium gray, fossils are rare Broken weathered zone 231 0-232 0 Upper part seems to transition to overlying Cobleskill Limestone	Breaks- 229 2 & 229 6 (H), 230 0 (H, shale parting), 230 9-232 0 (broken and weathered zone?), 232 4 (H) 232 6 (H, shale parting), 234 1 (H), 235 6 & 235 8, (H, fractures filled with 0 25 in seam of weathered clay), 236 5 (H)	21, 22
238–261	Upper Silurian	Bertie Group	Forge Hollow	Gypsiferous shaly dolostone and shale- a few tace fossils, zones of solution weathering, vuggy 237 8-242 medium to light gray dolostone interbedded with gypsum and dark gray shale 243-247 void 247-255 8 Dark gray shale with abundunt gypsum 255 8-256 2 gray clay 256 2 261 0 dark gray shaly dolostone with abundant gypsum The Forge Hollow was mined for gypsum in the Union Springs area (Clark, 1968)	Breaks- 237 8 (H, shale bed at top contact w/ Oxbow unit, 237 9 & 238 1 (H), 239 0 (shale parting), 239 2-241 2 (highly fractured zone), 241 2-242 0 (highly solutioned), 242-246 (4 ft void?), 246-249 (highly fractured), 249-251(H, fracture about every 2-3 in), 251 3 (H), 252 9 (H), 253 4, 253 5 & 254 8 (H), 255 6 (H, top of clay bed), 256 1 (bottom of clay bed), 256 2 (H), 256 4 (weathered zone), 256 6, 257 4, 258 8, 259 3, 259 5 & 260 0 (all H), 260 2 (very vuggy), 260 4 & 260 8 (H), 260 8 (H, very weathered)	23, 24