# APÉNDICE

**INFORMACIÓN COMPLEMENTARIA**

**DEL ARTÍCULO**

**Propuesta nomenclatural y análisis de procedencia de la Formación**

**Concepción del Oro (antes Formación Caracol): implicaciones sobre la evolución tectónica del sur de Norte América durante el Cretácico Tardío**

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Tabla A1. Base de datos petrográficos de las muestras analizadas de la Formación Concepción del Oro.

| **Muestra** | **Cuarzo** | | | | | | **Feldespato** | | | **Plagioclasa** | | | **Líticos** | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Qmr | Qmo | Qp2-3 | Qp>3 | Qrc | Qrm | Fk | Frk | Frc | Pg | Prs | Prc | Lsar | Lslu | Lsvf |
| NO-05 | 222 | 300 | 50 | 37 | 25 | 2 | 53 | 2 | 3 | 91 | 16 | 19 | 2 | 2 | 81 |
| NO-07 | 181 | 346 | 29 | 13 | 36 | 2 | 19 | 2 | 2 | 94 | 3 | 39 | 2 | 2 | 65 |
| NO-10 | 227 | 372 | 49 | 20 | 13 | 2 | 30 | 2 | 2 | 128 | 36 | 26 | 2 | 3 | 66 |
| NO-14 | 183 | 235 | 31 | 58 | 18 | 2 | 46 | 6 | 3 | 82 | 18 | 24 | 2 | 9 | 150 |
| NO-18 | 110 | 398 | 47 | 10 | 7 | 2 | 23 | 2 | 7 | 94 | 3 | 10 | 2 | 7 | 60 |
| NO-21 | 62 | 350 | 47 | 15 | 24 | 1 | 32 | 6 | 3 | 62 | 3 | 18 | 3 | 15 | 103 |
| NO-23 | 83 | 282 | 50 | 62 | 39 | 3 | 45 | 1 | 9 | 80 | 3 | 9 | 1 | 3 | 211 |
| NO-26 | 87 | 327 | 58 | 49 | 14 | 1 | 29 | 3 | 9 | 87 | 12 | 14 | 3 | 1 | 116 |
| NO-40 | 125 | 262 | 67 | 67 | 15 | 2 | 37 | 3 | 6 | 58 | 12 | 12 | 2 | 2 | 128 |
| CAR-03 | 62 | 275 | 45 | 71 | 17 | 1 | 43 | 1 | 6 | 111 | 20 | 48 | 1 | 1 | 113 |
| CAR-04 | 112 | 187 | 18 | 18 | 6 | 2 | 81 | 6 | 9 | 118 | 15 | 21 | 2 | 6 | 151 |
| NO-48 | 128 | 325 | 46 | 39 | 7 | 2 | 36 | 3 | 2 | 141 | 23 | 23 | 3 | 3 | 56 |
| NO-52 | 113 | 248 | 51 | 38 | 22 | 1 | 43 | 1 | 8 | 83 | 11 | 16 | 1 | 1 | 54 |
| NO-56 | 125 | 232 | 43 | 64 | 9 | 2 | 31 | 2 | 3 | 73 | 9 | 18 | 2 | 2 | 137 |
| NO-59 | 57 | 280 | 20 | 17 | 11 | 1 | 60 | 3 | 6 | 86 | 14 | 37 | 1 | 6 | 103 |
| CAR-05 | 74 | 173 | 59 | 105 | 6 | 2 | 93 | 6 | 6 | 46 | 12 | 6 | 9 | 6 | 222 |
| NO-65 | 45 | 162 | 65 | 57 | 20 | 1 | 51 | 3 | 9 | 131 | 23 | 11 | 6 | 1 | 114 |
| CO-01 | 106 | 209 | 31 | 44 | 6 | 2 | 59 | 3 | 13 | 88 | 28 | 19 | 13 | 9 | 134 |
| CO-04 | 99 | 248 | 19 | 25 | 9 | 3 | 90 | 2 | 3 | 90 | 6 | 2 | 2 | 2 | 130 |
| CO-06 | 67 | 242 | 11 | 19 | 6 | 1 | 61 | 3 | 17 | 17 | 1 | 1 | 11 | 42 | 45 |
| CO-08 | 96 | 262 | 29 | 29 | 3 | 2 | 80 | 2 | 2 | 74 | 6 | 2 | 2 | 6 | 134 |
| CO-12 | 59 | 225 | 279 | 1 | 7 | 1 | 2 | 40 | 5 | 66 | 33 | 14 | 1 | 9 | 50 |
| CO-16 | 159 | 182 | 56 | 56 | 3 | 10 | 50 | 2 | 2 | 119 | 10 | 3 | 3 | 2 | 169 |
| CO-17 | 106 | 188 | 38 | 59 | 1 | 1 | 53 | 3 | 3 | 94 | 21 | 9 | 1 | 6 | 162 |
| CO-18 | 106 | 222 | 45 | 87 | 2 | 2 | 35 | 2 | 2 | 64 | 16 | 3 | 3 | 2 | 193 |
| CO-19 | 132 | 210 | 26 | 55 | 1 | 9 | 69 | 3 | 1 | 100 | 26 | 6 | 1 | 1 | 109 |
| CO-26 | 118 | 233 | 51 | 39 | 2 | 12 | 27 | 9 | 2 | 66 | 12 | 2 | 2 | 2 | 124 |
| CO-27 | 163 | 247 | 6 | 27 | 2 | 24 | 69 | 3 | 2 | 81 | 9 | 24 | 2 | 6 | 96 |
| CO-28 | 119 | 217 | 9 | 12 | 2 | 12 | 43 | 2 | 6 | 86 | 9 | 15 | 2 | 2 | 98 |
| CO-30 | 165 | 225 | 9 | 34 | 1 | 9 | 68 | 3 | 1 | 80 | 37 | 6 | 6 | 1 | 37 |
| CO-32 | 191 | 197 | 9 | 49 | 2 | 6 | 52 | 9 | 2 | 95 | 40 | 9 | 3 | 2 | 77 |
| CO-34 | 160 | 198 | 13 | 31 | 2 | 6 | 53 | 6 | 2 | 72 | 25 | 16 | 9 | 3 | 88 |
| CO-35 | 138 | 96 | 18 | 81 | 2 | 7 | 71 | 2 | 2 | 117 | 46 | 4 | 2 | 4 | 142 |
| CO-41 | 151 | 64 | 40 | 94 | 2 | 2 | 37 | 2 | 3 | 114 | 47 | 3 | 13 | 7 | 147 |
| CO-42 | 159 | 70 | 18 | 82 | 3 | 1 | 47 | 3 | 1 | 79 | 41 | 1 | 6 | 1 | 229 |
| NO-77 | 140 | 149 | 53 | 70 | 8 | 1 | 45 | 3 | 8 | 51 | 3 | 8 | 8 | 1 | 227 |
| NO-78 | 95 | 76 | 35 | 199 | 3 | 2 | 44 | 3 | 3 | 82 | 16 | 32 | 19 | 2 | 231 |
| NO-80 | 98 | 149 | 55 | 88 | 6 | 2 | 27 | 2 | 12 | 21 | 21 | 15 | 2 | 52 | 213 |
| NO-82 | 94 | 136 | 42 | 108 | 3 | 2 | 17 | 10 | 2 | 118 | 14 | 10 | 7 | 2 | 286 |
| CAR-06 | 138 | 95 | 29 | 114 | 11 | 1 | 40 | 1 | 8 | 72 | 19 | 8 | 1 | 1 | 201 |
| CAR-13 | 107 | 101 | 71 | 92 | 1 | 3 | 50 | 6 | 6 | 95 | 9 | 9 | 3 | 1 | 172 |
| NO-84 | 141 | 116 | 41 | 150 | 3 | 2 | 63 | 9 | 3 | 72 | 6 | 2 | 3 | 2 | 125 |
| NO-85 | 124 | 136 | 37 | 71 | 3 | 2 | 40 | 12 | 6 | 84 | 22 | 15 | 3 | 2 | 198 |
| NO-86 | 174 | 148 | 68 | 90 | 6 | 6 | 48 | 3 | 2 | 96 | 10 | 3 | 10 | 2 | 235 |
| NO-87 | 151 | 89 | 43 | 52 | 9 | 2 | 43 | 2 | 9 | 108 | 18 | 3 | 3 | 3 | 194 |
| NO-88 | 107 | 116 | 90 | 96 | 11 | 1 | 34 | 1 | 3 | 93 | 17 | 11 | 8 | 1 | 229 |
| NO-89 | 126 | 111 | 48 | 96 | 3 | 1 | 48 | 1 | 3 | 114 | 24 | 6 | 12 | 1 | 222 |
| NO-90 | 149 | 56 | 43 | 90 | 9 | 2 | 59 | 2 | 3 | 102 | 25 | 15 | 2 | 2 | 192 |
| NO-93 | 129 | 99 | 79 | 119 | 17 | 2 | 73 | 2 | 3 | 96 | 26 | 3 | 17 | 3 | 211 |
| NO-95 | 179 | 127 | 21 | 97 | 12 | 3 | 48 | 3 | 2 | 85 | 6 | 15 | 9 | 2 | 212 |
| CAR-07 | 121 | 213 | 33 | 86 | 1 | 1 | 30 | 1 | 3 | 92 | 36 | 9 | 3 | 1 | 157 |
| CAR-08 | 128 | 131 | 38 | 75 | 3 | 3 | 52 | 1 | 1 | 64 | 9 | 9 | 26 | 3 | 223 |
| CAR-09 | 138 | 86 | 43 | 118 | 1 | 3 | 29 | 6 | 1 | 75 | 14 | 3 | 3 | 3 | 268 |
| CAR-10 | 160 | 70 | 60 | 80 | 7 | 3 | 60 | 3 | 3 | 63 | 40 | 3 | 2 | 2 | 210 |
| CAR-11 | 140 | 46 | 23 | 101 | 10 | 2 | 72 | 2 | 3 | 78 | 29 | 3 | 7 | 2 | 225 |
| CAR-13 | 126 | 154 | 61 | 104 | 2 | 7 | 47 | 2 | 2 | 79 | 36 | 2 | 14 | 4 | 258 |
| CAR-20 | 154 | 116 | 55 | 96 | 3 | 2 | 61 | 3 | 2 | 64 | 10 | 3 | 3 | 2 | 135 |

*continúa*

Tabla A1 (cont.). Base de datos petrográficos de las muestras analizadas de la Formación Concepción del Oro.

| **Muestra** | **Líticos** | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Lsvt** | **Lsvl** | **Lsvm** | **Lsp** | **Lmf1** | **Lmf2** | **Lmf3** | **Lmf4** | **Lmp1** | **Lmp2** | **Lmp3** | **Lmc2** | **Lmc4** |
| NO-05 | 37 | 9 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| NO-07 | 39 | 6 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| NO-10 | 36 | 3 | 7 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| NO-14 | 52 | 9 | 6 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| NO-18 | 43 | 10 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| NO-21 | 73 | 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| NO-23 | 36 | 3 | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| NO-26 | 26 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| NO-40 | 40 | 6 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| CAR-03 | 28 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CAR-04 | 39 | 12 | 2 | 9 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| NO-48 | 33 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| NO-52 | 13 | 3 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| NO-56 | 15 | 9 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| NO-59 | 31 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CAR-05 | 59 | 15 | 9 | 3 | 3 | 6 | 2 | 2 | 3 | 3 | 2 | 1 | 3 |
| NO-65 | 48 | 6 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO-01 | 28 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| CO-04 | 80 | 6 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| CO-06 | 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO-08 | 42 | 10 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO-12 | 35 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO-16 | 43 | 17 | 7 | 2 | 2 | 7 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| CO-17 | 35 | 6 | 3 | 1 | 1 | 6 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO-18 | 93 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| CO-19 | 75 | 3 | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CO-26 | 39 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| CO-27 | 57 | 2 | 9 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| CO-28 | 34 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| CO-30 | 20 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO-32 | 25 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| CO-34 | 41 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| CO-35 | 85 | 2 | 2 | 2 | 2 | 7 | 2 | 2 | 2 | 7 | 4 | 2 | 2 |
| CO-41 | 77 | 3 | 2 | 2 | 3 | 7 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| CO-42 | 76 | 9 | 3 | 6 | 1 | 1 | 3 | 1 | 1 | 6 | 6 | 1 | 1 |
| NO-77 | 31 | 8 | 3 | 6 | 1 | 6 | 3 | 3 | 1 | 1 | 3 | 1 | 1 |
| NO-78 | 35 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| NO-80 | 21 | 6 | 3 | 9 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |
| NO-82 | 42 | 7 | 7 | 2 | 2 | 3 | 3 | 2 | 2 | 7 | 3 | 2 | 2 |
| CAR-06 | 19 | 8 | 3 | 5 | 3 | 8 | 1 | 3 | 1 | 3 | 1 | 1 | 1 |
| CAR-13 | 71 | 12 | 6 | 6 | 1 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 3 |
| NO-84 | 69 | 6 | 3 | 6 | 3 | 6 | 2 | 2 | 2 | 3 | 6 | 2 | 2 |
| NO-85 | 62 | 12 | 6 | 3 | 6 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |
| NO-86 | 32 | 10 | 3 | 3 | 6 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 |
| NO-87 | 74 | 9 | 3 | 9 | 2 | 6 | 3 | 3 | 2 | 6 | 3 | 2 | 2 |
| NO-88 | 57 | 3 | 3 | 6 | 1 | 3 | 3 | 1 | 1 | 3 | 3 | 1 | 1 |
| NO-89 | 45 | 6 | 6 | 9 | 6 | 3 | 1 | 6 | 1 | 3 | 3 | 1 | 1 |
| NO-90 | 68 | 12 | 12 | 12 | 6 | 6 | 3 | 2 | 3 | 3 | 2 | 2 | 2 |
| NO-93 | 33 | 13 | 7 | 3 | 2 | 3 | 2 | 3 | 2 | 7 | 3 | 2 | 3 |
| NO-95 | 33 | 9 | 9 | 9 | 2 | 6 | 3 | 6 | 2 | 3 | 2 | 3 | 3 |
| CAR-07 | 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CAR-08 | 84 | 3 | 3 | 6 | 1 | 1 | 6 | 3 | 1 | 6 | 1 | 1 | 1 |
| CAR-09 | 72 | 1 | 1 | 6 | 6 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 3 |
| CAR-10 | 113 | 7 | 10 | 17 | 3 | 10 | 3 | 2 | 2 | 3 | 7 | 2 | 3 |
| CAR-11 | 69 | 10 | 3 | 7 | 3 | 3 | 7 | 7 | 2 | 3 | 2 | 2 | 3 |
| CAR-13 | 136 | 4 | 2 | 4 | 2 | 4 | 4 | 2 | 4 | 7 | 2 | 4 | 2 |
| CAR-20 | 132 | 6 | 3 | 10 | 6 | 10 | 3 | 2 | 2 | 6 | 2 | 2 | 3 |

Tabla A2. Estadística básica de los parámetros petrográficos de las petrofacies descritas en el texto (Des. est. = Desviación estándar). NCE= Granos no carbonatados extracuenca; CE: Granos carbonatados extracuenca; CI: Granos carbonatados intracuenca.

| **Diagrama ternario** | **Parámetro (%)** | **Petrofacies A** | | **Subpetrofacies A1** | | **Subpetrofacies A2** | | **Petrofacies B** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (n=35) | | (n=27) | | (n=8) | | (n=21) | |
| Media | Des. est. | Media | Des. est. | Media | Des. est. | Media | Des. est. |
| *QFL* | Q | 44 | 8 | 43 | 9 | 40 | 6 | 35 | 4 |
| F | 16 | 3 | 17 | 4 | 16 | 3 | 14 | 2 |
| R | 40 | 8 | 40 | 8 | 44 | 8 | 51 | 4 |
| *QmFLt* | Qm | 41 | 10 | 42 | 11 | 40 | 4 | 28 | 4 |
| F | 19 | 4 | 20 | 4 | 19 | 4 | 17 | 3 |
| Lt | 40 | 9 | 38 | 10 | 41 | 7 | 55 | 4 |
| *QmKP* | Qm | 68 | 8 | 67 | 9 | 68 | 4 | 60 | 7 |
| K | 11 | 4 | 10 | 5 | 10 | 3 | 13 | 3 |
| P | 21 | 7 | 23 | 7 | 22 | 6 | 27 | 6 |
| *QmrQmoQp* | Qmr | 27 | 10 | 26 | 10 | 28 | 11 | 35 | 7 |
| Qmo | 55 | 13 | 54 | 14 | 56 | 12 | 28 | 8 |
| Qp | 18 | 11 | 20 | 9 | 16 | 12 | 37 | 8 |
| *RgRsRm* | Rg | 37 | 10 | 41 | 7 | 27 | 10 | 40 | 5 |
| Rs | 43 | 13 | 39 | 8 | 54 | 14 | 35 | 6 |
| Rm | 20 | 8 | 20 | 6 | 19 | 12 | 25 | 4 |
| *LmLvpLs* | Lm | 6 | 1 | 5 | 1 | 5 | 1 | 7 | 1 |
|  | Lvp | 41 | 13 | 49 | 9 | 27 | 13 | 49 | 6 |
| Ls | 53 | 14 | 46 | 9 | 64 | 13 | 44 | 6 |
| *RpRvRs* | Rp | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Rv | 34 | 9 | 37 | 5 | 25 | 9 | 37 | 4 |
| Rs | 66 | 9 | 63 | 5 | 75 | 9 | 62 | 4 |
| *QpLvpLs* | Qp | 17 | 8 | 17 | 6 | 14 | 12 | 20 | 4 |
| Lvp | 40 | 10 | 45 | 6 | 32 | 11 | 44 | 5 |
| Ls | 43 | 13 | 38 | 9 | 54 | 16 | 36 | 6 |
| *NCECECI* | NCE | 84 | 7 | 85 | 5 | 79 | 8 | 83 | 3 |
| CE | 16 | 7 | 15 | 5 | 22 | 8 | 17 | 3 |
| CI | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Tabla A3. Relaciones numéricas para determinar procedencia (abreviaciones ver Tabla 1; Des. est. = Desviación estándar).

| **Relación** | **Petrofacies A** | | **Subpetrofacies A1** | | **Subpetrofacies A2** | | **Petrofacies B** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Media | Des. est. | Media | Des. est. | Media | Des. est. | Media | Des. est. |
| Qmr/Qmo | 0.51 | 0.49 | 0.52 | 0.54 | 0.50 | 0.26 | 1.20 | 0.65 |
| Qp/Qm | 0.22 | 0.20 | 0.23 | 0.16 | 0.17 | 0.31 | 0.57 | 0.23 |
| P/F | 0.48 | 0.67 | 0.46 | 0.29 | 0.57 | 1.31 | 0.49 | 0.19 |
| Rv/Rm+Rp | 3.26 | 2.00 | 3.02 | 1.11 | 4.21 | 3.29 | 2.61 | 0.61 |
| Rs/Rv+Rm | 1.25 | 0.77 | 1.09 | 0.24 | 2.0 | 1.2 | 1.03 | 0.18 |
| Rp/Rm+Rv | 0.004 | 0.004 | 0.004 | 0.09 | 0.004 | 0.002 | 0.09 | 0.01 |
| Lv/Lt | 0.39 | 0.14 | 0.09 | 1.11 | 0.22 | 0.07 | 0.05 | 0.1 |
| Ls/Lt | 0.51 | 0.14 | 0.09 | 0.24 | 0.72 | 0.073 | 0.44 | 0.07 |
| Lm/Lt | 0.05 | 0.01 | 0.012 | 0.004 | 0.044 | 0.011 | 0.05 | 0.01 |

Tabla A4. Análisis geoquímicos de rota total realizados en los Laboratorios ACME, en Vancouver, Canadá: Elementos Mayores y Elementos Trazas selectos, CIA y contenido máximo de CaCO3 recalculado.

| **Muestra** | **m** | **SiO2**  % | **Al2O3**  % | **CaO**  % | **CaO\***  % | **Na2O**  % | **K2O**  % | **TiO2**  % | **Sc**  ppm | **Y**  ppm | **Zr**  ppm | **Nb**  ppm | **Th**  ppm | **CIA** | **máx.**  **CaCO3** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sección Tierras Blancas I / Miembro Tierras Blancas | | | | | | | | | | | | | | | |
| NO-05 | 62 | 58.88 | 7.59 | 13.08 | 1.8 | 2.02 | 0.81 | 0.33 | 5 | 18 | 126 | 5.9 | 4.6 | 50.4 | 19.9 |
| NO-07 | 81 | 51.41 | 6.8 | 16.61 | 0.12 | 1.94 | 0.73 | 0.31 | 5 | 14 | 98 | 5.3 | 4.2 | 61.8 | 29.22 |
| NO-10 | 97 | 56.44 | 6.95 | 15.56 | 0.45 | 2.04 | 0.69 | 0.37 | 6 | 21 | 144 | 7 | 4.2 | 58.5 | 26.75 |
| NO-14 | 109 | 54.18 | 6.68 | 17.04 | 0.00 | 1.86 | 0.77 | 0.26 | 5 | 16 | 107 | 5.1 | 4.1 | 63.2 | 30.25 |
| NO-18 | 132 | 52.34 | 7.01 | 18.03 | 0.05 | 2.02 | 0.7 | 0.34 | 5 | 16 | 143 | 5.3 | 4.2 | 62.7 | 31.86 |
| NO-21 | 165 | 52.79 | 7.00 | 17.41 | 0.00 | 1.67 | 0.9 | 0.3 | 5 | 20 | 108 | 6.5 | 4.7 | 65.3 | 30.86 |
| NO-26 | 199 | 51.8 | 7.09 | 16.61 | 0.43 | 1.88 | 0.83 | 0.34 | 5 | 18 | 139 | 6.5 | 4.6 | 59.8 | 28.66 |
| NO-40 | 243 | 55.02 | 8.28 | 14.99 | 0.81 | 2.28 | 0.91 | 0.41 | 7 | 21 | 127 | 6.1 | 4.7 | 57.1 | 25.09 |
| CAR-03 | 331 | 54.85 | 8.62 | 16.42 | 0.44 | 2.07 | 0.79 | 0.44 | 7 | 21 | 120 | 7 | 4.1 | 63 | 28.22 |
| NO-48 | 375 | 50.59 | 7.25 | 18.17 | 2.3 | 1.63 | 0.76 | 0.34 | 6 | 19 | 101 | 5.9 | 4 | 48.5 | 28.11 |
| NO-52 | 390 | 50.47 | 7.89 | 17.74 | 2.52 | 2.26 | 0.74 | 0.38 | 6 | 17 | 90 | 5.3 | 3.7 | 46.4 | 26.91 |
| NO-56 | 412 | 53.94 | 7.78 | 15.8 | 2.07 | 1.93 | 0.77 | 0.39 | 6 | 18 | 110 | 4.9 | 4.3 | 50 | 24.26 |
| NO-68 | 429 | 54.82 | 8.24 | 14.88 | 2.15 | 1.85 | 0.8 | 0.45 | 6 | 19 | 131 | 6.4 | 4.6 | 51.3 | 22.4 |
| NO-59 | 434 | 48.04 | 7.15 | 20.09 | 2.42 | 2.04 | 0.64 | 0.39 | 6 | 20 | 111 | 5.8 | 4.2 | 45.8 | 31.29 |
| NO-65 | 485 | 53.69 | 8.41 | 14.77 | 2.17 | 1.94 | 0.89 | 0.43 | 7 | 19 | 131 | 7.1 | 4.2 | 50.9 | 22.22 |
| Sección Tierras Blancas I / Miembro Rancho Viejo | | | | | | | | | | | | | | | |
| NO-77 | 754 | 59.6 | 9.23 | 11.51 | 2.22 | 2.13 | 1.03 | 0.41 | 8 | 15 | 118 | 6.5 | 4.4 | 51.6 | 16.35 |
| NO-78 | 779 | 58.55 | 8.67 | 12.44 | 1.69 | 2.02 | 0.96 | 0.37 | 7 | 17 | 97 | 5.6 | 4.5 | 53.8 | 18.97 |
| NO-80 | 834 | 55.15 | 8 | 15.32 | 1.45 | 2.01 | 0.9 | 0.38 | 6 | 16 | 119 | 5.7 | 3.9 | 53.6 | 24.56 |
| NO-82 | 857 | 56.38 | 8.54 | 14.37 | 1.98 | 2.2 | 1.03 | 0.35 | 6 | 13 | 93 | 4.7 | 3.8 | 50.6 | 21.9 |
| CAR06 | 878 | 60.05 | 8.94 | 13.12 | 1.53 | 1.8 | 1.21 | 0.39 | 7 | 15 | 115 | 5 | 4 | 55.9 | 20.47 |
| NO-84 | 975 | 55.88 | 8.27 | 14.76 | 1.77 | 2.01 | 1.1 | 0.36 | 7 | 15 | 107 | 5.1 | 4 | 51.7 | 22.95 |
| NO-85 | 1196 | 51.2 | 9.03 | 16.26 | 2.74 | 1.98 | 1.18 | 0.34 | 6 | 15 | 95 | 5.6 | 4.9 | 48.7 | 23.97 |
| NO-86 | 1215 | 57.76 | 8.05 | 13.49 | 1.44 | 1.89 | 1.22 | 0.35 | 6 | 15 | 126 | 4.7 | 3.4 | 53.3 | 21.31 |
| NO-88 | 1287 | 55.22 | 8.52 | 14.04 | 1.95 | 2.05 | 1.2 | 0.38 | 7 | 15 | 100 | 4.8 | 3.8 | 50.9 | 21.36 |
| NO-89 | 1306 | 53.13 | 9.05 | 15.61 | 1.88 | 2.38 | 1.39 | 0.34 | 6 | 11 | 107 | 4.7 | 3.9 | 50.6 | 24.31 |
| NO-90 | 1339 | 55.16 | 7.65 | 15.65 | 1.57 | 2.25 | 1.15 | 0.28 | 6 | 11 | 72 | 2.9 | 2.6 | 49.5 | 24.97 |
| NO-93 | 1471 | 62.9 | 9.51 | 9.55 | 2.38 | 2.62 | 1.35 | 0.43 | 8 | 20 | 120 | 5.9 | 4.1 | 48.5 | 12.53 |
| NO-95 | 1504 | 55.15 | 9.51 | 13.9 | 1.72 | 2.82 | 1.42 | 0.36 | 7 | 13 | 87 | 4.5 | 2.9 | 50.5 | 21.51 |
| Sección Tierras Blancas II / Miembro Tierras Blancas | | | | | | | | | | | | | | | |
| CAR-04 | 315 | 54.88 | 7.79 | 15.51 | 1.27 | 1.26 | 0.93 | 0.29 | 6 | 18 | 90 | 4.4 | 4.1 | 59.1 | 25.22 |
| Sección Tierras Blancas II / Miembro Rancho Viejo | | | | | | | | | | | | | | | |
| CAR-08 | 411 | 56.78 | 8.8 | 14.03 | 2.3 | 1.86 | 1.12 | 0.39 | 6 | 16 | 124 | 5.4 | 4.1 | 51 | 20.69 |
| CAR-10 | 477 | 56.81 | 8.74 | 13 | 2.34 | 2.22 | 1.08 | 0.44 | 8 | 21 | 127 | 5 | 3.2 | 49.1 | 18.76 |
| CAR-11 | 532 | 40.37 | 8.4 | 22.49 | 1.43 | 1.45 | 1.19 | 0.4 | 7 | 11 | 101 | 3.4 | 2.5 | 57.2 | 37.32 |
| CAR-12 | 562 | 53.65 | 7.94 | 15.81 | 3.38 | 1.65 | 1.27 | 0.3 | 6 | 15 | 79 | 3.2 | 3.1 | 43.7 | 21.97 |
| CAR-20 | 1133 | 58.58 | 8.22 | 14.37 | 0.75 | 2.24 | 0.99 | 0.36 | 7 | 15 | 138 | 4.7 | 4.1 | 57.3 | 24.06 |
| CAR-07 |  | 52.73 | 8.37 | 16.83 | 1.22 | 0.82 | 0.87 | 0.47 | 7 | 22 | 179 | 5.8 | 4.2 | 65 | 27.52 |
| CAR-09 |  | 54.8 | 7.52 | 17.07 | 1.38 | 1.21 | 0.82 | 0.36 | 5 | 16 | 147 | 4.5 | 3.8 | 58.3 | 27.77 |

Tabla A5. Análisis geoquímicos de roca total, elaborados en los Laboratorios ACME, en Vancouver, Canadá: Elementos de Tierras Raras.

| **Muestra** | **m** | **La**  ppm | **Ce**  ppm | **Pr**  ppm | **Nd**  ppm | **Sm**  ppm | **Eu**  ppm | **Gd**  ppm | **Tb**  ppm | **Dy**  ppm | **Ho**  ppm | **Er**  ppm | **Tm**  ppm | **Yb**  ppm | **Lu**  ppm |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sección Tierras Blancas I / Miembro Tierras Blancas | | | | | | | | | | | | | | | |
| NO-05 | 62 | 12.5 | 26.5 | 3.66 | 14.2 | 3.56 | 0.87 | 3.4 | 0.58 | 3.13 | 0.66 | 1.94 | 0.24 | 1.63 | 0.25 |
| NO-07 | 81 | 12.8 | 27.2 | 3.36 | 12.3 | 2.92 | 0.75 | 2.94 | 0.45 | 2.73 | 0.52 | 1.6 | 0.22 | 1.39 | 0.19 |
| NO-10 | 97 | 14 | 29.7 | 3.82 | 16.5 | 4.04 | 0.98 | 3.86 | 0.67 | 3.83 | 0.75 | 2.15 | 0.3 | 1.76 | 0.28 |
| NO-14 | 109 | 13 | 27.7 | 3.6 | 13.3 | 3.4 | 0.81 | 3.34 | 0.55 | 3.04 | 0.64 | 1.69 | 0.24 | 1.7 | 0.2 |
| NO-18 | 132 | 13.8 | 28.6 | 3.77 | 16.4 | 3.31 | 1.05 | 3.18 | 0.57 | 2.81 | 0.66 | 1.79 | 0.27 | 1.84 | 0.27 |
| NO-21 | 165 | 14.1 | 29.3 | 3.82 | 13.8 | 3.53 | 0.89 | 3.3 | 0.62 | 2.97 | 0.64 | 1.88 | 0.27 | 1.6 | 0.26 |
| NO-26 | 199 | 13.7 | 29.3 | 3.89 | 18.1 | 3.51 | 0.9 | 3.35 | 0.62 | 3.01 | 0.7 | 1.88 | 0.29 | 1.74 | 0.26 |
| NO-40 | 243 | 12.8 | 30.3 | 4.15 | 17.3 | 4.19 | 1.18 | 4.29 | 0.72 | 3.92 | 0.78 | 2.29 | 0.29 | 1.99 | 0.27 |
| CAR-03 | 331 | 14.1 | 31.2 | 3.89 | 17 | 4.23 | 0.94 | 3.9 | 0.71 | 4.02 | 0.74 | 2.14 | 0.32 | 1.65 | 0.29 |
| NO-48 | 375 | 12.4 | 28.7 | 3.78 | 14.6 | 4.13 | 0.92 | 3.63 | 0.66 | 3.55 | 0.77 | 2.07 | 0.3 | 1.74 | 0.29 |
| NO-52 | 390 | 13 | 28.4 | 3.56 | 13.9 | 3.37 | 0.89 | 3.2 | 0.55 | 2.86 | 0.61 | 1.78 | 0.27 | 1.6 | 0.2 |
| NO-56 | 412 | 12.6 | 27.3 | 3.43 | 12.7 | 3.51 | 0.88 | 3.15 | 0.57 | 3.1 | 0.65 | 1.86 | 0.27 | 1.42 | 0.27 |
| NO-68 | 429 | 14.8 | 29.6 | 3.82 | 15.6 | 3.78 | 0.95 | 3.77 | 0.62 | 3.45 | 0.68 | 1.94 | 0.31 | 1.69 | 0.28 |
| NO-59 | 434 | 13.2 | 29.1 | 3.84 | 15.8 | 3.92 | 0.96 | 3.66 | 0.62 | 3.16 | 0.65 | 1.99 | 0.27 | 1.81 | 0.27 |
| NO-65 | 485 | 13.7 | 30.4 | 4.04 | 17.1 | 4.05 | 0.99 | 3.91 | 0.68 | 3.5 | 0.74 | 2.02 | 0.32 | 1.57 | 0.29 |
| Sección Tierras Blancas I / Miembro Rancho Viejo | | | | | | | | | | | | | | | |
| NO-77 | 754 | 14.3 | 31.3 | 3.94 | 14.5 | 3.77 | 0.91 | 3.25 | 0.56 | 3.03 | 0.69 | 1.71 | 0.27 | 1.83 | 0.26 |
| NO-78 | 779 | 13.9 | 28.3 | 3.6 | 12.4 | 3.41 | 0.8 | 3.13 | 0.56 | 3.03 | 0.68 | 1.69 | 0.25 | 1.64 | 0.23 |
| NO-80 | 834 | 13.4 | 28 | 3.48 | 14.4 | 3.21 | 0.83 | 3.1 | 0.52 | 2.8 | 0.59 | 1.76 | 0.27 | 1.71 | 0.25 |
| NO-82 | 857 | 12.2 | 24.8 | 3.19 | 11.5 | 2.53 | 0.62 | 2.46 | 0.41 | 2.28 | 0.44 | 1.49 | 0.22 | 1.42 | 0.21 |
| CAR06 | 878 | 12.4 | 26.5 | 3.41 | 15.7 | 3.15 | 0.69 | 3.05 | 0.54 | 2.75 | 0.58 | 1.72 | 0.27 | 1.73 | 0.25 |
| NO-84 | 975 | 12.7 | 27.5 | 3.46 | 17.5 | 3.29 | 0.84 | 2.91 | 0.52 | 2.83 | 0.59 | 1.56 | 0.26 | 1.36 | 0.23 |
| NO-85 | 1196 | 14.9 | 31.6 | 3.55 | 15.2 | 3.14 | 0.64 | 2.77 | 0.45 | 2.39 | 0.55 | 1.39 | 0.24 | 1.29 | 0.24 |
| NO-86 | 1215 | 11.8 | 25.2 | 3.15 | 14 | 3.17 | 0.81 | 2.8 | 0.45 | 2.57 | 0.55 | 1.47 | 0.24 | 1.39 | 0.23 |
| NO-88 | 1287 | 12.7 | 26.1 | 3.25 | 13.8 | 3.07 | 0.83 | 2.96 | 0.49 | 2.71 | 0.55 | 1.49 | 0.25 | 1.4 | 0.23 |
| NO-89 | 1306 | 12.1 | 25.9 | 3.19 | 12.3 | 2.75 | 0.78 | 2.16 | 0.38 | 2.13 | 0.45 | 1.29 | 0.21 | 1.26 | 0.21 |
| NO-90 | 1339 | 9.0 | 17.8 | 2.3 | 8.8 | 2.09 | 0.54 | 2 | 0.34 | 1.9 | 0.36 | 0.93 | 0.16 | 0.93 | 0.16 |
| NO-93 | 1471 | 14.5 | 31.4 | 3.84 | 18.2 | 4.03 | 0.88 | 3.58 | 0.64 | 3.84 | 0.7 | 2.02 | 0.32 | 1.62 | 0.28 |
| NO-95 | 1504 | 10.7 | 23.7 | 2.88 | 11.8 | 2.72 | 0.78 | 2.41 | 0.43 | 2.56 | 0.5 | 1.42 | 0.22 | 1.28 | 0.19 |
| Sección Tierras Blancas II / Miembro Tierras Blancas | | | | | | | | | | | | | | | |
| CAR-04 | 315 | 13.7 | 26.6 | 3.57 | 15.8 | 3.64 | 0.95 | 3.51 | 0.59 | 3.38 | 0.58 | 1.6 | 0.23 | 1.55 | 0.25 |
| Sección Tierras Blancas II / Miembro Rancho Viejo | | | | | | | | | | | | | | | |
| CAR-08 | 411 | 12.9 | 26.4 | 3.34 | 15.7 | 3.29 | 0.77 | 3 | 0.49 | 2.97 | 0.6 | 1.59 | 0.26 | 1.43 | 0.24 |
| CAR-10 | 477 | 10.7 | 23.1 | 3.22 | 16.5 | 4 | 1.12 | 3.95 | 0.68 | 4.02 | 0.81 | 2.27 | 0.31 | 1.91 | 0.24 |
| CAR-11 | 532 | 8.5 | 17.9 | 2.29 | 11.3 | 2.35 | 0.55 | 2.23 | 0.33 | 1.96 | 0.42 | 1.05 | 0.19 | 1.04 | 0.15 |
| CAR-12 | 562 | 10.9 | 26 | 3.31 | 12.8 | 3.37 | 0.79 | 2.93 | 0.51 | 2.7 | 0.59 | 1.65 | 0.25 | 1.62 | 0.2 |
| CAR-20 | 1133 | 12.5 | 25.7 | 3.36 | 14 | 3.16 | 0.77 | 3.05 | 0.49 | 2.6 | 0.65 | 1.7 | 0.28 | 1.48 | 0.25 |
| CAR-07 |  | 15.1 | 33.2 | 4.33 | 19 | 4.44 | 1.06 | 4.12 | 0.7 | 4.14 | 0.78 | 2.14 | 0.34 | 1.81 | 0.28 |
| CAR-09 |  | 12.2 | 26.8 | 3.18 | 15.9 | 3.41 | 0.75 | 3.1 | 0.5 | 2.61 | 0.59 | 1.71 | 0.24 | 1.4 | 0.21 |