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Calculations to Determine Baseline Water Quality and Evaluate the Level or Significance of Degradation

See 2020 Water Quality Management Plan / Continuous Planning Process Appendix A Sections 4 and 5.

Determine Critical Low Flow / Mixing Zones (See 20.6.4.11 NMAC (Applicability of Water Quality Standards):

	Streams:	**Lakes, Reservoirs, Playas:**
Human Health-Organism Only Criteria	= Harmonic Mean (HM) or Modified Harmonic Mean (MHM) See 20.6.4.7 (H)(2) & 20.6.4.11(B)(1) NMAC.	Mixing zones are not allowed. Effluent discharges shall meet criteria at point of discharge. See 20.6.4.11(E)(1) NMAC.
All Other Narrative and Numeric Criteria	= 4Q3 See 20.6.4.7 (A)(1) & 20.6.4.11(B)(2) NMAC. 4Q3 is the minimum average flow over four consecutive days that occurs with a frequency of once in three years. 4Q3 may be determined on an annual, a seasonal, or a monthly basis, as appropriate, after due consideration of site-specific conditions.	Mixing zones are not allowed. Effluent discharges shall meet criteria at point of discharge. See 20.6.4.11(E)(1) NMAC. Omit Mixing Zone Limitations in 20.6.4.11 NMAC (Applicability of Water Quality Standards). Critical lake and reservoir water levels will be determined on a case-by-case basis.

Determine Reasonably Expected Concentration Effluent (Ce):

Reasonably Expected Pollutants: Determined by a review of effluent data in the NPDES application, Form 2; effluent and stormwater data provided for NMED GWQB discharge permits (DPs), and site-specific background water quality data provided by NMED SWQB MASS.

Determine Baseline Water Quality (bwq):

Baseline Water Quality Concentration (Cbwq) = concentration of pollutant in stream/waterbody above the discharge; baseline water quality

Cbwq Calculation Notes:
- Minimum Detection Limit = MDL (See 2020 WQMP/CPP Appendix A Glossary and USEPA 40 CFR 136 Appendix B)
- Minimum Level (ML) = Reported Level (RL) or Quantitation Level (See USEPA Sufficiently Sensitive Method Rule)
- If pollutant is "not detected" or is "less than" MDL and MDL < or = Cwqs; then use Geometric Mean of MDL
- If at least one data point is detected (i.e., = or > MDL meaning estimated data may be used), then use MDL/2 for "less than"
- If data not provided / not retested at MDL that is lower or < Cwqs, then Cbwq = MDL/2
- If data not reported to MDL, then may substitute reported or quantitation minimum level (ML)
- If higher ML or 1/2 ML (using same instructions for MDL) results in no or allowable degradation, then use of MDL or 1/2 MDL will also result in no or allowable degradation.

Evaluate Level of Degradation (Surface Water + Discharge):

See 2020 Water Quality Management Plan / Continuous Planning Process Appendix A Section 5.3 Calculations to Determine Significance of Degradation.

Mass Balance Equation:

[(discharge flow x discharge concentration) + (stream/waterbody flow x stream/waterbody concentration)]
= (resulting flow downstream of discharge x resulting concentration downstream of discharge)
[(Qs x Cs) + (Qd x Cd)] = (Qr x Cr)

Where (for streams):	**Where (for lakes, reservoirs, and playas):**
Qs = stream flow above discharge (cfs or MGD) 4Q3 or HM	Qs = volume of lake at critical lake water level (ac-ft or MG)
Qd = discharge flow (cfs or MGD)	Qd = discharge flow (cfs or MGD) or discharge volume (ac-ft or MG)
Qr = resulting flow in-stream downstream of discharge (cfs or MGD) Qs + Qd (cfs or MGD)	Qr = resulting volume of lake after discharge (ac-ft or MG) Qs + Qd (ac-ft or MG)
Cs = concentration of pollutant in stream above the discharge (mg/L)	Cs = concentration of pollutant in lake (mg/L)
Cd = concentration of pollutant in discharge (mg/L)	Cd = concentration of pollutant in discharge (mg/L)
Cr= resulting concentration of pollutant in-stream downstream of discharge (mg/L)	Cr = resulting concentration of pollutant in lake (mg/L)

Solve for Cd

Cd= [(Qr x Cr) - (Qs x Cs)] / Qd
{[(Qs + Qd) x Cr] - (Qs x Cs)} / Qd

Determining Assimilative Capacity

Concentration Water Quality Standard (Cwqs)= segment-specific criteria or designated use-specific numeric criteria (mg/L or other unit as indicated)

Assimilative Capacity (AC)= The difference between the most stringent applicable water quality standard for a pollutant (Cwqs) and the baseline water quality concentration for that pollutant (Cbwq).
Cwqs - Cbwq (mg/L)

Notes:
- If AC is negative (-), then water may not be high-quality. Antidegradation Tier 2 review may not applicable at this time.
- If AC is negative (-), then evaluate the need for additional testing or condition that Ce = Cwqs at point of discharge, outfall or end of pipe.
- For example, a permittee may re-test at a lower MDL (if available) if a pollutant is reasonably expected in discharge

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For purposes of Tier 2 antidegradation reviews, NMED solves for the discharge concentration that uses 10% of the assimilative capacity.

Calculated Resulting Concentration of Pollutant at 10% AC (Cr_{10})= Calculate the resulting concentration of pollutant in-stream downstream of the discharge (mg/L) when 10% of the assimilative capacity has been used.

(AC x 0.1) + Cbwq

((Cwqs - Cbwq) x 0.1) + Cbwq

Calculated Concentration of Pollutant in the Discharge that uses 10% AC (Cd_{10}) = Calculate the discharge concentration at 10% AC using Cr_{10}

= {[(((Cwqs – Cbwq) x 0.1) + Cbwq) x (Qs + Qd)] – (Qs x Cs)} / Qd

50% cumulative cap = Not applicable for only one (1) regulated discharge

= Only applicable for multiple regulated discharges to the same receiving water over time

Comparison (comprehensive Tier 2 antidegradation review includes an alternatives analysis and social and economic demonstration - See 2020 WQMP/CPP Appendix A Sections 6 & 7):

No significant degradation. If $Cd_{10\%}$ > Ce, then antidegradation review process is complete and the permitting process may proceed.

Further degradation analysis needed. Calculated maximum loading capacity (with increased 10% assimilative capacity) would be flagged if further comprehensive review required.

If $Cd_{10\%}$ < or = Ce or if Ce > 50% cumulative cap, then "Further Antidegradation Required."

References:

State of New Mexico Water Quality Management Plan / Continuing Planning Process Appendix A
Antidegradation Policy Implementation Procedure for Regulated Activities Revision October 23, 2020
https://www.env.nm.gov/surface-water-quality/wqs/

State of New Mexico Water Quality Standards (NMWQS) effective March 15, 2025 for state purposes
https://www.env.nm.gov/surface-water-quality/wqmp-cpp/

2024-2026 Integrated Report Clean Water Act 303(d)/305(b) Integrated Report, EPA-Approved May 13, 2024
https://www.env.nm.gov/surface-water-quality/303d-305b/

Additional Information:

20.6.4.900(J)(1) Use-specific criteria (effective April 23, 2022)

(2) Notes applicable to the table of numeric criteria in Paragraph (1) of this subsection.
(a) Where the letter “a” is indicated in a cell, the criterion is hardness-based and can be referenced in Subsection I of 20.6.4.900 NMAC.
(b) Where the letter “b” is indicated in a cell, the criterion can be referenced in Subsection C of 20.6.4.900 NMAC.
(c) Criteria are in µg/L unless otherwise indicated.
(d) Abbreviations are as follows: CAS - chemical abstracts service (see definition for “CAS number” in 20.6.4.7 NMAC);
DWS - domestic water supply; Irr/Irr storage- irrigation and irrigation storage; LW - livestock watering;
WH - wildlife habitat; HH-OO - human health-organism only; C – criteria based on cancer-causing endpoint; P - persistent toxic pollutant.
(e) The criteria are based on analysis of an unfiltered sample unless otherwise indicated. The
acute and chronic aquatic life criteria for aluminum are based on analysis of total recoverable aluminum in a sample that is filtered to
minimize mineral phases as specified by the department.
(f) The criteria listed under human health-organism only (HH-OO) are intended to protect human
health when aquatic organisms are consumed from waters containing pollutants. These criteria do not protect the aquatic life itself;
rather, they protect the health of humans who ingest fish or other aquatic organisms.
(g) The dioxin criteria apply to the sum of the dioxin toxicity equivalents expressed as 2,3,7,8-TCDD dioxin.
(h) The criteria for polychlorinated biphenyls (PCBs) apply to the sum of all congeners, to the sum of all homologs or to the sum of all aroclors.
(i) The acute and chronic aquatic life criteria for dissolved aluminum only apply when the
concurrent pH is less than 6.5 or greater than 9.0 S.U. If the concurrent pH is between 6.5 and 9.0 S.U. then the hardness-dependent
total recoverable aluminum criteria in Paragraphs (1) and (2) of Subsection I of 20.6.4.900 NMAC apply.

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Permittee / Applicant:	Chevron Mining Inc.
Facility / Proposed Discharge:	Questa Mine, Outfall 001
NPDES Permit/Application Tracking #:	NM0022306
Source Water:	Current underground and collected mine waters, potential contact stormwater, potential future water management (Source: NPDES applicaiotn, Form 2C)
Receiving Water:	Red River, Segment 20.6.4.122 NMAC in the Rio Grande Basin
Segment:	20.6.4.122 NMAC
Designated Uses:	Coldwater aquatic life, fish culture, irrigation/irrigation storage, livestock watering, wildlife habitat and primary contact.
Existing Uses:	Same as designated uses.
Segment-Specific Numeric Criteria:	The monthly geometric mean of E. coli bacteria 126 cfu/100 mL or less, single sample 235 cfu/100 mL or less. 20.6.4.122(B) NMAC
Use Specific Numeric Criteria / Table:	20.6.4.900(J)(1) NMAC (Applicable to Existing, Designated or Attainable Uses unless otherwise specified in 20.6.4.97 through 20.6.4.899 NMAC)
Impairments:	Assessment Unit Red River (Rio Grande to Placer Creek), assessment unit ID NM-2119_10. TMDL for dissolved aluminum approved in 2006, and withdrawn in 2013 because dissolved aluminum criteria no longer apply. TMDL for turbidity approved in 2025. (Source: 2024-2026 Integrated Report https://www.env.nm.gov/surface-water-quality/303d-305b/ and TMDLS https://www.env.nm.gov/surface-water-quality/tmdl/)

Cd_{10} ={ [(((Cwqs - Cbwq) x 0.1) + Cbwq) x (Qd + Qs)] - (Cbwq x Qs)}/Qd

Cd_{10} = concentration of pollutant in discharge (mg/L)
Cwqs = water quality standard
Cbwq = baseline water quality (mg/L)
Qd = discharge flow (cfs or MGD) or discharge volume (ac-ft or MG)
Qs = volume of lake at critical lake water level, case by case (acre-feet (ac-ft) or million gallons (MG))
Cs = concentration of pollutant in lake (mg/L)
Cr = Cr =resulting concentration of pollutant at 10% Assimilative capacity, set equal to (((Cwqs-Cbwq) x 0.1) + Cbwq)

Solve for Cd (NMED solves for the discharge concentration that would use up 10% of the assimilative capacity):

	cubic feet per second (cfs)	million galls per day (MGD)	
Q_{d1} (effluent discharge flow 1) =	1.78 cfs	1.152 MGD	From NPDES application Form 2C - Outfall 001, current underground and collected mine waters
Q_{d2} (effluent discharge flow 2) =	0.70 cfs	0.455 MGD	From NPDES application Form 2C - Outfall 001, potential contact stormwater
Q_{d3} (effluent discharge flow 3) =	1.00 cfs	0.648 MGD	From NPDES application Form 2C - Outfall 001, potential future water management
Qd (effluent discharge) =	3.49 cfs	2.26 MGD	
Qs (4Q3) =	7.91 cfs	5.11 MGD	Calculation from StreamStats
Qd + Qs (total streamflow) =	11.40 cfs	7.37 MGD	
Qs (harmonic mean) =	17.21 cfs	11.13 MGD	Calculation from StreamStats
Qd + Qs (total streamflow, HM for HH-OO) =	20.70 cfs	13.38 MGD	
Cs (in-stream) =	Same as Cbwq, baseline water quality		
Cbwq =	Red River, upstream of facility		

Cd_{10} (mg/L) = Effluent discharge concentration using 10% AC

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The calculated discharge concentration (Cd) is compared with the proposed discharge concentration. If the proposed discharge is less than 10% of the assimilative capacity (calculated > proposed) and existing uses are maintained, the antidegradation review process is complete and the permitting process may proceed. If the proposed discharge consumes more than 10% of available assimilative capacity (calculated < proposed), a comprehensive Tier 2 review is required.

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							Mixing Calculation		Loading Calculation	
Pollutant	**CAS**	**20.6.4 NMAC Water Quality Standard (Cwqs),** *ug/L*	**20.6.4 NMAC Water Quality Standard (Cwqs),** *mg/L*	***Baseline Concentration (Cbwq) In-Stream,*** *mg/L*	**Assimilative Capacity (AC) (Cwqs-Cbwq),** *mg/L*	**Significant degradation (Cbwq+10% AC),** *mg/L*	**Calculated Effluent Concentration (Cd)** ((Cwqs-Cbwq) x 0.1 + Cbwq) x (Qd + Qs), *mg/L*	**Cs*Qs**	**Calculated Effluent Concentration @ 10% of AC Daily Max (Cd_{10}),** *mg/L*	**Allowable Effluent Load @ 10% of AC Daily Max,** *lbs/day*
Aluminum, dissolved	7429-90-5	5,000	5.000	0.22100	4.7790	0.6989	5.149	1.1297	1.7822	33.5172
Aluminum, total recoverable*	7429-90-5	1,711.13	1.71	0.919	0.7921	0.9982	7.353	4.6976	1.1778	22.1500
Antimony, dissolved**	7440-36-0	640	0.64	0.0000125	0.6400	0.0640	0.857	0.0001	0.3798	7.1428
Arsenic, dissolved**	7440-38-2	9	0.009	0.0000772	0.0089	0.00097	0.013	0.0009	0.0054	0.1010
Boron, dissolved	7440-42-8	750	0.75	0.000393	0.7496	0.0754	0.555	0.0020	0.2453	4.6128
Cadmium, dissolved *	7440-43-9	0.811	0.0008	0.0000238	0.0008	0.000103	0.00076	0.0001	0.0003	0.0053
Chromium, dissolved	7440-47-3	100	0.100	0.0000264	0.1000	0.0100	0.074	0.0001	0.0327	0.6147
Cobalt, dissolved	7440-48-4	50	0.050	0.000687	0.0493	0.00562	0.041	0.0035	0.0168	0.3159
Copper, dissolved *	7440-50-8	10.286	0.0103	0.0000685	0.0102	0.00109	0.008	0.0004	0.0034	0.0641
Lead, dissolved *	7439-92-1	3.001	0.00300	0.0000122	0.0030	0.00031	0.002	0.0001	0.0010	0.0186
Manganese, total *	7439-96-5	1741.122	1.74	0.0943	1.6468	0.259	1.908	0.4820	0.6323	11.8911
Mercury, total	7439-97-6	0.77	0.001	0.0000021	0.0008	0.000079	0.001	0.0000	0.0003	0.0048
Mercury, dissolved	7439-97-6	0.77	0.001	0.00000199	0.0008	0.000079	0.001	0.0000	0.0003	0.0048
Molybdenum, dissolved	7439-98-7	1,000	1.000	0.000402	0.9996	0.100	0.739	0.0021	0.3269	6.1488
Nickel, dissolved *	7440-02-0	59.652	0.060	0.000157	0.0595	0.00611	0.045	0.0008	0.0196	0.3685
Selenium, dissolved	7782-49-2	50	0.050	0.000358	0.0496	0.00532	0.039	0.0018	0.0166	0.3117
Selenium, total recoverable	7782-49-2	5	0.005	0.000358	0.0046	0.000822	0.006	0.0018	0.0019	0.0353
Silver, dissolved *	7440-22-4	4.251	0.004	0.00000382	0.0042	0.000429	0.003	0.0000	0.0014	0.0262
Thallium, dissolved**	7440-28-0	0.47	0.00047	0.00000307	0.0005	0.0000498	0.001	0.0000	0.0003	0.0053
Uranium, dissolved	7440-61-1	30	0.030	0.00000303	0.0300	0.00300	0.022	0.0000	0.0098	0.1844
Vanadium, dissolved	7440-62-2	100	0.100	0.0000183	0.1000	0.0100	0.074	0.0001	0.0327	0.6146
Zinc, total *	7440-66-6	140.439	0.140	0.00862	0.1318	0.0218	0.161	0.0441	0.0517	0.9720
Acenaphthene	83-32-9	90	0.09	0.000280	0.0897	0.00925	0.068	0.0014	0.0296	0.5565
Acrolein	107-02-8	3	0.003	0.00650	0.0000	0.00650	0.048	0.0332	0.0065	0.1222
Acrylonitrile**	107-13-1	70	0.070	0.000750	0.0693	0.00768	0.103	0.0083	0.0418	0.7870
Anthracene**	120-12-7	400	0.400	0.000220	0.3998	0.0402	0.538	0.0024	0.2375	4.4659
Benzene**	71-43-2	160	0.160	0.0000750	0.1599	0.0161	0.215	0.0008	0.0950	1.7863
Benzidine**	92-87-5	0.11	0.00011	0.000155	0.0000	0.000155	0.002	0.0017	0.0002	0.0029
Benzo(a)anthracene**	56-55-3	0.013	0.000013	0.000080	0.0000	0.0000800	0.001	0.0009	0.0001	0.0015
Benzo(a)pyrene**	50-32-8	0.0013	0.0000013	0.000215	0.0000	0.000215	0.003	0.0024	0.0002	0.0040
Benzo(b)fluoranthene**	205-99-2	0.013	0.000013	0.000220	0.0000	0.000220	0.003	0.0024	0.0002	0.0041
Benzo(k)fluoranthene**	207-08-9	0.13	0.00013	0.000175	0.0000	0.000175	0.002	0.0019	0.0002	0.0033
Bis(2-chloroethyl) ether**	111-44-4	22	0.022	0.000120	0.0219	0.00231	0.031	0.0013	0.0131	0.2464
Bis(2-ethylhexyl) phthalate**	117-81-7	3.7	0.0037	0.000090	0.0036	0.000451	0.006	0.0010	0.0022	0.0420
Bromoform**	75-25-2	1,200	1.200	0.000170	1.1998	0.120	1.608	0.0019	0.7122	13.3939
Butylbenzyl phthalate**	85-68-7	1	0.001	0.000180	0.0008	0.000262	0.004	0.0020	0.0007	0.0125
Carbon tetrachloride**	56-23-5	50	0.050	0.000090	0.0499	0.00508	0.068	0.0010	0.0297	0.5587
Chlorobenzene**	108-90-7	800	0.800	0.000080	0.7999	0.0801	1.072	0.0009	0.4748	8.9290
Chlorodibromomethane**	124-48-1	210	0.210	0.000125	0.2099	0.0211	0.283	0.0014	0.1247	2.3447
Chloroform**	67-66-3	2,000	2.000	0.000090	1.9999	0.2001	2.677	0.0010	1.1869	22.3216
2-Chloronaphthalene**	91-58-7	1,000	1.000	0.000115	0.9999	0.1001	1.340	0.0013	0.5935	11.1614
2-Chlorophenol**	95-57-8	800	0.800	0.000160	0.7998	0.0801	1.072	0.0018	0.4748	8.9296

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	Antidegradation Analysis				
Pollutant	**Average (Geomean) Effluent Data,** mg/L	**Proposed load based on current effluent data,** lbs/day	**Proposed Discharge: if > Allowable Effluent Load @ 10% of AC Daily, then Further Degradation Analysis Required**	**Pollutants Reported at MDL or Non-Detect (ND) (Only considered for pollutants Further Degradation Analysis Needed)**	**Flagging Pollutants Reported at MDL, all others No Additional Degradation Analysis Required**
Aluminum, dissolved	0.01483	0.2789	No Additional Degradation Analysis Required	*aquatic life WQS only applies when the concurrent pH is less than 6.6 or greater than 9.0 S.U.*	
Aluminum, total recoverable*	0.00478	0.0898	No Additional Degradation Analysis Required		
Antimony, dissolved**	0.0000343	0.000645	No Additional Degradation Analysis Required		
Arsenic, dissolved**	0.0000756	0.00142	No Additional Degradation Analysis Required		
Boron, dissolved	0.01127	0.212	No Additional Degradation Analysis Required		
Cadmium, dissolved *	0.00003	0.000483	No Additional Degradation Analysis Required		
Chromium, dissolved	0.00241	0.0452	No Additional Degradation Analysis Required		
Cobalt, dissolved	0.00010	0.0018	No Additional Degradation Analysis Required		
Copper, dissolved *	0.000096	0.0018	No Additional Degradation Analysis Required		
Lead, dissolved *	0.0000406	0.000764	No Additional Degradation Analysis Required		
Manganese, total *	0.006885	0.1295	No Additional Degradation Analysis Required		
Mercury, total	0.00000043	0.00000813	No Additional Degradation Analysis Required		
Mercury, dissolved	0.0000005	0.00000853	No Additional Degradation Analysis Required		
Molybdenum, dissolved	0.12069	2.270	No Additional Degradation Analysis Required		
Nickel, dissolved *	0.00047	0.0088	No Additional Degradation Analysis Required		
Selenium, dissolved	0.00180	0.0338	No Additional Degradation Analysis Required		
Selenium, total recoverable	0.00009	0.0016	No Additional Degradation Analysis Required		
Silver, dissolved *	0.0000043	0.000080	No Additional Degradation Analysis Required		
Thallium, dissolved**	0.0000178	0.000335	No Additional Degradation Analysis Required		
Uranium, dissolved	0.00024	0.00444	No Additional Degradation Analysis Required		
Vanadium, dissolved	0.00017	0.00315	No Additional Degradation Analysis Required		
Zinc, total *	0.00340	0.0639	No Additional Degradation Analysis Required		
Acenaphthene	0.00341	0.0642	No Additional Degradation Analysis Required		
Acrolein	0.00109	0.0206	No Additional Degradation Analysis Required		
Acrylonitrile**	0.00109	0.0206	No Additional Degradation Analysis Required		
Anthracene**	0.00341	0.0642	No Additional Degradation Analysis Required		
Benzene**	0.00112	0.0210	No Additional Degradation Analysis Required		
Benzidine **	0.01150	0.216	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Benzo(a)anthracene **	0.00341	0.0642	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Benzo(a)pyrene **	0.00341	0.0642	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Benzo(b)fluoranthene **	0.00474	0.0891	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Benzo(k)fluoranthene **	0.00355	0.0667	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Bis(2-chloroethyl) ether	0.00288	0.0542	No Additional Degradation Analysis Required		
Bis(2-ethylhexyl) phthalate	0.00452	0.0850	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Bromoform**	0.00112	0.0210	No Additional Degradation Analysis Required		
Butylbenzyl phthalate **	0.00353	0.0664	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Carbon tetrachloride**	0.00112	0.0210	No Additional Degradation Analysis Required		
Chlorobenzene**	0.00112	0.0210	No Additional Degradation Analysis Required		
Chlorodibromomethane**	0.00125	0.0236	No Additional Degradation Analysis Required		
Chloroform**	0.00179	0.0337	No Additional Degradation Analysis Required		
2-Chloronaphthalene**	0.00341	0.0642	No Additional Degradation Analysis Required		
2-Chlorophenol**	0.00311	0.0584	No Additional Degradation Analysis Required		

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							Mixing Calculation		Loading Calculation	
Pollutant	**CAS**	**20.6.4 NMAC Water Quality Standard (Cwqs),** *ug/L*	**20.6.4 NMAC Water Quality Standard (Cwqs),** *mg/L*	***Baseline Concentration (Cbwq) In-Stream,*** *mg/L*	**Assimilative Capacity (AC) (Cwqs-Cbwq),** *mg/L*	**Significant degradation (Cbwq+10% AC),** *mg/L*	**Calculated Effluent Concentration (Cd)** ((Cwqs-Cbwq) x 0.1 + Cbwq) x (Qd + Qs), *mg/L*	**Cs*Qs**	**Calculated Effluent Concentration @ 10% of AC Daily Max (Cd_{10}),** *mg/L*	**Allowable Effluent Load @ 10% of AC Daily Max,** *lbs/day*
Chrysene**	218-01-9	1.3	0.0013	0.000130	0.0012	0.000247	0.003	0.0014	0.0008	0.0155
Dibenzo(a,h)anthracene**	53-70-3	0.0013	0.0000013	0.000330	0.0000	0.000330	0.004	0.0037	0.0003	0.0062
Dibutyl phthalate**	84-74-2	30	0.030	0.000295	0.0297	0.0033	0.044	0.0033	0.0179	0.3371
1,2-Dichlorobenzene**	95-50-1	3,000	3.000	0.000119	2.9999	0.300	4.016	0.0013	1.7803	33.4824
1,3-Dichlorobenzene**	541-73-1	10	0.010	0.000146	0.0099	0.0011	0.015	0.0016	0.0060	0.1127
1,4-Dichlorobenzene**	106-46-7	900	0.900	0.000144	0.8999	0.0901	1.206	0.0016	0.5341	10.0455
Dichlorobromomethane**	75-27-4	270	0.270	0.000100	0.2699	0.0271	0.363	0.0011	0.1603	3.0141
3,3'-Dichlorobenzidine**	91-94-1	1.5	0.0015	0.000225	0.0013	0.0004	0.005	0.0025	0.0010	0.0185
1,2-Dichloroethane**	107-06-2	6,500	6.500	0.000075	6.4999	0.6501	8.699	0.0008	3.8573	72.5437
2,4-Dichlorophenol**	120-83-2	60	0.060	0.000145	0.0599	0.00613	0.082	0.0016	0.0357	0.6707
1,2-Dichloropropane**	78-87-5	310	0.310	0.000060	0.3099	0.03105	0.416	0.0007	0.1840	3.4602
Diethyl phthalate**	84-66-2	600	0.600	0.000175	0.5998	0.06016	0.805	0.0019	0.3561	6.6976
Dimethyl phthalate**	131-11-3	2,000	2.000	0.000130	1.9999	0.20012	2.678	0.0014	1.1869	22.3220
2,4-Dimethylphenol**	105-67-9	3,000	3.000	0.000215	2.9998	0.30019	4.017	0.0024	1.7804	33.4831
2,4-Dinitrophenol**	51-28-5	300	0.300	0.000210	0.2998	0.03019	0.404	0.0023	0.1781	3.3497
2,4-Dinitrotoluene**	121-14-2	17	0.017	0.000090	0.0169	0.00178	0.024	0.0010	0.0101	0.1904
Ethylbenzene**	100-41-4	130	0.130	0.000070	0.1299	0.01306	0.175	0.0008	0.0772	1.4514
Fluoranthene**	206-44-0	20	0.020	0.000140	0.0199	0.00213	0.028	0.0016	0.0119	0.2243
Fluorene**	86-73-7	70	0.070	0.000180	0.0698	0.00716	0.096	0.0020	0.0416	0.7826
Hexachlorobenzene**	118-74-1	0.00079	0.00000079	0.000115	0.0000	0.000115	0.002	0.0013	0.0001	0.0022
Hexachlorobutadiene**	87-68-3	0.1	0.0001	0.000145	0.0000	0.000145	0.002	0.0016	0.0001	0.0027
Hexachlorocyclopentadiene**	77-47-4	4	0.004	0.000160	0.0038	0.000544	0.007	0.0018	0.0024	0.0459
Hexachloroethane**	67-72-1	1	0.001	0.000100	0.0009	0.000190	0.003	0.0011	0.0006	0.0119
Ideno(1,2,3-cd)pyrene**	193-39-5	0.013	0.000	0.000205	0.0000	0.000205	0.003	0.0023	0.0002	0.0039
Isophorone**	78-59-1	18,000	18	0.000215	17.9998	1.800	24.090	0.0024	10.6818	200.8903
3-Methyl-4-chlorophenol**	59-50-7	2,000	2	0.000160	1.9998	0.20014	2.678	0.0018	1.1869	22.3222
2-Methyl-4,6-dinitrophenol**	534-52-1	30	0.030	0.000130	0.0299	0.00312	0.042	0.0014	0.0179	0.3358
Methylene chloride**	75-09-2	10,000	10	0.000050	10.0000	1.000	13.382	0.0006	5.9343	111.6052
Nitrobenzene**	98-95-3	600	0.600	0.000604	0.5994	0.06054	0.810	0.0067	0.3563	6.7009
N-Nitrosodimethylamine**	62-75-9	30	0.030	0.000180	0.0298	0.00316	0.042	0.0020	0.0179	0.3362
N-Nitrosodi-n-propylamine**	621-64-7	5.1	0.0051	0.000200	0.0049	0.00069	0.009	0.0022	0.0031	0.0584
N-Nitrosodiphenylamine**	86-30-6	60	0.060	0.000155	0.0598	0.00614	0.082	0.0017	0.0357	0.6708
Pentachlorophenol**	87-86-5	0.4	0.0004	0.000135	0.0003	0.00016	0.002	0.0015	0.0003	0.0055
Phenol**	108-95-2	300,000	300.000	0.000290	299.9997	30.000	401.460	0.0032	178.0294	3,348.1464
Pyrene**	129-00-0	30	0.030	0.000105	0.0299	0.00309	0.041	0.0012	0.0178	0.3356
1,1,2,2-Tetrachloroethane**	79-34-5	30	0.030	0.000095	0.0299	0.00309	0.041	0.0011	0.0178	0.3355
Tetrachloroethylene**	127-18-4	290	0.29	0.000075	0.195	0.1145	1.532	0.0008	0.3173	1.6775
Toluene**	108-88-3	520	0.520	0.000070	0.5199	0.0521	0.697	0.0008	0.3086	5.8040
1,2-Trans-dichloroethylene**	156-60-5	4,000	4	0.000085	3.9999	0.4001	5.354	0.0009	2.3738	44.6426
1,2,4-Trichlorobenzene**	120-82-1	0.76	0.00076	0.000131	0.0006	0.00019	0.003	0.0015	0.0005	0.0095
1,1,1-Trichloroethane**	71-55-6	200,000	200	0.000115	199.9999	20.000	267.639	0.0013	118.6863	2,232.0970
1,1,2-Trichloroethane**	79-00-5	89	0.089	0.000050	0.0890	0.00895	0.120	0.0006	0.0528	0.9937

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 001 Antidegradation Analysis

	Antidegradation Analysis				
Pollutant	**Average (Geomean) Effluent Data,** mg/L	**Proposed load based on current effluent data,** lbs/day	**Proposed Discharge: if > Allowable Effluent Load @ 10% of AC Daily, then Further Degradation Analysis Required**	**Pollutants Reported at MDL or Non-Detect (ND) (Only considered for pollutants Further Degradation Analysis Needed)**	**Flagging Pollutants Reported at MDL, all others No Additional Degradation Analysis Required**
Chrysene **	0.00355	0.0667	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Dibenzo(a,h)anthracene **	0.00355	0.0667	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Dibutyl phthalate**	0.00407	0.0765	No Additional Degradation Analysis Required		
1,2-Dichlorobenzene**	0.00287	0.0539	No Additional Degradation Analysis Required		
1,3-Dichlorobenzene**	0.00262	0.0493	No Additional Degradation Analysis Required		
1,4-Dichlorobenzene**	0.00287	0.0539	No Additional Degradation Analysis Required		
Dichlorobromomethane**	0.00087	0.0037	No Additional Degradation Analysis Required		
3,3'-Dichlorobenzidine **	0.0101	0.1906	Further Degradation Analysis Needed	Reported ND, calcaulted by 1/2 of RL	No Additional Degradation Analysis Required
1,2-Dichloroethane**	0.00125	0.0236	No Additional Degradation Analysis Required		
2,4-Dichlorophenol**	0.00474	0.0891	No Additional Degradation Analysis Required		
1,2-Dichloropropane**	0.00125	0.0236	No Additional Degradation Analysis Required		
Diethyl phthalate**	0.00384	0.0723	No Additional Degradation Analysis Required		
Dimethyl phthalate**	0.00384	0.0723	No Additional Degradation Analysis Required		
2,4-Dimethylphenol**	0.00474	0.0891	No Additional Degradation Analysis Required		
2,4-Dinitrophenol**	0.01019	0.192	No Additional Degradation Analysis Required		
2,4-Dinitrotoluene**	0.00474	0.0891	No Additional Degradation Analysis Required		
Ethylbenzene**	0.00119	0.0223	No Additional Degradation Analysis Required		
Fluoranthene**	0.00355	0.0667	No Additional Degradation Analysis Required		
Fluorene**	0.00355	0.0667	No Additional Degradation Analysis Required		
Hexachlorobenzene	0.00355	0.0667	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Hexachlorobutadiene	0.00473	0.0889	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Hexachlorocyclopen-tadiene	0.00473	0.0889	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Hexachloroethane	0.00473	0.0889	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Ideno(1,2,3-cd)pyrene	0.00355	0.0667	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Isophorone**	0.00288	0.0542	No Additional Degradation Analysis Required		
3-Methyl-4-chlorophenol**	0.00462	0.0868	No Additional Degradation Analysis Required		
2-Methyl-4,6-dinitrophenol**	0.00710	0.133	No Additional Degradation Analysis Required		
Methylene chloride**	0.00149	0.0281	No Additional Degradation Analysis Required		
Nitrobenzene**	0.00288	0.0542	No Additional Degradation Analysis Required		
N-Nitrosodimethylamine**	0.00288	0.0542	No Additional Degradation Analysis Required		
N-Nitrosodi-n-propylamine**	0.00288	0.0542	No Additional Degradation Analysis Required		
N-Nitrosodiphenylamine**	0.00341	0.0642	No Additional Degradation Analysis Required		
Pentachlorophenol **	0.00882	0.166	Further Degradation Analysis Needed	Reported ND, calculated by 1/2 of RL	No Additional Degradation Analysis Required
Phenol**	0.00547	0.103	No Additional Degradation Analysis Required		
Pyrene**	0.00355	0.0667	No Additional Degradation Analysis Required		
1,1,2,2-Tetrachloroethane**	0.00125	0.0236	No Additional Degradation Analysis Required		
Tetrachloroethylene**	0.000866	0.00458	No Additional Degradation Analysis Required		
Toluene**	0.00112	0.0210	No Additional Degradation Analysis Required		
1,2-Trans-dichloroethylene**	0.00125	0.0236	No Additional Degradation Analysis Required		
1,2,4-Trichlorobenzene **	0.00474	0.0891	Further Degradation Analysis Needed	Reported ND, calcaulted by 1/2 of RL	No Additional Degradation Analysis Required
1,1,1-Trichloroethane**	0.00125	0.0236	No Additional Degradation Analysis Required		
1,1,2-Trichloroethane**	0.00125	0.0236	No Additional Degradation Analysis Required		

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							Mixing Calculation		Loading Calculation	
Pollutant	**CAS**	**20.6.4 NMAC Water Quality Standard (Cwqs),** *ug/L*	**20.6.4 NMAC Water Quality Standard (Cwqs),** *mg/L*	***Baseline Concentration (Cbwq) In-Stream,*** *mg/L*	**Assimilative Capacity (AC) (Cwqs-Cbwq),** *mg/L*	**Significant degradation (Cbwq+10% AC),** *mg/L*	**Calculated Effluent Concentration (Cd)** ((Cwqs-Cbwq) x 0.1 + Cbwq) x (Qd + Qs), *mg/L*	**Cs*Qs**	**Calculated Effluent Concentration @ 10% of AC Daily Max (Cd_{10}),** *mg/L*	**Allowable Effluent Load @ 10% of AC Daily Max,** *lbs/day*
Trichloroethylene**	79-01-6	70	0.070	0.000075	0.0699	0.00707	0.095	0.0008	0.0416	0.7818
2,4,5-Trichlorophenol**	95-95-4	600	0.6	0.000155	0.445	0.2	2.676	0.0017	0.662	3.501
2,4,6-Trichlorophenol**	88-06-2	28	0.028	0.000115	0.0279	0.00290	0.039	0.0013	0.0167	0.3134
Vinyl chloride**	75-01-4	16	0.016	0.000075	0.0159	0.00167	0.022	0.0008	0.0095	0.1791

* hardness-based criteria
** Human health-organism only (HH-OO) criteria

NM0022306 Chevron Mining Inc. Questa Mine
Outfall 001 Antidegradation Analysis

	Antidegradation Analysis				
Pollutant	**Average (Geomean) Effluent Data,** mg/L	**Proposed load based on current effluent data,** lbs/day	**Proposed Discharge: if > Allowable Effluent Load @ 10% of AC Daily, then Further Degradation Analysis Required**	**Pollutants Reported at MDL or Non-Detect (ND) (Only considered for pollutants Further Degradation Analysis Needed)**	**Flagging Pollutants Reported at MDL, all others No Additional Degradation Analysis Required**
Trichloroethylene**	0.00125	0.0236	No Additional Degradation Analysis Required		
2,4,5-Trichlorophenol**	0.00019	0.001	No Additional Degradation Analysis Required		
2,4,6-Trichlorophenol**	0.00470	0.0884	No Additional Degradation Analysis Required		
Vinyl chloride**	0.00112	0.0210	No Additional Degradation Analysis Required		

* hardness-based criteria
** Human health-organism only (HH-OO) criteria