

Appendix 9.A Water Balance/Water Quality Model Report



**Queensway Gold
Project Water Balance and
Water Quality Model Report**

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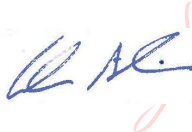
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Acronyms / Abbreviations

°C	degrees Celsius
AET	Actual evapotranspiration
BSGI	Interbedded Black Siltstone and Greywacke
BSIL	Black Siltstone
CCME	Canadian Council of Ministers of the Environment
ECCC	Environment and Climate Change Canada
FDP	Final Discharge Point
g/yr	gram per year
GoldSim	GoldSim™ Simulation Software
ha	hectare(s)
HCT	Humidity Cell Test
HGO	High-Grade Ore
HGSR	High-grade sorter rejects
K	kelvins
kg	kilograms
kJ/mol	kilojoule per mole
km	kilometres
L	litres
m ³	cubic metres
m ³ /mon	cubic metre per month
MDMER	<i>Metal and Diamond Mining Effluent Regulations</i>
mg/kg/week	milligrams per kilogram per week
mg/L	milligrams per litre



MGO	Mid-Grade Ore
MGSR	Mid-grade sorter rejects
mm	millimetres
MMBCG	Mineralized Material Below Cut-Off Grade
New Found Gold	New Found Gold Corporation
non-PAG	Non-Potentially Acid Generating
PAG	Potentially Acid Generating
R _{HC}	leaching rates
RoM	Run-of-Mine
SDG	Greywacke
SF	scaling factor
SIL	Siltstone
Stantec	Stantec Consulting Limited
USGS	United States Geological Survey
VC	Valued Component
WBM	Water Balance Model
WBWQM	Water Balance and Water Quality Model
WQM	Water Quality Model
WRSF	Waste Rock Storage Facility



1 Introduction

New Found Gold Corporation (New Found Gold) is planning to develop an open pit gold mine at the Queensway North Property (the Property), located east of the Town of Appleton and approximately 6 kilometres (km) west of Gander, Newfoundland and Labrador (Figure 1.1). The Property is located between the Gander River, to the northwest, and Gander Lake, to the south. The Queensway Gold Project (the Project) includes the construction, operation, and rehabilitation and closure of an open pit gold mine and associated infrastructure. A total of four open pits are proposed at the mine site: Keats, Iceberg, Dome, and Jackpot. As part of the environmental assessment for the Project, New Found Gold has commissioned Stantec Consulting Limited (Stantec) to develop an integrated water balance and water quality model (WBWQM), which combines a water balance model (WBM) and a water quality model (WQM), to predict potential changes in water flow and water quality as a result of the Project.

1.1 Project Description

This report describes the development of the preliminary process WBWQM for the site that represents the Project-level site development plan. The WBWQM for the Project was constructed using GoldSim™ simulation software (GoldSim) with the contaminant transport module extension. GoldSim is commonly used in the mining industry to develop water balance models and estimate water quality at user defined modelling nodes by combining system dynamics with discrete event simulations. The model is setup to run dynamically with daily time steps and generates monthly-averaged results for the construction, operation, active closure, and post-closure Project phases. Active closure represents the three-year period during active rehabilitation when pits begin to fill naturally and stockpiles are revegetated/covered, and post-closure is the mine life period following active closure.

The WBM incorporates defined inputs, such as inflow rates and outflow rates. These inflows and outflows are based on precipitation, evapotranspiration, infiltration and runoff rates, catchment and facility areas and volumes, groundwater inflow rates, operational water management strategies and the movement of materials within the mine site.



1.2 Objectives

The objectives of the Project WBWQM are as follows:

- To estimate the quantity and quality of surface water runoff and seepage associated with the Project facilities including the open pits, waste rock storage facility (WRSF), overburden storage facility, ore stockpiles, and industrial complex from the construction/operation phase through the post-closure phase.
- Predict the quantity and quality of effluent discharge at each final discharge point (FDP) and pit overflow during the different phases of the Project.

The effects of the Project on surface water quantity and quality of the receiving environment from the FDP locations are not simulated in the model, but are assessed in the Surface Water Resources Valued Component (VC) in the Environmental Registration (New Found Gold 2026a).



2 Project Overview

2.1 Project Facilities

The Project site consists of four open pits, ore stockpile area, WRSF, overburden storage facility, industrial complex (including site facilities), and water management ponds. A description of the individual Project facilities is presented in the Water Management Plan (Stantec 2026; Appendix 4.A of the Environmental Registration). The locations of the facilities are presented in Figure 1.1.

2.1.1 Open Pits

The four open pits—Keats, Iceberg, Dome, and Jackpot—will be constructed sequentially and progressively from Mine Years 1 to 7. Ore that is extracted from the pits will be hauled to the ore stockpiles area for stockpiling or hauled to the Pine Cove processing facility (high-grade ore [HGO]). Each of the four pits will be dewatered throughout operation by pumping from sumps at the base of each pit. The collected contact water will be pumped to a central treatment pond (IT-TP-01) prior to discharge. Discharge from the central treatment pond is divided to two FDPs which drain either to North Herman's Pond (Pond P2) or P-Pond (Pond P9). The treatment within IT-TP-01 is planned to be sedimentation only for a design storm event prior to release to the environment (Stantec 2026).

After completion of mining, the pits will be allowed to fill with water up to a crest of spillway elevation. For the Iceberg and Keats pits, mineralized material below cut-off grade (MMBCG) and potentially acid generating (PAG) waste rock will be deposited into the pits prior to natural filling of the pits. Once full, the pits will be allowed to spill naturally along established drainage pathways. Within the WBWQM, the pit lake overflows drain to the North Herman's Pond watershed during the post-closure phase.

Active ore extraction will occur from Mine Year 1 to Mine Year 7 within the pits. The pit excavation and operation schedule are discussed in Section 2.3.

2.1.2 Stockpiles

The ore stockpiles, where mineralized material will be placed, is located east of the pit areas (Figure 1.1). The run-of-mine (RoM) pad underlying the ore stockpile area has an assumed surface area of 37.8 hectares (ha). Mineralized material stored at the ore stockpile area will be divided into five separate piles: MMBCG, mid-grade ore (MGO), mid-grade sorter rejects, high-grade sorter rejects, and a stockpile designated to hold approximately one week's worth of RoM material. Rejected material from the sorting plant will be placed in their respective mid- and high-grade reject stockpiles, while MMBCG and MGO will be stockpiled separately.



Non-potentially acid generating (non-PAG) waste rock will be placed in the WRSF. The WRSF will be constructed from the existing ground surface and will be sloped and benched as it is developed, creating overall safe slopes for final closure. In addition, the WRSF will be progressively rehabilitated during operation and closure by covering the slopes and benches with vegetated soil cover to reduce infiltration and increase evapotranspiration. The WRSF is expected to have a total surface area of 90 ha.

Overburden will be placed in the overburden storage facility on the northeast corner of the Project Area (Figure 1.1). The facility is expected to have a total surface area of 33.9 ha.

2.2 Water Management Infrastructure

The water management infrastructure for the Project includes five water management ponds and associated ditching (Stantec 2026). Collection ditches will be installed around each stockpile to intercept surface water, toe seepage, and lateral groundwater flows including stockpile basal seepage, which will be conveyed via gravity drainage to the water management ponds. Upgradient non-contact water is actively planned to be diverted away from contact water collection ditches and ponds. The ponds are designed to provide flood control and treatment via sedimentation for contact water discharges from the stockpiles and pit dewatering. The water management concept is centralized with two effluent discharges augmenting flow at two project sub-watersheds. Effluent from four of the ponds for Project infrastructure (overburden storage facility pond, ore stockpiles pond, and the two WRSF ponds) will be routed to the central treatment pond located at the industrial complex. Additional water quality treatment will be provided within the IT-TP-01 pond, as required. The industrial complex pond will discharge via constructed drainage channels or pipelines to diffusers to two local surface waterbodies (P-Pond and North Herman's Pond) as FDPs. Discharge to each FDP is divided based on baseline mean annual flow contributions to each watershed, i.e., 47% of discharge is sent to FDP-01 (P-Pond) and 53% of discharge is sent to FDP-02 (North Herman's Pond). Table 2.1 presents the list of ditches and water management ponds for the Project, including watershed catchment areas, pond volumes, and pond surface areas.



Table 2.1 Water Management Infrastructure Details

Mine Facility	Ditch Name	Water Management Pond	Water Management Pond Drainage Area (ha)	Pond Volume (m ³)	Pond Surface Area (m ²)
WRSF	WR-DR-01	WR-SP-01	63.9	73,420	35,774
	WR-DR-02				
	WR-DR-03	WR-SP-02	39.8	38,128	23,814
	WR-DR-04				
Overburden Storage Facility	OB-DR-01	OB-SP-01	48.2	61,787	29,921
	OB-DR-02				
Ore Stockpiles	OS-DR-01	OS-SP-01	27.6	69,070	53,666
	OS-DR-02				
Industrial Complex	IT-DR-01	IT-TP-01	39.1	76,946	36,978
	IT-DR-02				
	IT-DR-03				
	IT-DR-04				
	IT-DR-05				
	IT-DR-06				

Notes:

ha = hectare(s); m³ = cubic metre(s); m² = square metre(s)

2.3 Project Phases and Schedule

For the purposes of this model, the Project development schedule is assumed to consist of four primary phases: construction, operation, active closure, and post-closure. Table 2.2 presents the schedule for development of the Project infrastructure.

For the model scenarios, the construction phase is a one-year period which includes site preparation for areas not cleared during early works, road construction, site power supply upgrades and installation, dewatering of South Herman's Pond, installation of site infrastructure (i.e., pads, modular structures, and crushing and sorting plant), and the start of operation for the Keats pit. The following mine features associated with each mine phase are listed below with Table 2.2 presenting the Mine Year and Model Year timelines for each phase.



Construction – Mine Year 1 (Model Year 0)

- Clearing of overburden and transport to the overburden storage facility
- Construction of site infrastructure, including the industrial complex and ore stockpiles pad. The industrial complex and ore stockpiles pad are assumed to be constructed from non-PAG greywacke (SDG) and siltstone (SIL) rock sourced from the open pits
- Construction of water management infrastructure (contact ditches and ponds) for WRSF, overburden storage facility, ore stockpiles and industrial complex
- Dewatering of South Herman's Pond
- Start of mining operation at Keats pit, Dome pit, and Jackpot pit, including pit dewatering
- Ore begins to be stockpiled at the ore stockpiles pad and transported to Pine Cove
- Non-PAG waste rock is sent to the WRSF



Table 2.2 Project Schedule (Mine Years)

Mine Infrastructure	Operation							Active Closure			Post-Closure			Notes
	1	2	3	4	5	6	7	8	9	10	11	12	13 +	
Pits														
Keats	✓	✓	✓	✓	✓	✓	✓							Dewatering stops Yr 8, PAG ^g material and MMBCG ^a to pit Yr 8 (90%), Fills Yr 25.76
Jackpot	✓	✓												Dewatering stops Yr 3
Dome	✓	✓												Dewatering stops Yr 3
Iceberg		✓	✓	✓										Dewatering stops Yr 5, PAG ^g material to pit Yr 5, and MMBCG ^a to pit Yr 8 (10%), Fills Yr 31.24
Stockpiles														
Overburden Storage Facility	✓	✓	✓	✓	✓	✓	✓							Overburden removed Yr 8
Waste Rock Storage Facility	✓	✓	✓	✓	✓	✓	✓							Capped in Yr 8
Ore Stockpiles														
MMBCG ^a	✓	✓	✓	✓	✓	✓	✓	✓						Pile moved into Keats and Iceberg pits in Yr 8, pile fully gone Yr 9
MGO ^b	✓	✓	✓	✓	✓	✓								Gone Yr 7
MGSR ^c					✓	✓	✓							Gone Yr 8
HGSR ^d	✓	✓	✓	✓										Gone Yr 5
RoM ^e	✓	✓	✓	✓	✓	✓	✓							Gone Yr 8
RoM Pad	✓	✓	✓	✓	✓	✓	✓	✓						Gone Yr 9
Industrial Complex	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				Reclaimed Yr 10, Pond shut off once closure done Yr 10
Ponds														
OB-SP-01	✓	✓	✓	✓	✓	✓	✓							
WR-SP-01 (North)	✓	✓	✓	✓	✓	✓	✓							
WR-SP-02 (South)	✓	✓	✓	✓	✓	✓	✓							
OS-SP-01	✓	✓	✓	✓	✓	✓	✓							
IT-SP-01	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				Pond removed Yr 10
FDPs ^f														
FDP-01 (P-Pond)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				FDPs removed Yr 10
FDP-02 (North Herman's)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				FDPs removed Yr 10

Notes:

^a MMBCG: Mineralized material below cut-off grade

^b MGO: Mid-grade ore

^c MGSR: Mid-grade sorter rejects

^d HGSR: High-grade sorter rejects

^e RoM: Run-of-mine pile

^f FDPs: Final discharge points

^g PAG: Potentially acid generating material

Yr = year



Operation: Mine Years 1 to 7 (Model Years 0 to 6)

- Start of operation at Iceberg pit in Mine Year 2
- Dewatering of pits based on construction schedule (Table 2.2)
- Contact water ponds constructed with collection ditches, assumed to be extended to full footprint
- Water management design diverts non-contact water away from contact water infrastructure including open pits to reduce contact water inventory via berms constructed from ditch excavation side cast materials and non-contact water ditching. Diverted non-contact water is not simulated in the WBWQM
- Progressive rehabilitation of pits as operation ceases according to construction schedule (Table 2.2). This includes ceasing the dewatering of the pits and filling via incidental precipitation and groundwater infiltration
- Black siltstone (BSIL) and interbedded black siltstone and greywacke (BSGI) waste rock mined from Keats pit in Mine Years 4 and 5 is assumed to be PAG and will be backfilled and submerged in Iceberg pit and Keats pit following end of operation
- Mining extraction from pits ceases at the end of Mine Year 7

Active Closure: Mine Years 8 to 10 (Model Years 7 to 9)

- Overburden will be used as cover material for the WRSF. Assumed to cover in Mine Year 7. As such, the overburden storage facility will be cleared at the end of Mine Year 8 as all material will be removed
- Industrial complex will be in place until Mine Year 9. Overburden cover placed on industrial complex at start of Mine Year 10
- Material remaining in the MMBCG stockpile after operation will be backfilled in Keats pit (90% of total MMBCG volume) and Iceberg pit (10% of total MMBCG volume) in Mine Year 8
- Ore stockpiles area rehabilitated between Mine Year 8 and Mine Year 9, when material is removed and ore stockpiles pad is allowed to naturally revegetate
- Water management infrastructure at the industrial complex will remain in place during active closure until the discharge water quality meets regulatory criteria
 - If mine rock seepage or pit overflows are predicted to have discharge quality that exceed expected effluent concentrations when entering receiving water environments, water management infrastructure (i.e., perimeter ditches and sedimentation ponds) can be retrofitted as passive treatment systems. The primary passive treatment technologies for mine related waters include aerobic and anaerobic wetlands, sulphate reducing bioreactors, anoxic limestone drains, and successive alkalinity producing systems. Selection and design of passive treatment system is based on water chemistry, flow rate, local topography, and site characteristics. Passive treatment systems are not simulated in the WBWQM.
- Water management infrastructure will be breached or removed and existing condition drainage re-established



Post-Closure: Mine Years 11 to 51 (Model Years 10 to 50)

- Open pits will continue to fill and eventually discharge to the environment (Keats and Iceberg) or reach a stable maximum water level below the spillway crest elevation (Dome and Jackpot)



3 Modeling Approach

The model was constructed using GoldSim with the contaminant transport module extension. GoldSim is commonly used in the mining industry to develop water balance models and predict water quality at user-defined modeling nodes by combining system dynamics with discrete event simulations. The model was run dynamically with a monthly time step for the construction, operation, active closure and post-closure phases of the Project, as defined in Table 2.2.

The model includes a water balance component (Section 4) and a water quality component (Section 5). The water balance is developed using defined inputs as inflow rates and outflow rates. These inflows and outflows are based on precipitation, evapotranspiration, infiltration, and runoff rates, catchment and facility areas and volumes, groundwater inflow rates, operational water management strategies and the movement of materials within the site. The water quality predictions are calculated at the model nodes by integrating source terms developed for mass loading sources into the water quantity/balance component.

An average climate condition (i.e., based on Climate Normals) was considered to evaluate the potential effects of the Project on surface water as a base case. The water quantity model and climate scenarios are discussed in more detail in Section 4. The water quality model and source term scenarios are discussed in more detail in Section 5.



4 Water Balance Model

4.1 Conceptual Water Balance Model

The WBM relies on climate and hydrological inputs, drainage areas, and characteristics of mine facilities during different phases of the Project. The water quantity model is developed to predict outflow rates of the mine site, including the water management pond discharges to the FDPs, within the Local Assessment Area. The Local Assessment Area for the Surface Water Resources Valued Component as assessed in the Environmental Registration (Section 9; New Found Gold 2026a) is shown in Figure 4.1.

Figure 4.2 to Figure 4.7 present the schematic structure of the water quantity model, the FDP locations, Project facilities, and the contact water and non-contact water flow pathways. The modelled Project facilities identified in Section 2, including the ore stockpiles, overburden storage facility, WRSF and open pits, will have drainage and diversion controls that prevent external natural drainage from coming into contact with Project facilities and becoming contact water.

Catchment areas for the Project facilities were delineated based on the Project layout (Figure 4.8) and existing topography. The catchment areas were delineated where seepage from the bases of the stockpiles are expected to report to the collection ditches and then to each respective water management pond. It is assumed that these catchment areas are at the ultimate footprint stage of mine development at the beginning of each Project phase. For example, the model assumes that contact water from stockpiles starts flowing to the water management ponds at the beginning of operation with the exception of the Keats open pit which has been set as a gradually expanding area over Mine Years 1 to 7.

Conceptual models showing the interactions of the Project facilities during the construction, operation, active closure and post-closure life of mine phases are presented in Figure 4.2 to Figure 4.7. The flow arrows in the figures indicate the direction of flow accounted for in the WBM. To simulate post-closure, the WBM was extended to run until Mine Year 50. Natural pit filling was simulated to assess how long it would take for the pits to naturally fill and drain to the environment upon end of operation.



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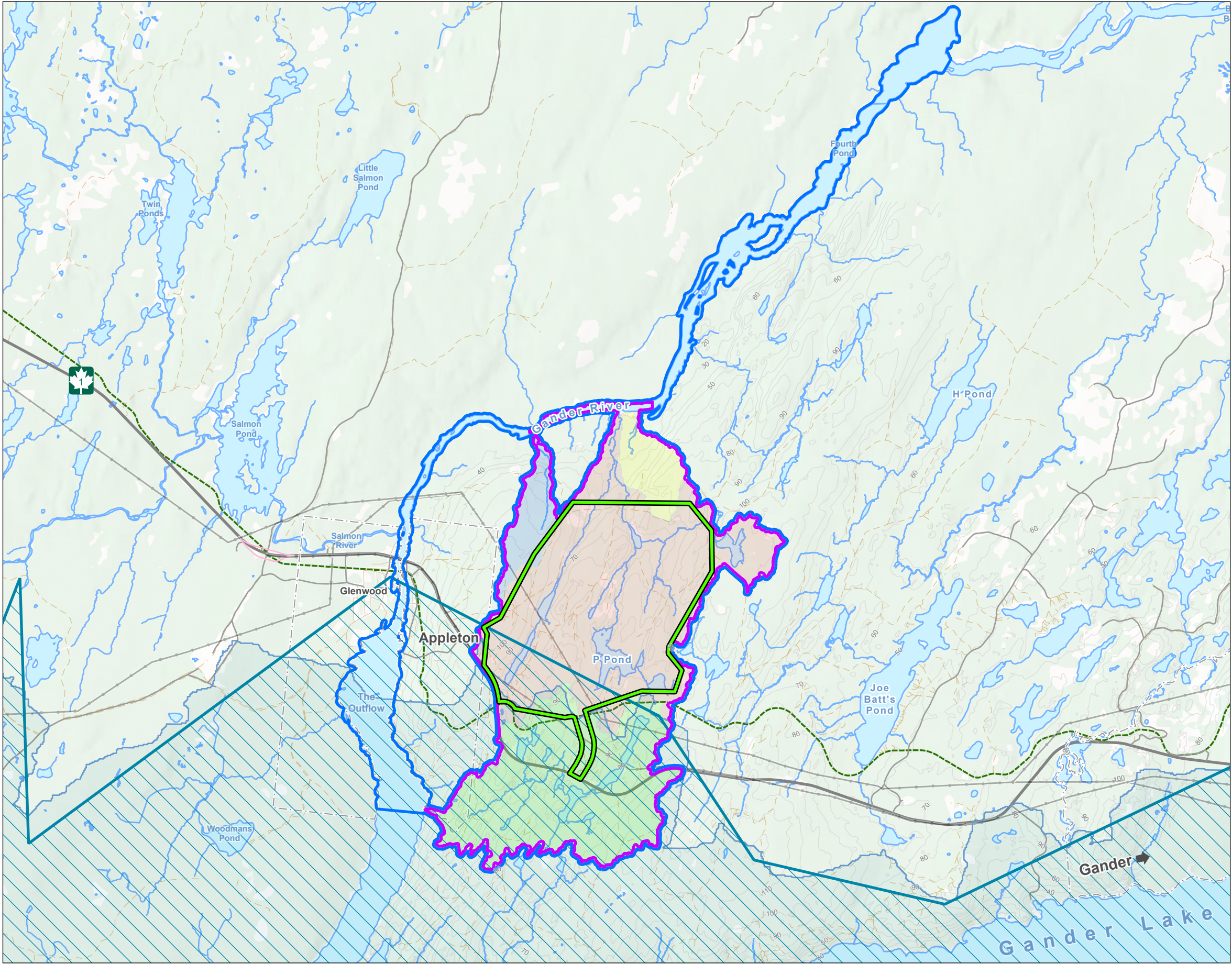


Figure No.
4.1

Title
**Queensway Gold Project
Surface Water Spatial Boundaries**

Client/Project
New Found Gold Corp.
Queensway Gold Project

Project Location
North Gander Lake
Newfoundland and Labrador

Prepared by NW on 2025-11-14
Updated by NW on 2026-03-05
TR by JR on 2026-03-03

121418510_127

N

00.512

km

(At original document size of 11x17)
1:65,000

Project Area

Local Assessment Area

Regional Assessment Area

Protected Surfacewater Boundary (NLDFAL)

Gander Lake Watershed (NLDECCC-WRMD)

Watershed Delineation (Stantec 2025)

GLT1 (Gander Lake Tributary 1)

GRT1 (Gander River Tributary 1)

GRT2 (Gander River Tributary 2)

HP (Herman's Pond)

Wetlands and Waterways

Watercourse

Waterbody

Existing Infrastructure

Transmission Line

Highway

Collector

Local / Street

Ramp

Resource Road / Trail

NL T'Railway Provincial Park

Other Features

Contour (10 m)

Municipal Boundaries

Notes
1. Coordinate System: NAD 1983 CSRS MTM 2
2. Data Sources: New Found Gold Corp.; Stantec; Government of Newfoundland and Labrador, Department of Environment, Conservation and Climate Change, Department of Forestry, Agriculture and Lands - Land Use Atlas Mapping Service, Department of Municipal and Community Affairs; National Road Network, Statistics Canada.
3. Background: Government of Newfoundland and Labrador, Department of Forestry, Agriculture and Lands - Land Use Atlas Mapping. Esri, NASA, NGA, USGS, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, USGS

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Queensway Gold Project Water Balance and Water Quality Model Report
Section 4 Water Balance Model
April 30, 2026

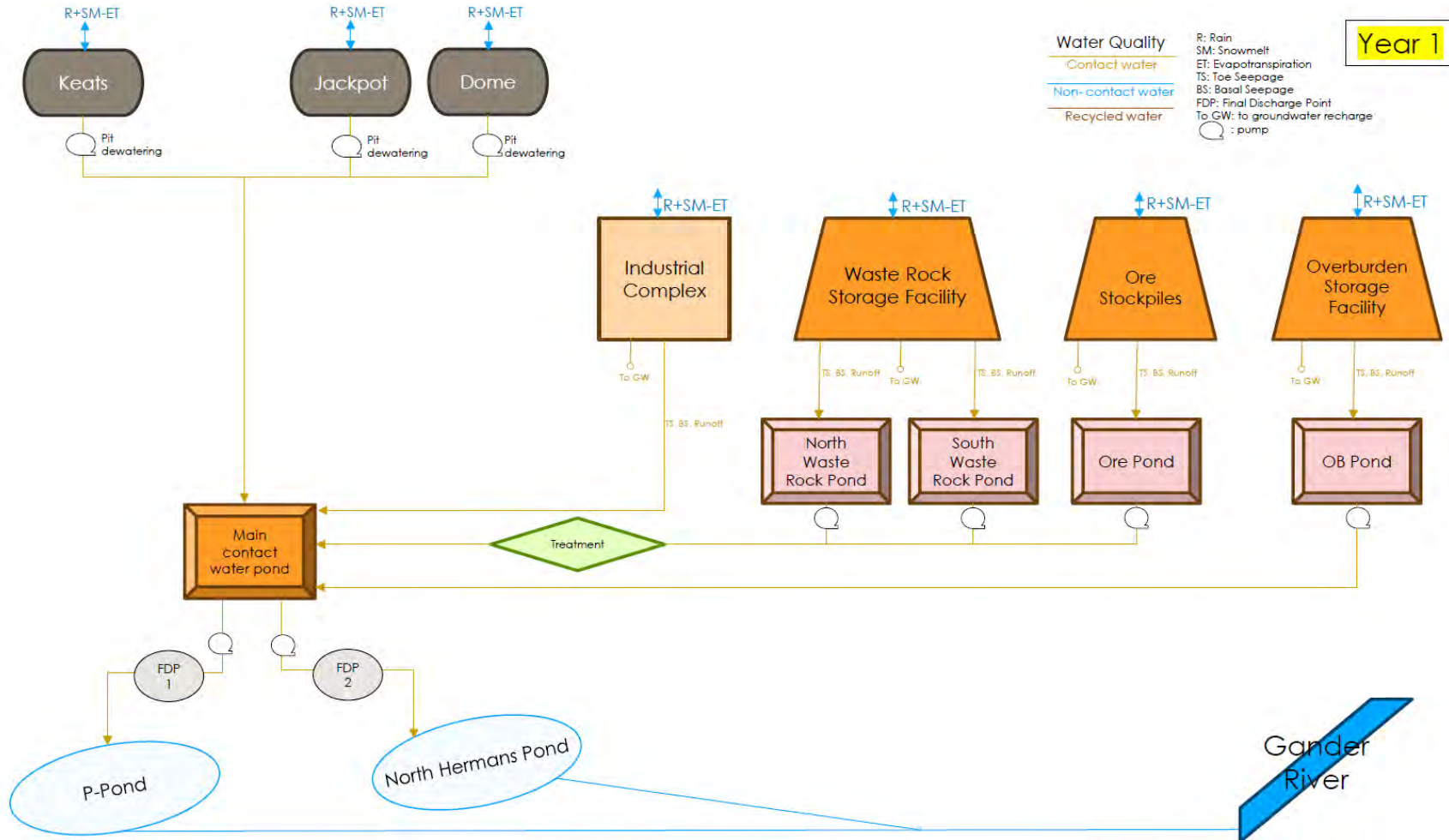


Figure 4.2 Conceptual Model of Mine Water Management – Construction/Operation (Mine Year 1)



Queensway Gold Project Water Balance and Water Quality Model Report
Section 4 Water Balance Model
 April 30, 2026

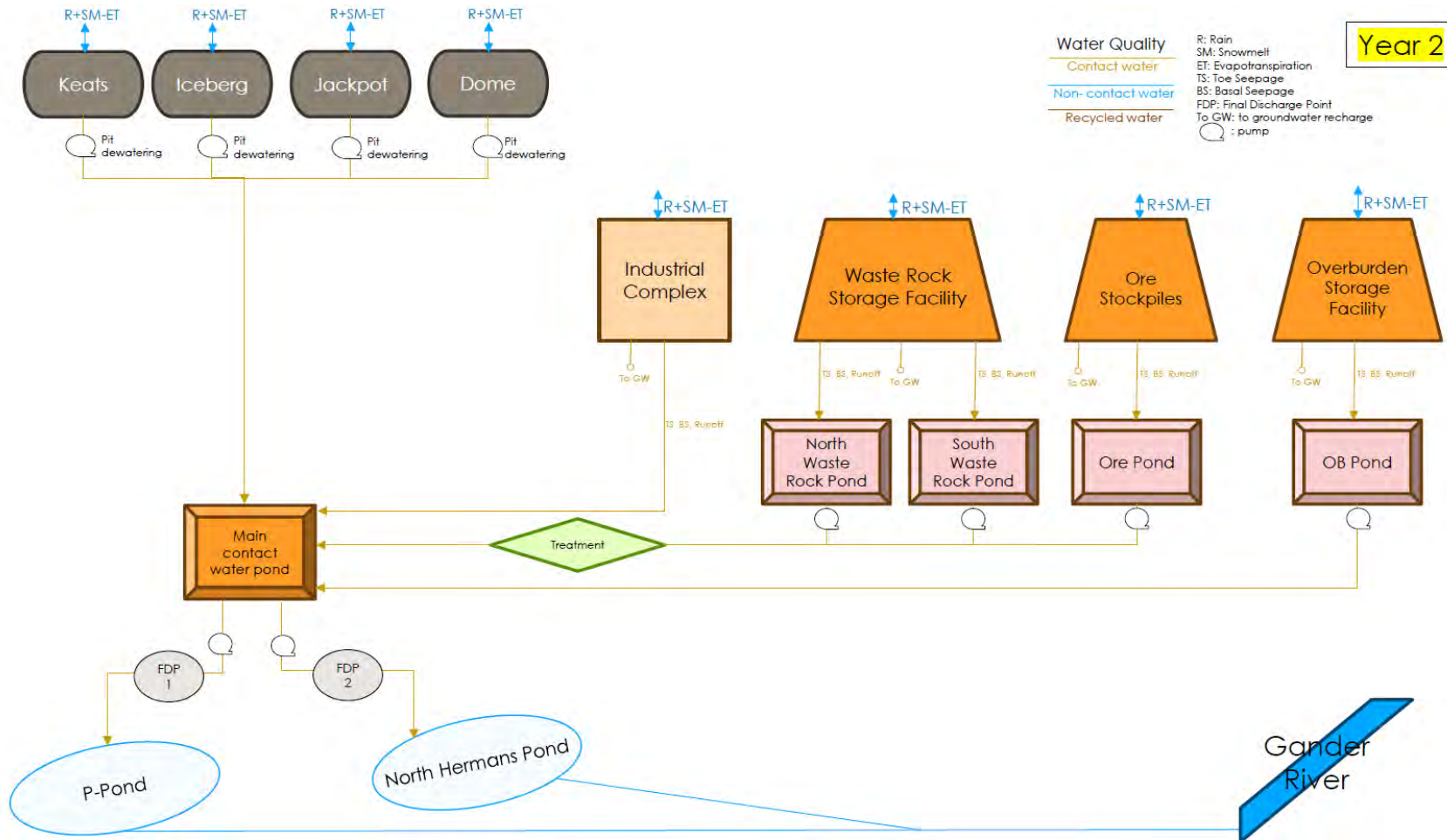


Figure 4.3 Conceptual Model of Mine Water Management – Operation (Mine Year 2)



Queensway Gold Project Water Balance and Water Quality Model Report
Section 4 Water Balance Model
 April 30, 2026

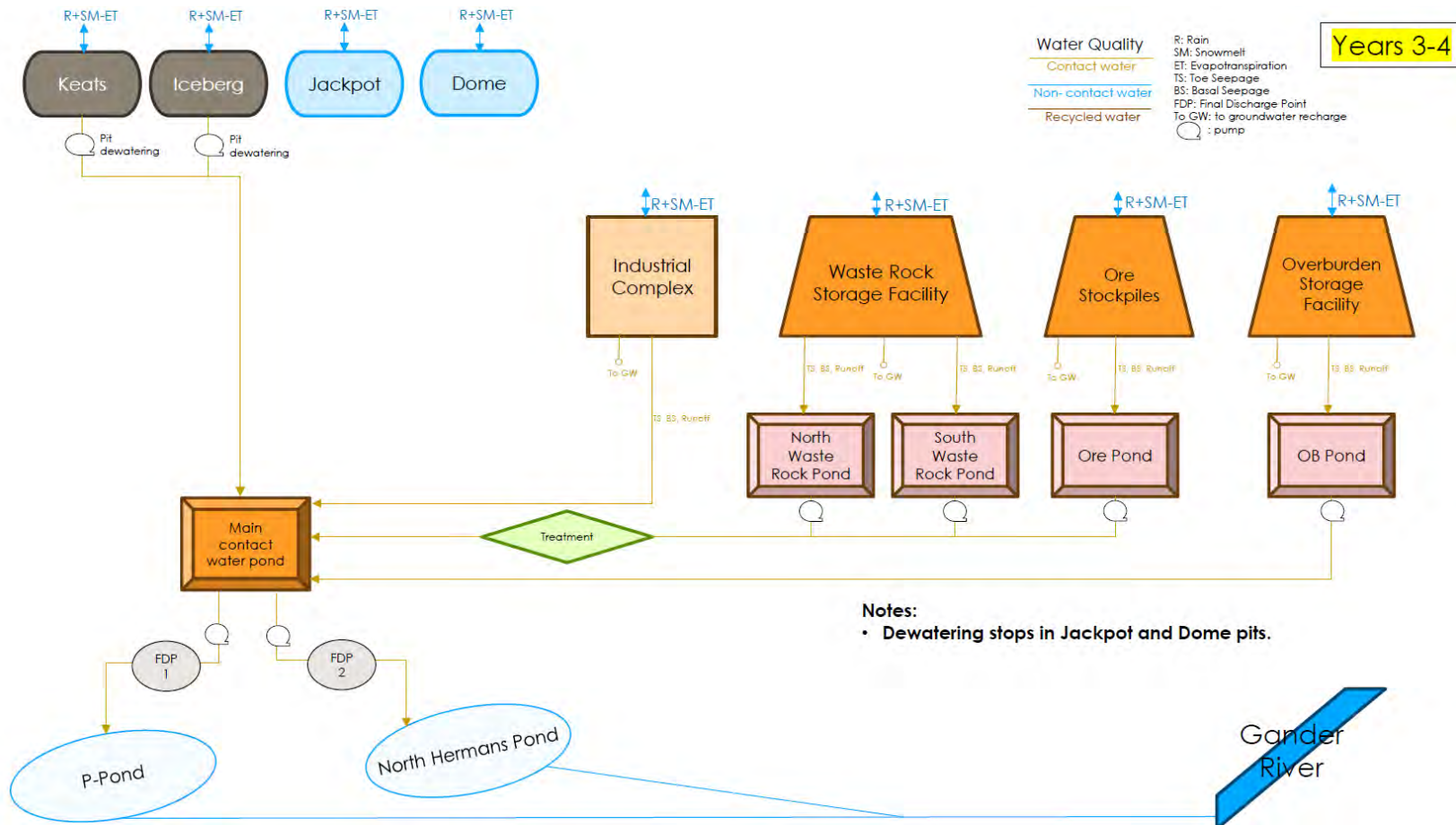


Figure 4.4 Conceptual Model of Mine Water Management – Operation (Mine Years 3 to 4)



Queensway Gold Project Water Balance and Water Quality Model Report
Section 4 Water Balance Model
April 30, 2026

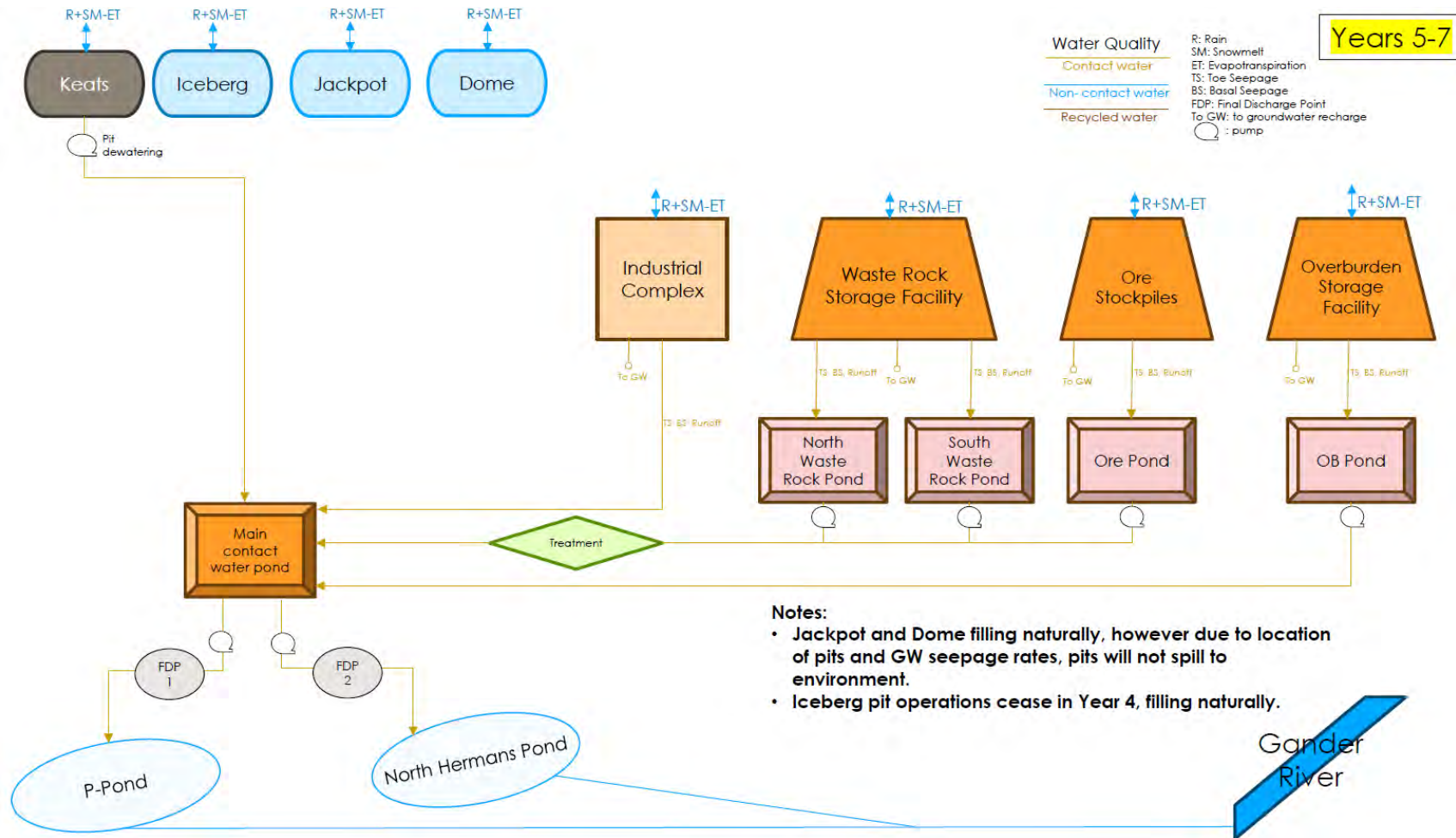


Figure 4.5 Conceptual Model of Mine Water Management – Operation (Mine Years 5 to 7)



Queensway Gold Project Water Balance and Water Quality Model Report
Section 4 Water Balance Model
April 30, 2026

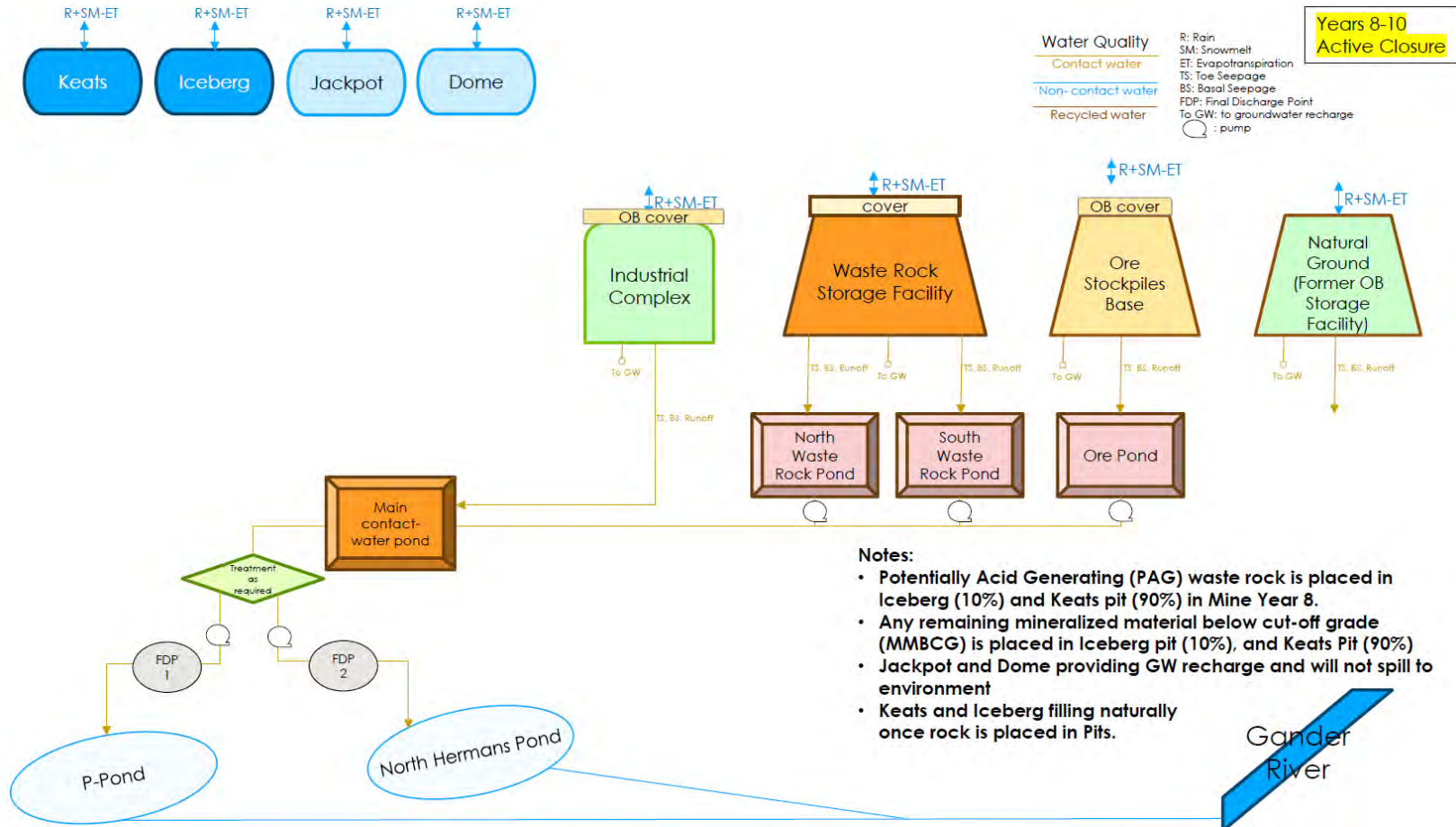


Figure 4.6 Conceptual Model of Mine Water Management – Active Closure (Mine Years 8 to 10)



Queensway Gold Project Water Balance and Water Quality Model Report
 Section 4 Water Balance Model
 April 30, 2026

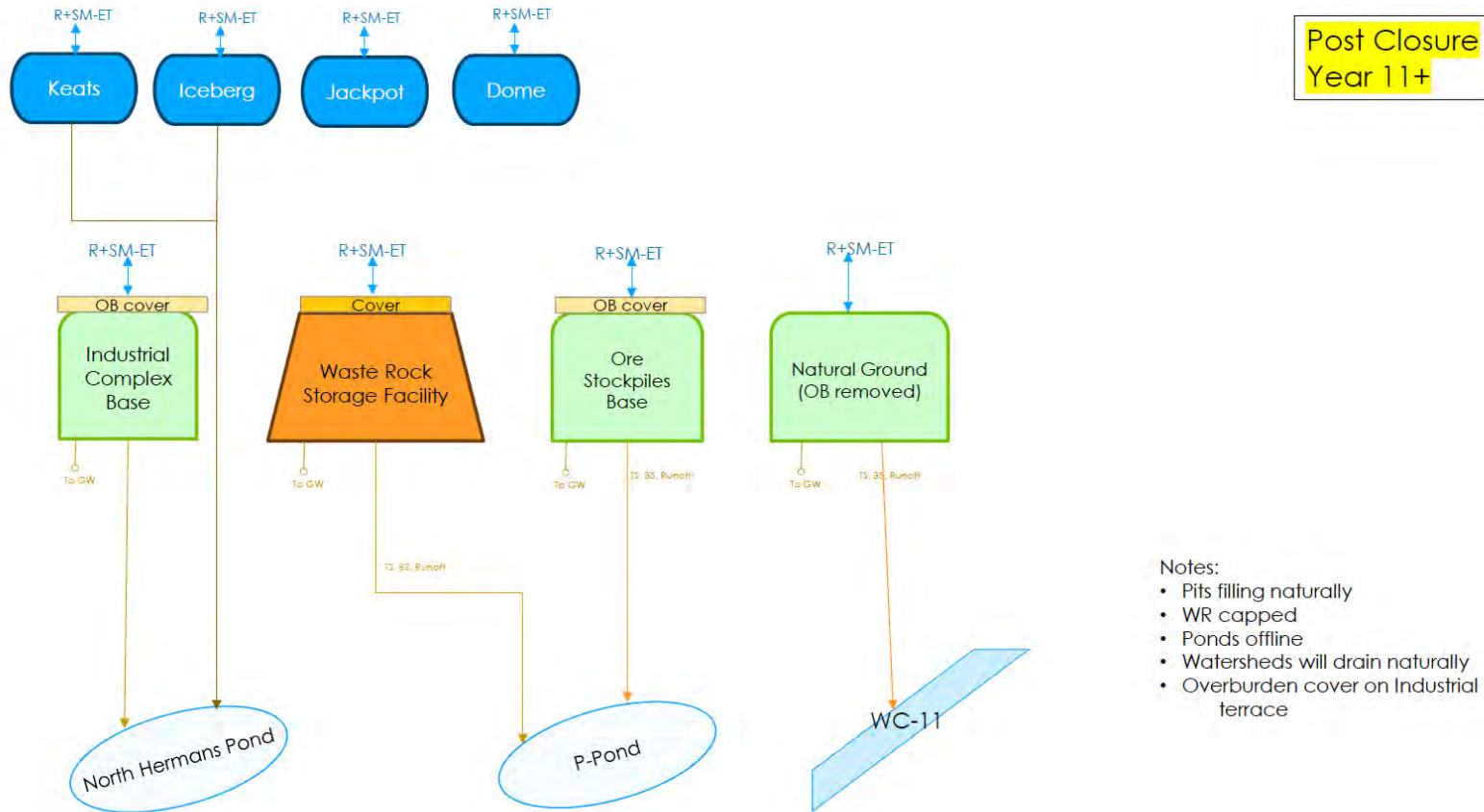


Figure 4.7 Conceptual Model of Mine Water Management – Post-Closure (Mine Years 11+)





Figure 4.8 Catchment Areas for Project Infrastructure



4.2 Water Balance Model Inputs

4.2.1 Climate

Two climate scenarios are simulated: Climate Normal (based on the 1991-2020 Climate Normals) throughout the life of mine and Dry (20-year return period dry scenario) to assess changes in component outflows during a single year during operation. The existing conditions section in the Surface Water Resources VC (Section 9.1 of the Environmental Registration; New Found Gold 2026a) evaluated available climate data for the Project. Precipitation data collected at the Environment and Climate Change Canada (ECCC) meteorological station at Gander Airport (Climate ID: 8401703) located 10 km from the Project site is used to develop the input data for the two scenarios. The 1991-2020 Climate Normals has an annual precipitation of 1,247.1 millimetres (mm). Using the available precipitation data for the Gander Airport Climate Station (1953 to 2024), dry years were defined as years having annual precipitation less than the Climate Normal value. The 20-year return period dry year annual precipitation amount was estimated using the hydrological frequency analysis software package HYFRAN (El Adlouni and Bobée 2015). The 20-year dry precipitation was estimated to be 1064.6 mm, based on the hydrological frequency analysis. The Climate Normal monthly distribution of precipitation is applied to estimate dry year monthly precipitation amounts. The dry year was inserted into the model as a single dry year event in Year 4 to assess impacts of the dry climate year on the WBM.

Actual evapotranspiration (AET) for the Project site is estimated using the monthly environmental water balance model based on the Thornthwaite equation (Thornthwaite and Mather 1957) using a graphical user interface developed by the United States Geological Survey (USGS) (Table 4.1). Inputs to the USGS Thornthwaite model included average precipitation and temperature data at the Gander Airport climate station, local soil conditions and recommended values provided by the USGS (McCabe and Markstrom 2007) (Table 4.1).



Table 4.1 *Water Balance Model Climate Inputs with Monthly Distribution*

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Temperature (°C) (ECCC 1991-2020 Climate Normal)	-6.6	-6.8	-3.8	1.4	6.7	11.6	16.6	16.6	12.3	6.7	1.8	-3.1	4.5
Precipitation (ECCC 1991-2020 Climate Normal)	102.8	91.4	105.2	92.0	93.8	88.8	105.0	101.7	115.2	119.9	110.1	121.3	1247.1
Dry Year Precipitation	92.8	88.1	84.5	85.2	71.5	75.5	77.7	93.9	90.7	98.7	108.9	97.1	1064.6
AET (Thornthwaite Model [New Found Gold 2026a])	11.1	12.2	20.2	28.5	50.6	73.7	98.8	82.1	46.5	24.9	12.9	8.3	469.8
Lake Evaporation (Average Lake Evaporation Rate New Found Gold 2026a)	0	0	0	0	102.6	103.5	101.0	89.8	52.3	0	0	0	449.2
Snow Storage	76.6	66.4	79.8	40.3	15.6	0	0	0	0	3.9	29.7	66.6	378.9
Snowmelt	51.6	60.4	93.8	77.3	20.6	0	0	0	0	1.9	24.7	48.6	379.2

Notes:

^a Monthly and annual values provided as percent of the annual precipitation

°C = degrees Celsius; AET = actual evapotranspiration



4.2.2 Hydrology

Table 4.2 presents the runoff coefficients for the Project facilities and associated ground conditions. Direct precipitation onto the water management pond surfaces and pit lakes during active closure/post-closure are assumed to have no loss due to runoff. The natural ground coefficient is estimated from the regional hydrology assessment (New Found Gold 2026a).

Table 4.2 Runoff Coefficients for Water Balance Model

Land Use	Runoff Coefficient
Natural Ground (Stantec in prep)	0.35
Mine Rock - Operation	0.25
Mine Rock - Closure	0.40
Open Pit	0.95
Prepared Ground (2x Natural Ground)	0.7
Overburden Storage Facility - Operation	0.7
Overburden Storage Facility - Closure	0.35

4.2.2.1 Stockpiles

4.2.2.1.1 Waste Rock Storage Facility

During the first year of stockpile placement, the WRSF is assumed to store 50% of the infiltration as the mine rock is wetted. Following the first year of stockpile placement when rock mass wetting occurs, 100% of water is available for infiltration to groundwater or lateral flow to seepage collection ditches.

During active closure, the WRSF is assumed to be stabilized with a vegetative cover of overburden. The evaporation for the covered WRSF is assumed to be 100% of AET which decreases the net infiltration into the stockpile.

4.2.2.1.2 Overburden Storage Facility

The overburden storage facility is assumed to be completely removed during Mine Year 8 as material from the pile will be used to cover other Project facility areas (e.g., WRSF). When the pile is removed, it is assumed that no lateral flow seepage will flow to the OB-SP-01 or associated collection ditches.



4.2.2.1.3 Ore Stockpiles

The ore stockpiles will progressively change over the life of mine. For the purpose of the WBM, stockpiles appear in their full extents and are removed per the schedule in Table 2.2. During active closure, the MMBCG will be placed in the Iceberg (10% of material) and Keats (90% of material) pits. When ore is removed from the ore stockpiles pad in Mine Year 8, the pad will be revegetated with an overburden cover. Once the cover is placed, the water management pond for this area will be removed and seepage and lateral flow from the pad will flow naturally to the environment.

Lateral seepage and toe seepage for the stockpiles is assumed to account for 25% of infiltration reporting to the piles. The remaining 75% of infiltration per month is assumed to be groundwater recharge.

4.2.2.2 Open Pits

Appendix A presents the stage, 2D surface area, and pit volume below each stage for each of the four pits. A pit overflow elevation has been assigned based on the lowest storage elevation within the pit when discharge would occur.

PAG waste rock is proposed to be placed in the Iceberg pit beginning in Mine Year 5, and MMBCG ore is proposed to be placed within the Keats and Iceberg pits in Mine Year 8. The volume of PAG waste rock plus MMBCG placed within Keats pit is estimated to be 2,433,353 cubic metres (m³), and the volume of MMBCG ore placed within Iceberg pit is estimated to be 270,353 m³.

4.2.2.2.1 Groundwater Seepage Rates

The maximum groundwater seepage rates to the four pit shells for the operation phase (full pit shell) and pit full volume condition are presented in Table 4.3 were estimated by the groundwater model (Section 8 of the Environmental Registration; New Found Gold 2026a). The groundwater seepage rates for each model timestep are calculated using linear interpolation of the Table 4.3 rates based on water level elevation within each pit.

Table 4.3 Water Balance Model Climate Inputs with Monthly Distribution

Pit	Groundwater Seepage – Operation (m ³ /day)	Groundwater Seepage – Pit Full (m ³ /day)
Keats	2,357	800
Iceberg	1,030	-63 ^a
Dome	491	-247 ^a
Jackpot	223	-555 ^a

Source: Groundwater Resources VC (Section 8; New Found Gold 2026a)

Notes:

^a A negative number indicates groundwater recharge, i.e., flow out of the pit to groundwater table
m³/day = cubic metre(s) per day



4.3 Water Balance Model Results

The results of the WBM are presented in the following sub-sections for each of the sedimentation ponds and open pits for Climate Normal and dry-year scenarios. Appendix B presents tabular forms of select WBM results.

4.3.1 Water Management Ponds

The main treatment pond (IT-TP-01) and the overburden storage facility pond (OB-SP-01) will fill up and discharge via the low flow outlet during the first month of operation. The water management ponds associated with the WRSF (WR-SP-01, WR-SP-02) and ore stockpiles pond (OS-SP-01) will take approximately two months to begin discharging to IT-TP-01.

Table 4.4 presents the maximum average daily outflow rate and average annual discharge rate from the water management ponds using the climate normal scenario during Mine Year 2 (Operation), Mine Year 7 (Operation), and Mine Year 8 (Active Closure). Table 4.5 presents the maximum average monthly outflow rate and average total annual discharge volume from the water management ponds at select Mine Years (4, 5, and 6) for the dry scenario simulated to occur in Mine Year 4. The Climate Normal year with the highest predicted pit dewatering rate is Mine Year 2 when the four pits are operational.



Table 4.4 Climate Normal Water Balance Results – Average Flow (m³/day) from Water Management Ponds and Final Discharge Points

Pond	Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
OB-SP-01	Operation – Year 2	719	762	1,158	1,294	763	694	795	791	1,057	1,168	1,081	1,026	942
	Operation – Year 7	784	784	1,190	1,333	799	732	839	833	1,103	1,212	1,118	1,058	982
	Active closure – Year 8	794	929	1,204	1,352	817	752	864	855	1,128	1,237	1,138	1,074	1,012
WR-SP-01	Operation – Year 2	819	899	1,429	1,484	774	583	649	665	934	1,039	1,072	1,126	956
	Operation – Year 7	899	899	1,429	1,484	774	583	649	665	934	1,039	1,072	1,126	963
	Active closure – Year 8	928	1,089	1,402	1,527	845	736	847	830	1,170	1,357	1,309	1,271	1,109
WR-SP-02	Operation – Year 2	386	422	670	698	346	261	292	301	434	495	507	530	445
	Operation – Year 7	422	422	670	698	346	261	292	301	434	495	507	530	448
	Active closure – Year 8	435	510	658	717	378	330	380	374	540	637	613	595	514
OS-SP-01	Operation – Year 2	915	915	1,392	1,536	1,020	948	1,088	1,062	1,292	1,362	1,283	1,233	1,170
	Operation – Year 7	915	915	1,392	1,536	1,020	948	1,088	1,062	1,292	1,362	1,283	1,233	1,170
	Active closure – Year 8	477	560	731	817	510	474	546	537	677	723	666	633	612
IT-TP-01	Operation – Year 2	8,796	9,240	11,922	12,621	9,514	8,932	9,585	9,512	10,881	11,293	10,965	10,815	10,340
	Operation – Year 7	7,320	3,833	5,921	6,421	3,816	3,339	3,805	3,777	4,897	5,322	5,123	5,045	4,885
	Active closure – Year 8	3,448	4,043	5,234	5,782	3,427	3,106	3,574	3,513	4,650	5,167	4,868	4,670	4,290
FDP-01	Operation – Year 2	4,134	4,343	5,604	5,932	4,472	4,198	4,505	4,471	5,114	5,308	5,154	5,083	4,860
	Operation – Year 7	3,441	1,802	2,783	3,018	1,794	1,569	1,788	1,775	2,301	2,501	2,408	2,371	2,296
	Active closure – Year 8	1,621	1,900	2,460	2,717	1,611	1,460	1,680	1,651	2,185	2,429	2,288	2,195	2,016
FDP-02	Operation – Year 2	4,662	4,897	6,319	6,689	5,042	4,734	5,080	5,041	5,767	5,985	5,812	5,732	5,480
	Operation – Year 7	3,880	2,032	3,138	3,403	2,023	1,770	2,017	2,002	2,595	2,821	2,715	2,674	2,589
	Active closure – Year 8	1,828	2,143	2,774	3,064	1,816	1,646	1,894	1,862	2,464	2,739	2,580	24,75	2,274



Table 4.5 Dry Scenario (Mine Year 4) Water Balance Results – Average Flow (m³/day) from Water Management Ponds and Final Discharge Points

Pond	Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
OB-SP-01	Operation – Year 4	750	880	1149	1285	871	809	926	897	1095	1136	1047	996	987
	Operation – Year 5	915	915	1392	1536	1020	948	1,088	1,062	1,292	1,362	1,283	1,233	1,170
	Operation – Year 6	915	915	1392	1536	1020	948	1,088	1,062	1,292	1,362	1,283	1,233	1,170
WR-SP-01	Operation – Year 4	631	757	1085	1141	604	472	563	508	682	732	712	781	722
	Operation – Year 5	899	899	1429	1484	774	583	649	665	934	1039	1072	1126	963
	Operation – Year 6	899	899	1429	1484	774	583	649	665	934	1039	1072	1126	963
WR-SP-02	Operation – Year 4	299	359	511	540	270	211	252	228	317	353	342	372	338
	Operation – Year 5	422	422	670	698	346	261	292	301	434	495	507	530	448
	Operation – Year 6	422	422	670	698	346	261	292	301	434	495	507	530	448
OS-SP-01	Operation – Year 4	577	676	900	1,022	625	586	676	646	846	927	830	780	757
	Operation – Year 5	763	763	1,162	1,295	756	684	784	780	1,047	1,160	1,078	1,026	942
	Operation – Year 6	771	773	1,176	1,313	776	706	809	804	1,073	1,184	1,096	1,041	960
IT-TP-01	Operation – Year 4	7,461	8,168	9,743	10,396	6,613	6,208	6,786	6,599	7,633	7,894	7,513	7,421	7,703
	Operation – Year 5	7,300	7,300	9,885	10,547	7,517	6,948	7,568	7,503	8,831	9,246	8,946	8,812	8,367
	Operation – Year 6	7,307	7,310	9,899	10,565	7,536	6,970	7,593	7,527	8,857	9,270	8,964	8,827	8,385
FDP-01	Operation – Year 4	3,507	3,839	4,579	4,886	3,108	2,918	3,190	3,101	3,588	3,710	3,531	3,488	3,620
	Operation – Year 5	3,431	3,431	4,646	4,957	3,533	3,265	3,557	3,526	4,150	4,346	4,205	4,142	3,932
	Operation – Year 6	3,434	3,436	4,652	4,966	3,542	3,276	3,569	3,538	4,163	4,357	4,213	4,149	3,941
FDP-02	Operation – Year 4	3,954	4,329	5,164	5,510	3,505	3,290	3,597	3,497	4,046	4,184	3,982	3,933	4,083
	Operation – Year 5	3,869	3,869	5,239	5,590	3,984	3,682	4,011	3,976	4,680	4,901	4,741	4,670	4,434
	Operation – Year 6	3,873	3,874	5,246	5,599	3,994	3,694	4,024	3,989	4,694	4,913	4,751	4,678	4,444



The water management ponds receive surface runoff, and toe and basal seepage from associated infrastructure (i.e., mine rock piles) during the construction and operation phases. Figure 4.9 presents the storage volumes, inflows, and monthly outflow volumes from the IT-TP-01 pond to the FDPs. The IT-TP-01 pond also receives the pit dewatering flows during the construction/operation phases.

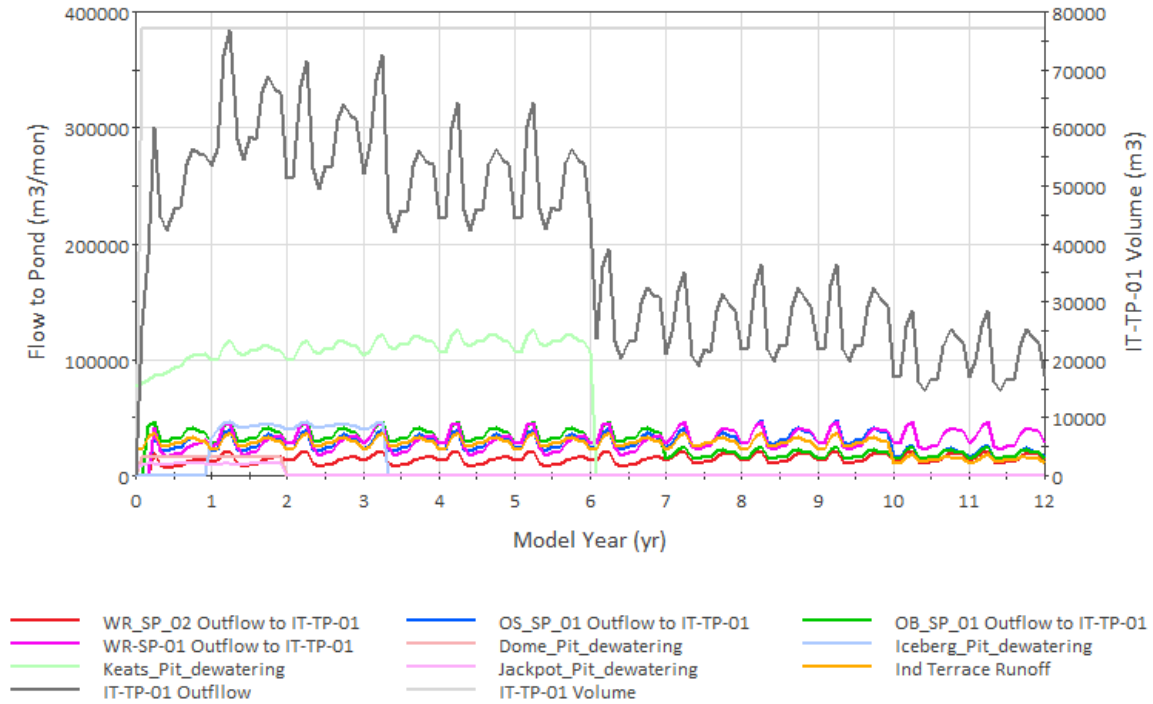


Figure 4.9 Construction, Operation and Active Closure Climate Normal Inflow, Outflow and Pit Dewatering for IT-TP-01 Water Management Pond

4.3.2 Final Discharge Points

Final discharge points receive flow from the IT-TP-01 water management pond, and therefore present similar seasonal behaviour noted in Section 4.3.1. Table 4.5 presents average monthly daily at the FDPs for each phase and subphase of the Project. Tables presenting flow rates from the two FDPs are also presented in Appendix B. Figure 4.10 and Figure 4.11 present the annual flowrate results for the two FDPs from construction/operation to active closure when the ponds are decommissioned.



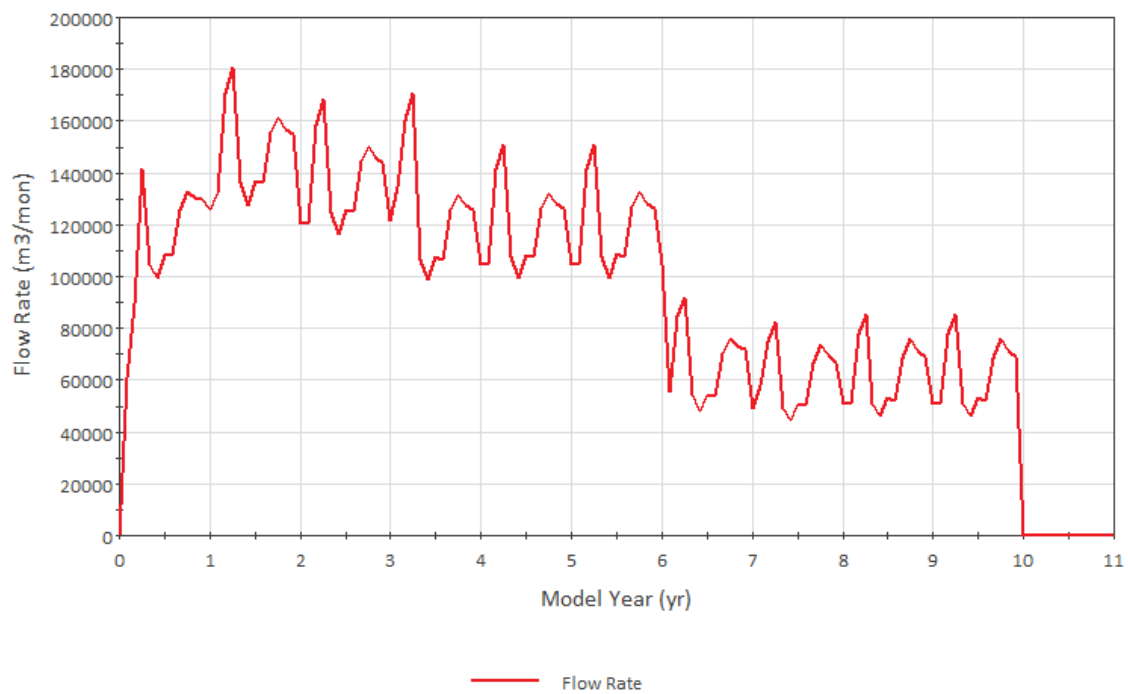


Figure 4.10 FDP-01 Monthly Flow Results

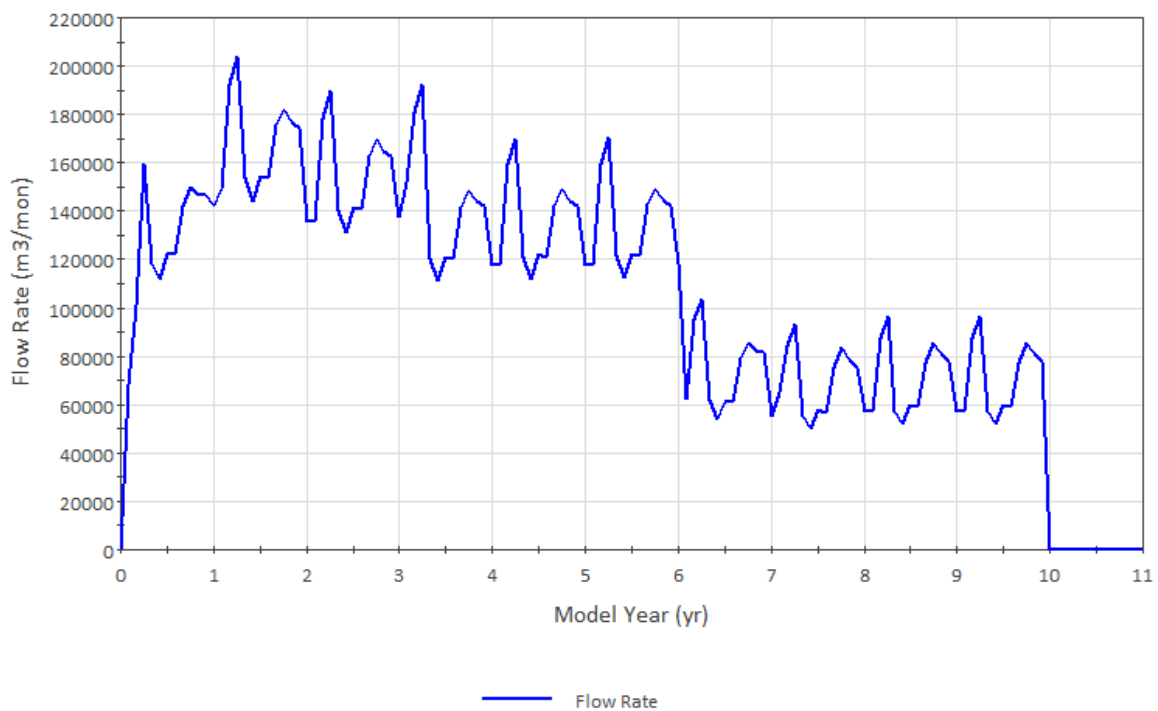


Figure 4.11 FDP-02 Monthly Flow Results



4.3.3 Open Pits

The open pits during construction and operation have dewatering flows pumped centrally to IT-TP-01. The monthly average dewatering rates for the four pits during operation are predicted to be 16,141 m³/mon (Dome), 10,155 m³/mon (Jackpot), 42,706 m³/mon (Iceberg), and 109,260 m³/mon (Keats).

For active closure/post-closure, the open pits are assumed to fill naturally and be discharged via natural spillways to the Herman's Pond watershed. The predicted groundwater table elevation and associated inflow/outflow rates for the pits when filled (Section 8, Groundwater Resources VC of the Environmental Registration) indicate that due to the topographic location of the Dome and Jackpot pits within the landscape, these two pits will act as groundwater recharge and will not discharge via the spillway. The water levels in both Jackpot and Dome pits will be naturally maintained at a stable elevation below the spillway crest elevation (Figure 4.12 and Figure 4.13).

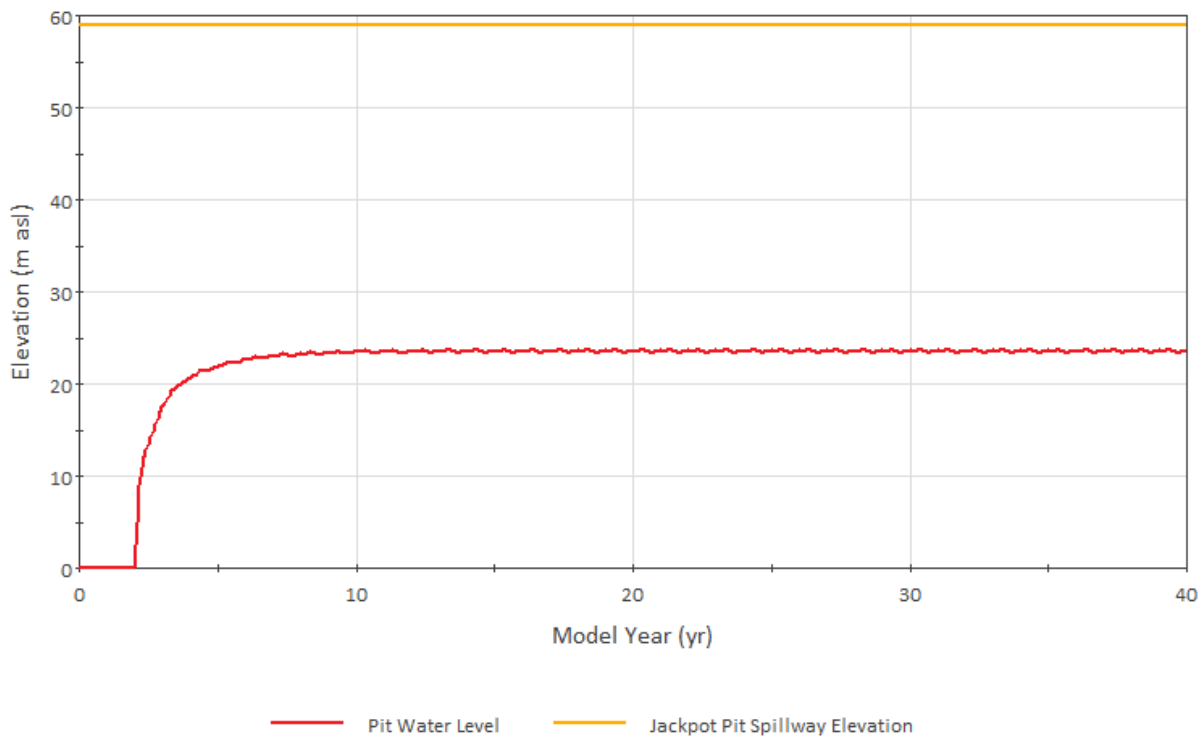


Figure 4.12 Jackpot Pit Natural Pit Filling



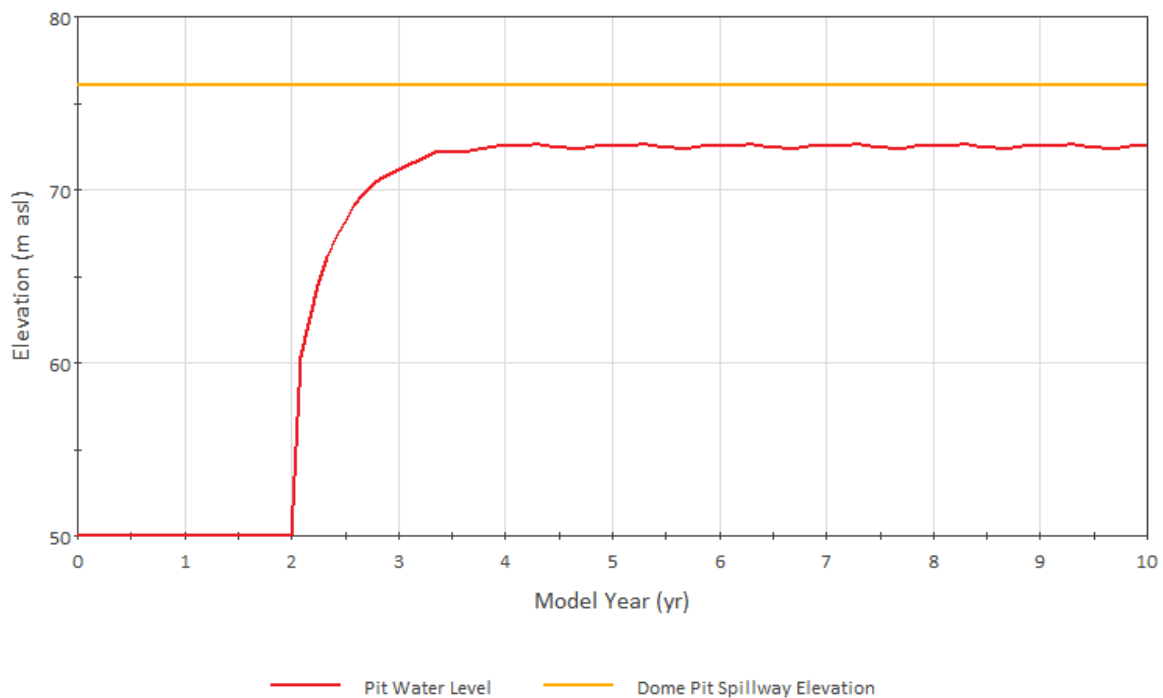


Figure 4.13 Dome Pit Natural Pit Filling

Iceberg pit does not begin to fill until end of operation in Mine Year 4 at which time PAG waste rock from the Keats pit is placed in the pit (Figure 4.14). Keats Pit begins to fill at the end of operation (Mine Year 8), after the remaining MMBCG is placed in both Iceberg (10% of material) and Keats (90% of material) pits. Under Climate Normal conditions, the Iceberg pit is predicted to overflow in Q2 of Mine Year 31 (Figure 4.14) and the Keats pit is predicted to overflow in Q4 of Mine Year 25 (Figure 4.15). Monthly average outflows from the pits in post-closure are presented in Appendix B.

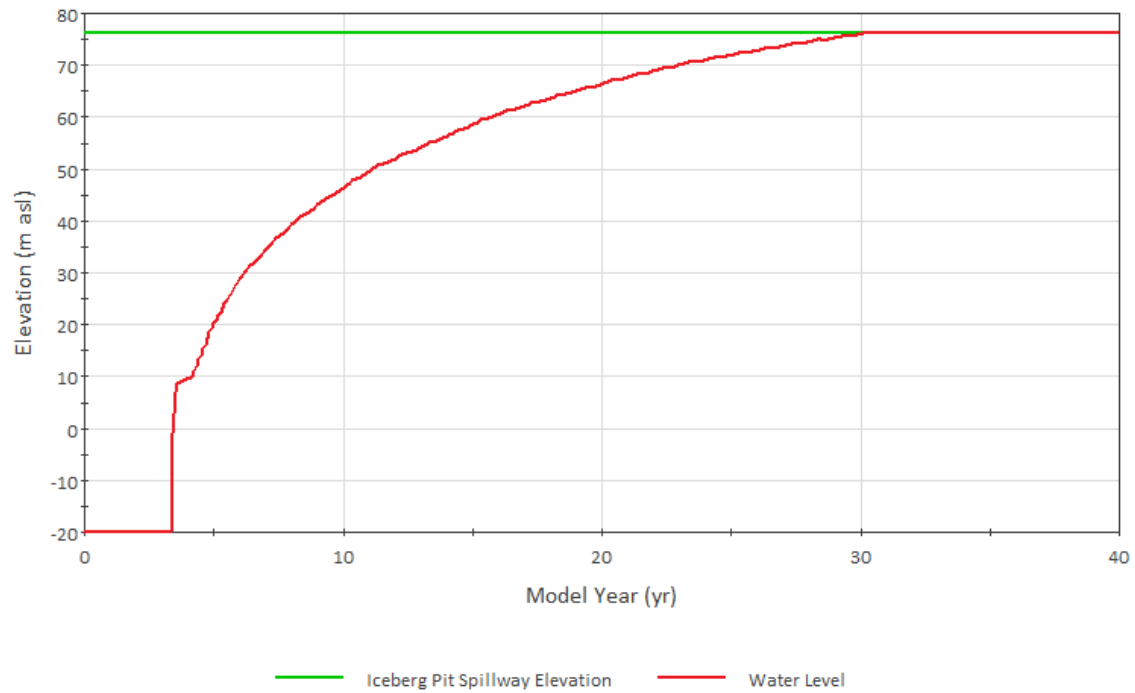


Figure 4.14 Iceberg Pit Natural Pit Filling

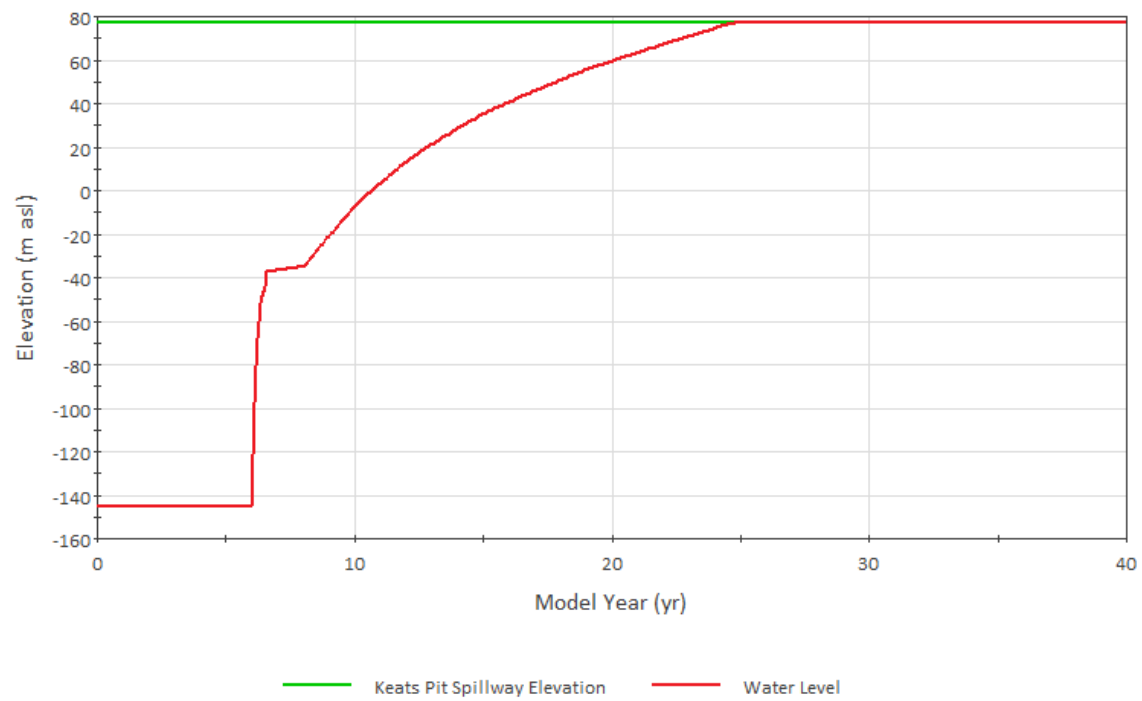


Figure 4.15 Keats Pit Natural Pit Filling



5 Water Quality Model

This section presents the model overview, inputs, assumptions, and results of the water quality (mass balance) model developed in GoldSim to simulate concentrations of water quality parameters in the various Project facilities under different source term scenarios.

5.1 Model Platform and Parameters

The contaminant transport module of GoldSim was used to build the WQM which is directly linked to the WBM presented in Section 4. The WQM consists of a network of individual cells representing the following Project components (Figure 1.1):

- Open pits: Keats pit, Iceberg pit, Dome pit, and Jackpot pit
- WRSF
- Overburden storage facility
- Ore stockpiles: MMBCG, MGO, MGO sorter rejects, HGO sorter rejects, and RoM
- Constructed pads: industrial complex and RoM pad
- Water management ponds: WR-SP-01, WR-SP-02, OB-SP-01, OS-SP-01, and IT-TP-01

In the WQM, these individual cells are connected by links representing ditches and channels.

The WBM provides direct inputs to storage volumes and water inflow/outflow rates for each cell. The water quality inputs to each cell are either a defined concentration or mass-rate (loading) addition to the cell. The concentration in a cell is calculated as the mass retained in the cell divided by the volume of the cell at the end of each time step. Mass loadings are tracked on a daily time-step throughout the WQM and mixing within the cells is assumed to occur instantaneously and completely; the model assumes that no retention or chemical reactions occur within the cells. Additionally, ice formation within the water bodies during the winter months is not accounted for in the WQM.

The selection of chemical species and parameters for inclusion in the model was largely based on those listed in the following federal water quality guidelines:

- *Metal and Diamond Mining Effluent Regulations* (MDMER)
- Canadian Council of Ministers of the Environment (CCME) *Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life* (CCME 2026)

The full list of modelled parameters, their symbols, and units are provided in Table 5.1.



Table 5.1 List of Model Parameters

Group	Parameter	Model Symbol	Units
Major anions	Sulphate	SO ₄	mg/L
	Chloride	Cl	mg/L
	Fluoride	F	mg/L
Nutrients	Phosphorus	P	mg/L
	Ammonia (as N)	NH ₃	mg/L
	Nitrate (as N)	NO ₃	mg/L
	Nitrite (as N)	NO ₂	mg/L
Metals and metalloids	Aluminum	Al	mg/L
	Antimony	Sb	mg/L
	Arsenic	As	mg/L
	Barium	Ba	mg/L
	Beryllium	Be	mg/L
	Bismuth	Bi	mg/L
	Boron	B	mg/L
	Cadmium	Cd	mg/L
	Calcium	Ca	mg/L
	Chromium	Cr	mg/L
	Cobalt	Co	mg/L
	Copper	Cu	mg/L
	Iron	Fe	mg/L
	Lead	Pb	mg/L
	Magnesium	Mg	mg/L
	Manganese	Mn	mg/L
	Mercury	Hg	mg/L
	Molybdenum	Mo	mg/L
	Nickel	Ni	mg/L
	Potassium	K	mg/L
	Selenium	Se	mg/L
	Silver	Ag	mg/L
	Sodium	Na	mg/L
	Strontium	Sr	mg/L



Group	Parameter	Model Symbol	Units
Metals and metalloids (cont'd)	Thallium	Tl	mg/L
	Tin	Sn	mg/L
	Uranium	U	mg/L
	Vanadium	V	mg/L
	Zinc	Zn	mg/L

Notes:

mg/L = milligram(s) per litre; as N = expressed as nitrogen

5.2 Water Quality Model Inputs

Model inputs were based on data from on-site water quality monitoring, geochemical testing completed following best practice guidance outlined in MEND (2009), material production schedules and plans, pit development sequencing, engineering design, and analogue references. Model inputs are provided in two appendices: Appendix C (geochemical source terms) and Appendix D (mine production schedules, material balances, and pit metrics).

5.2.1 Geochemical Source Term Development

Geochemical source terms were developed for Project components anticipated to affect water quality in the pits and water management ponds through chemical mass loading, which are summarized in Table 5.2. Direct precipitation (i.e., rain or snow) on Project infrastructure was assumed to carry no chemical load; therefore, concentrations of model parameters for precipitation were set to zero. Similarly, evaporation was assumed to carry no chemical load. After selecting representative datasets for each source term, concentration-based and leaching rate-based source terms were developed for use in the model.

Source terms for exposed pit wall lithologies, waste rock lithologies in the WRSF, and/or in waste rock backfilled in the Iceberg pit were developed based on the main lithological wireframes from New Found Gold's geological model. These wireframes were defined at a practical scale to represent broader groupings of rock with common characteristics, such as colour, texture, and geochemistry, rather than the individual lithologies logged in Project drill cores. Consistent with this approach, the mine production schedules, material balances, and open pit surface areas presented in Appendix D are also based on the model wireframes rather than logged lithologies.



Table 5.2 Water Quality Model Source Terms

Development Approach	Source Term	Description ^a
Concentration based	Groundwater	Groundwater infiltration to open pits
	Constructed pads	Runoff and seepage from the industrial complex and RoM pad
Leaching rate based	Pit walls and rubble	Runoff from rock exposed on pit walls and in pit rubble
	WRSF	Runoff and seepage from rock stored in the WRSF
	Overburden storage facility	Runoff and seepage from overburden stored in the overburden storage facility
	Ore stockpiles	Runoff and seepage from the following stockpiles: MMBCG, MGO, MGO sorter rejects, HGO sorter rejects, and RoM
	Overburden covers	Runoff and seepage from overburden covers placed on the WRSF, industrial complex, and RoM pad
	PAG waste rock backfill	Initial mass release (i.e., “first flush”) from PAG waste rock placed underwater in Iceberg pit during the operation phase
	MMBCG backfill	Initial mass release (i.e., “first flush”) from MMBCG placed underwater in Iceberg pit (10%) and Keats pit (90%) during the active closure phase

Notes:

^a Refer to Figure 1.1 for the locations of Project components and to Section 2 for an overview of the Project facilities and the Project schedule.

RoM = run-of-mine; WRSF = waste rock storage facility; MMBCG = mineralized material below cut-off grade; MGO = mid-grade ore; HGO = high-grade ore; PAG = potentially acid generating

The main lithological wireframes for the Project, hereafter referred to as lithologies or units, are summarized in Table 5.3 and mainly comprise siltstone and greywacke units. To simplify source term development, the five siltstone units assumed to be non-PAG (SIL, SIL_CuRich, SIL_GreyGreen, SILCR, and SILNI) and the three greywacke units assumed to be non-PAG (SDG, SDG_Cr, and SDG_IB) were grouped as SIL and SDG, respectively. The “unknown” unit was also grouped with SIL, following recommendations from New Found Gold. The BSIL and BSGI units were assumed to be PAG and were modelled individually.



Table 5.3 Summary of Modelled Waste Rock Lithologies

Lithological Wireframe Code ^a	Description	Simplified Lithology Code	Assumed ARD Potential
SIL	Siltstone	SIL	Non-PAG
SIL_CuRich	Copper-rich siltstone		
SIL_GreyGreen	Grey-green siltstone		
SILCR	Chrome-rich siltstone		
SILNI	Nickel-rich siltstone		
Unknown	Unknown within model		
SDG	Greywacke	SDG	Non-PAG
SDG_Cr	Chrome-rich greywacke		
SDG_IB	Chrome-rich greywacke interbedded with siltstone		
BSIL	Black siltstone	BSIL	PAG
BSGI	Interbedded black siltstone and greywacke	BSGI	PAG

Notes:

^a Lithological wireframe codes from New Found Gold's Project geological model.

ARD = acid rock drainage; non-PAG = non-potentially acid generating; PAG = potentially acid generating

Geochemical source terms were developed for two scenarios: Expected Case and Upper Case. Source term development for both scenarios is detailed in the following sections.

5.2.1.1 Concentration-Based Source Terms

Concentration-based source terms were developed using groundwater and surface water quality data collected from locations on site or close to the Project Area. For each dataset, 50th percentile concentrations were used as inputs for the Expected Case scenario and 90th percentile concentrations were used as inputs for the Upper Case scenario. Percentiles were calculated following the criteria below:

- Half detection limits were used for measured concentrations below the detection limits.
- Duplicate samples, where clearly indicated, were excluded from the calculations. Results considered to be outliers based on professional judgement were also excluded.
- Dissolved metals concentrations were used to represent total metals concentrations in the groundwater quality dataset, which only contained dissolved metals results.



Groundwater

Groundwater quality data collected from the following Project Area bedrock wells (Figure 1.1) from July 2023 to October 2025 (n = 52) were used to develop concentration-based source terms to represent groundwater infiltration to the open pits: 23-MW-01 (n = 6), 23-MW-02D (n = 6), 23-MW-04 (n = 6), 23-MW-05 (n = 6), 23-MW-07 (n = 6), 23-MW-10 (n = 3), 23-MW-12D (n = 6), 23-MW-12S (n = 6), 25-MW-02S (n = 1), 25-MW-02D (n = 1), 25-MW-01S (n = 1), 25-MW-01D (n = 1), 25-MW-03S (n = 1), 25-MW-03D (n = 1), and 25-MW-08D (n = 1).

Groundwater quality results from Project Area wells screened in overburden were not included in the source term calculations. Additionally, results from Project Area bedrock well 23-MW-06 (Figure 1.1) were excluded from the source term calculations, as dissolved arsenic and iron concentrations were anomalously higher than those in the other wells, and the well was therefore considered an outlier based on professional judgment.

The 50th and 90th percentile concentrations used to represent groundwater model inputs for the Expected Case and Upper Case scenarios, respectively, are presented in Table C.1 (Appendix C).

Constructed Pads

Water quality data collected from the following Project Area surface water monitoring stations (Figure 1.1) from March 2021 to November 2024 (n = 84) were used to develop concentration-based source terms representing runoff and seepage from the industrial complex and RoM pad: SW-03 (n = 15), SW-04 (n = 16), SW-06 (n = 16), SW-22 (n = 6), SW-07 (n = 15), and SW-19 (n = 16).

The industrial complex and RoM pad are assumed to be constructed from non-PAG waste rock (i.e., largely SDG with some SIL), though runoff and seepage from these features are not expected to carry a substantial chemical load. As such, runoff and seepage from the industrial complex and RoM pad were represented using surface water quality monitoring results rather than leaching rates derived from waste rock humidity cells (Section 5.2.1.2). The surface water concentrations were proportioned based on the expected tonnages of rock used to construct the pads, which are provided in Table D.1 (Appendix D).

The 50th and 90th percentile surface water concentrations used to represent runoff and seepage from the industrial complex and RoM pad in the Expected Case and Upper Case scenarios, respectively, are presented in Table C.2 (Appendix C).

5.2.1.2 Leaching Rate-Based Source Terms

Materials excavated, disturbed, or exposed during Project development are subject to chemical weathering. Chemical masses released from pit walls, stockpiled waste rock, overburden, mineralized material, overburden covers, and materials backfilled in Iceberg pit and Keats pit were represented by leaching rates calculated from standard humidity cell tests (HCTs) completed for samples representing the main material types at the Project (Table 5.4).



Table 5.4 Summary of Humidity Cell Tests Used for Leaching Rate-Based Source Terms

Source Term ^a	Source Term Scenario	Material Type	HCT ID	Test Duration (Weeks)	Leaching Rate Summary Statistic ^b	HCT Result Interval Used to Represent Project Phase(s) ^a
Pit walls and rubble	Expected Case	BSIL	HC8	104	50 th percentile	Full test duration: construction/operation and active closure Last six weeks: post-closure
		BSGI	HC13	104		
		SDG	HC9	52		
		SIL	HC5	104		
	Upper Case	BSIL	HC6	104	50 th percentile	
		BSGI	HC4	104		
		SDG	HC15	104		
		SIL	HC5	104	90 th percentile	
WRSF	Expected Case	SDG	HC9	52	50 th percentile	Full test duration: construction/operation Last six weeks: operation, active closure, and post-closure ^c
		SIL	HC5	104		
	Upper Case	SDG	HC15	104	90 th percentile	
		SIL	HC5	104		
PAG waste rock backfill	Expected Case	BSIL	HC8	104	50 th percentile	First six weeks: When placed in Iceberg pit during the operation phase
		BSGI	HC13	104		
	Upper Case	BSIL	HC8	104	50 th percentile	
		BSGI	HC13	104		
Overburden storage facility	Expected Case	OVB	HC12	52	50 th percentile	Full test duration: construction/operation
	Upper Case				90 th percentile	
Overburden covers	Expected Case				50 th percentile	Last six weeks: operation, active closure, and post-closure ^d
	Upper Case				90 th percentile	
Ore stockpiles	Expected Case	Mineralized material ^e	HC15	104	50 th percentile	Full test duration: construction/operation
	Upper Case				90 th percentile	
MMBCG backfill	Expected Case				50 th percentile	First six weeks: When placed in Keats pit and Iceberg pit during the active closure phase
	Upper Case				90 th percentile	

Notes:

- ^a Refer to Figure 1.1 for the locations of Project components and to Section 2 for detailed descriptions of Project facilities and the Project schedule.
- ^b Where Expected Case and Upper Case source terms for the same lithology or material type are derived from different HCTs, Upper Case source terms are calculated from 50th percentile leaching rates. Where Expected and Upper Case use the same HCT, Upper Case source terms are calculated from 90th percentile mass leaching rates.
- ^c “Full test duration” leaching rates are applied to waste rock in the WRSF for the first year following placement, after which “last six weeks” leaching rates are applied.
- ^d Starting in Mine Year 3, it is assumed that half of the WRSF will be reclaimed with a cover system and the facility will be fully covered in active closure.
- ^e “Mineralized material” refers collectively to the material types stored at the ore stockpiles: MMBCG, MGO, MGO sorter rejects, HGO sorter rejects, and RoM.

HCT = humidity cell test; ID = identification; PAG = potentially acid generating; BSIL = black siltstone; BSGI = interbedded black siltstone and greywacke; SDG = greywacke; SIL = siltstone; WRSF = waste rock storage facility; OVB = overburden; MMBCG = mineralized material below cut-off grade; N/A = not applicable; MGO = mid-grade ore; HGO = high-grade ore; ROM = run-of-mine



The HCTs used to represent each material type were selected from the Project's waste rock kinetic testing dataset comprising 16 standard HCTs. Representative HCTs were identified by comparing key static testing results for the HCT samples with summary statistics for the same material types in the broader Project static testing geochemical dataset. Where possible, two HCTs were selected for each material type to represent the Expected Case and Upper Case scenarios. In these cases, the selected HCTs aligned approximately with the 50th and 90th percentile concentrations of key static testing parameters, such as solid-phase total sulphur and metals concentrations, and the source terms were based on 50th percentile leaching rates from their respective HCTs. For material types represented by only one HCT, 50th percentile leaching rates were applied for the Expected Case scenario and 90th percentile leaching rates were applied for the Upper Case scenario.

Leaching rates (in milligrams per kilogram per week [mg/kg/week]) were calculated by multiplying the concentration of each parameter in the HCT weekly leachate (milligrams per litre [mg/L]) by the volume of leachate collected (litres [L]) and dividing by the original dry mass of the sample (kilograms [kg]).

The leaching rates were calculated following the criteria below:

- Half detection limits were used for concentrations below the detection limits.
- Dissolved metals concentrations were used to represent total metals concentrations, which were not included in the analytical suite for the HCTs.

To represent different Project components and Project phases, 50th and 90th percentile leaching rates were calculated based on the following HCT result intervals:

- **Full test duration:** Mainly used to represent construction/operation phase leaching rates; the full test duration captures both the initial rapid oxidation of freshly exposed materials and longer-term leaching rates that develop with continued weathering.
- **Last six weeks:** Mainly used to represent active closure/post-closure leaching rates; later-stage HCT cycles are assumed to reflect stable, long-term weathering rates after the most reactive minerals have been depleted.
- **First six weeks:** Used to represent the “first flush” from PAG waste rock and MMBCG backfill at placement in the mined-out open pits; early HCT cycles capture the rapid dissolution of soluble salts and highly reactive minerals, some of which may contain stored acidity, when the test materials are first exposed to water.

Relevant details regarding the HCTs used to develop the leaching rate-based source terms are summarized in Table 5.4. The calculated leaching rates used as model inputs for the pit walls and rubble and WRSF, overburden storage facility, overburden covers, ore stockpiles, and backfill are summarized in Table C.3 to Table C.10 (Appendix C).



The HCT leaching rates (R_{HC}) were multiplied by the mass of each material type associated with a Project component and by scaling factors (SF) to adjust for the differences in temperature, grain size, and water-to-rock ratios (e.g., contact) between the laboratory tests and field conditions. Scaled leaching rates (R) were calculated using Equation 1:

$$R = M \times SA \times R_{HC} \times SF_{TEMPERATURE} \times SF_{GRAIN\ SIZE} \times SF_{CONTACT} \times SF_{CLOSURE} \quad \text{Equation 1}$$

Where:

- M (tonne): mass of rock/overburden/mineralized material exposed within each Project component. For the mass of reactive rock within the open pits, an exposure depth of 1 metre was assumed for the entirety of each pit shell (i.e., walls and rubble). Material balances/tonnages for the WRSF, overburden storage facility, overburden covers, ore stockpiles, and backfill are provided in Table D.2 to Table D.7 (Appendix D).
- SA (%): percent surface area (SA) of each lithology exposed within the open pits (Table D.8 to Table D.11; Appendix D). Only applicable to pit walls and rubble source terms.
- R_{HC} (mg/kg/week): HCT leaching rates. Rates were developed for the full test duration (construction/operation), the final six weeks (active closure/post-closure), and the first six weeks ("first flush" from backfill).
- $SF_{TEMPERATURE}$ (unitless): temperature scaling factor to account for the lower oxidation rate in the field compared to the temperature of approximately 22°C used in the laboratory for HCTs. The $SF_{TEMPERATURE}$ term was calculated using a rearranged form of the Arrhenius Equation (Equation 2):

$$\frac{k_{field}}{k_{lab}} = e^{\left[\frac{-E_a}{R} \left(\frac{1}{T_{field}} - \frac{1}{T_{lab}} \right) \right]} \quad \text{Equation 2}$$

Where:

- k_{field} = field reaction rate
- k_{lab} = laboratory reaction rate
- E_a = activation energy (kilojoules per mole [kJ/mol])
- R = universal gas constant (0.008314 kJ/mol per kelvin [K])
- T_{field} = field temperature in K
- T_{lab} = laboratory temperature in K



- $SF_{\text{GRAIN SIZE}}$ (unitless): grain size scaling factor to account for differences in particle size in the HCTs and RoM rock/mined material. Rock samples used in the HCTs were crushed to a nominal particle size of less than 6 mm. The HCT leaching rates therefore represent the leaching potential of fine particles which contain the most reactive surfaces. The water quality of runoff and seepage from Project components is governed in part by the particle size distribution, as the degree of water-rock interaction increases exponentially as particle size decreases (Neuner et al. 2009). The $SF_{\text{GRAIN SIZE}}$ value was selected based on the fraction of mine rock particles less than 6 mm in diameter.
- SF_{CONTACT} (unitless): contact scaling factor accounting for a reduction in solute leaching (flushing) due to hydraulic isolation, which is more limited under field conditions than under laboratory testing conditions. High water-to-rock ratios are used in HCTs to thoroughly flush the water-soluble constituents released from chemical weathering of the test materials. However, under field conditions, a fraction of the material within the open pits and stockpiles is effectively flushed by infiltrating water. Thus, the SF_{CONTACT} values were selected to represent the proportion of the material within each Project component that is in contact with infiltrating water.
- SF_{CLOSURE} (unitless): closure scaling factor accounting for the reduction in leaching rates due to the placement of covers. Only applicable to the Project components being covered: the WRSF, industrial complex, and RoM pad.

A summary of the scaling factor ranges applied to the leaching rate-based source terms is provided in Table 5.5.



Table 5.5 Ranges and References for Scaling Factors

Scaling Factor	Range	Description ^a	Reference/Justification
SF _{TEMPERATURE}	0.13 to 0.70	Temperature scaling factor to account for differences in oxidation rates under laboratory and field conditions.	Arrhenius equation using the monthly average temperatures at the Project site (Table 4.1) ranging from -6.8°C in February to 16.6 °C in July and August, and an activation energy of 47 kJ/mol for pyrite (Kamei and Ohmoto 1999). The highest SF _{TEMPERATURE} value (0.70) corresponds to the highest monthly average temperatures in July and August.
SF _{GRAIN SIZE}	0.2	Grain size scaling factor to account for differences in grain size between RoM rock and humidity cell tests.	Assumed value for the fraction of the less than 6 mm rock mass of the most representative RoM samples compiled in Kempton et al. (2012) because the fragmentation analysis of the blasted rock at the Project was not available.
SF _{CONTACT_PIT WALLS}	0.5	Scaling factor accounting for a reduction in solute leaching (flushing) due to hydraulic isolation; applies to pit walls and pit rubble.	Fraction of water flushing through porous rock matrix and carrying chemical mass load (Lopez et al. 1997; Kempton et al. 2012).
SF _{CONTACT_PILES}	0.38	Scaling factor accounting for a reduction in solute leaching (flushing) due to hydraulic isolation; applies to WRSF, overburden storage facility, overburden covers, ore stockpiles, and backfill.	Fraction of water flushing through porous rock matrix and carrying chemical mass load (Lopez et al. 1997; Kempton et al. 2012). Piled materials are considered more compacted than pit walls and rubble, resulting in reduced infiltration.
SF _{CLOSURE}	0.2 to 1	Scaling factor for the reduction in hydraulic conductivity, and therefore mass loading rates, due to the covers placed on the WRSF, industrial complex, and RoM pad. The scaling factor is equal to 1 when Project components are uncovered and decreased to 0.2 following cover placement.	Steinepreis (2017)

Notes:

^a Refer to Figure 1.1 for the locations of Project components and to Section 2 for detailed descriptions of Project facilities and the Project schedule.

SF = scaling factor; RoM = run-of-mine; WRSF = waste rock storage facility; °C = degree(s) Celsius; kJ/mol = kilojoule(s) per mole



5.2.1.3 Nitrogen Mass Loadings from Explosive Residuals

Blasting to extract ore and waste rock is the primary source of nitrogen species in mining environments. The dissolution of undetonated explosives releases nitrogen species including ammonia, nitrate, and nitrite into contact water. The mass rate of lost (i.e., non-exploded) nitrogen (R_N , in grams per year [g/yr]) is calculated using Equation 3:

$$R_N = M_R \times P_F \times F_N \times L_N \times F_{RN} \quad \text{Equation 3}$$

Where:

- M_R = production rate of blasted material tonnes per year (tonne/yr). The Project production schedule for waste rock and mineralized material is provided in Table D.12 (Appendix D).
- P_F = 600 grams per tonne (g/tonne), powder factor provided by New Found Gold.
- F_N = 0.333 based on 1/3 of the explosive product assumed to be nitrogen, usually as ammonium nitrate (Bailey et al. 2013), dimensionless.
- L_N = the rate of nitrogen lost from the blasted material ranging from 0.001 to 0.043 for different types of deposits (Ferguson and Leask 1988; Golder 2008). The input values used in this model are 0.002 (0.2%) for the Expected Case source term scenario and 0.043 (4.3%) for the Upper Case source term scenario.
- F_{RN} = fraction of nitrogen released from the blasted material. A value of 0.1 (or 10%) was assigned to materials that will be temporarily exposed within the open pits (i.e., pit walls and rubble), and a value of 0.9 (or 90%) was assigned to the WRSF, ore stockpiles, constructed pads, and backfill based on the assumption that the remaining nitrogen will be leached once mined materials are placed in storage areas (Golder 2007).

Rates of nitrogen release from explosive residuals depend on a combination of factors including the chemistry of the explosives, material properties, site conditions, and operational practices. In the model, the release of blasting-derived nitrogen from Project components was simulated as follows:

- Pit walls and rubble (during operation and active closure), WRSF, and ore stockpiles: nitrogen species are flushed year over year, with 50% remaining after each year.
- Constructed pads: nitrogen species are flushed in one year.
- Backfilled PAG waste rock and MMBCG: nitrogen species are flushed instantaneously after placement.
- Pit walls and rubble (during post-closure), overburden storage facility, and overburden covers: no nitrogen mass loadings from explosive residuals. Instead, nitrogen mass loadings for these material types were developed using the leaching rates derived from the HCTs, though nitrogen species concentrations in the HCTs were generally below detection limits.

The leached nitrogen was speciated as follows based on recommendations from Ferguson and Leask (1988): 11% as ammonia, 87% as nitrate, and 2% as nitrite.



5.3 Water Quality Model Scenarios

The water quality model results depend on uncertainties related to model inputs, particularly source term geochemistry. Uncertainty related to the source terms was assessed by modelling two scenarios that provide water quality predictions under Climate Normal conditions (Table 4.1) during each Project phase: Normal – Expected Case and Normal – Upper Case. The two water quality model scenarios are described in Table 5.6.

Table 5.6 Water Quality Model Scenarios

Number	Water Quality Model Scenario	Climate Condition Scenario ^a	Geochemical Source Term Scenario	Description
1	Normal – Expected Case	Climate Normal	Expected Case	Represents the likeliest water quality conditions at the Project, assuming stable climate conditions and typical geochemical behaviour. This scenario does not account for year-to-year variability in precipitation.
2	Normal – Upper Case	Climate Normal	Upper Case	Represents an upper-bound case that assumes model inputs carry near-maximum observed concentrations. This scenario reflects layers of conservatism in the source term assumptions and the highest possible water quality concentrations based on site data and laboratory testing, assuming stable climate.

Notes:

^a Refer to Table 4.1 for Climate Normal model inputs.

5.4 Water Quality Model Results

The water quality model was run in a deterministic mode for 50 years using a daily time step. The tabulated model results are reported as monthly mean concentrations (Appendix E) for the two scenarios presented in Table 5.6. Time-series plots showing monthly mean concentrations for modelled parameters in the open pits and water management ponds under the two water quality model scenarios are presented in Appendix F.

Water quality model results for the open pits and water management ponds under the Normal – Expected Case scenario are presented and discussed in the sections below. For context, modelled concentrations for relevant parameters are compared with Schedule 4 Table 1 MDMER effluent quality limits for Maximum concentrations, defined as the highest concentration in any grab sample, and Monthly Mean concentrations, defined as the maximum monthly mean value. As such, the results discussion focuses



primarily on total metals with MDMER discharge limits: arsenic, copper, lead, nickel, and zinc. Results for sulphate and nitrogen species are also discussed. Water quality model outputs are assessed further in the assimilative capacity assessment in Section 9, Surface Water Resources VC of the Environmental Registration.

5.4.1 Open Pits

This section presents modelled water quality results for the four open pits: Keats pit, Iceberg pit, Dome pit, and Jackpot pit. For each pit, results are presented by pit phase (i.e., pit dewatering, pit filling, and pit overflow or maintenance) rather than by Project phase.

During pit dewatering in the operation phase, water collected at the base of each pit will be pumped to the IT-TP-01 pond prior to discharge to the receiving environment (Figure 4.2 to Figure 4.5). Following completion of mining, Keats pit and Iceberg pit will be allowed to fill naturally to the spillway crest elevation and subsequently overflow along established drainage pathways toward the North Herman's Pond watershed (Figure 4.7). Once dewatering ceases in the Dome and Jackpot pits, the pits are allowed to naturally fill. The Dome pit and Jackpot pit are not expected to overflow following natural pit filling due to their topographic position; instead, the pits will act as groundwater recharge features with no spillway discharge, and the water level in each pit will be naturally maintained at a stable elevation below the spillway crest elevation.

The following pit-specific sections include time-series plots showing temporal trends for MDMER-regulated metals and nitrogen species, pie charts showing the relative contributions of individual source terms to the total mass loads in pit water averaged for each pit phase, and statistical summary tables.

5.4.1.1 Keats Pit

Pit Dewatering Phase (Mine Year 1 Month 1 to Mine Year 7 Month 12)

The pit dewatering phase in Keats pit is characterized by fluctuating but generally low concentrations of modelled parameters relative to the pit filling phase (Figure 5.1; Table 5.7). Predicted concentrations fluctuate seasonally, with generally higher concentrations occurring in the summer months when dewatering volumes are lower. Applicable metals concentrations remain below MDMER limits throughout this period, and major anions and nitrogen species concentrations are also low relative to subsequent pit phases.

The pie charts shown in Figure 5.2 indicate that groundwater infiltration, as well as runoff/seepage from exposed SIL and SDG waste rock on pit walls and in rubble, are the primary sources of mass loadings in Keats pit water during the pit dewatering phase.



Pit Filling Phase (Mine Year 8 Month 1 to Mine Year 25 Month 9)

The pit filling phase in Keats pit is characterized by an abrupt, order-of-magnitude increase in most parameter concentrations at the start of the active closure phase in Mine Year 8 (Figure 5.1; Table 5.7), after which concentrations gradually decline as the pit fills naturally and the volume of pit water increases. The modelled results are summarized as follows:

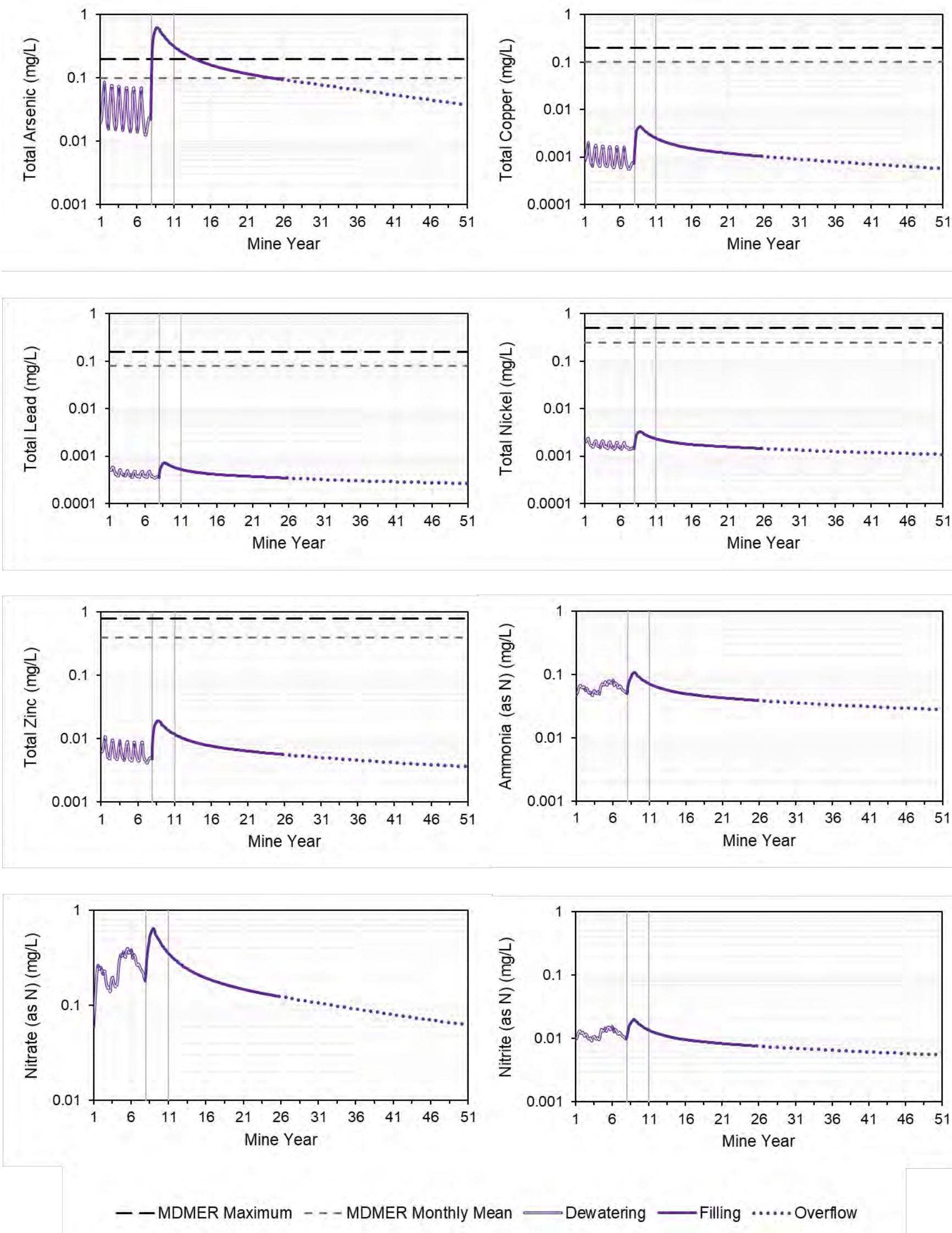
- The pronounced increase in parameter concentrations at the onset of pit filling in active closure is expected due to the placement of MMBCG backfill (90% of the total MMBCG stockpile volume) in Mine Year 8. The results shown in Figure 5.3 indicate that the “first flush” from MMBCG backfill is the primary source of mass loading to Keats pit water for sulphate, metals including arsenic and copper, and nitrate, though groundwater infiltration and runoff/seepage from pit walls and rubble remain major contributors.
- Total arsenic concentrations (median: 0.150 mg/L, range: 0.0952 to 0.621 mg/L) are expected to exceed the MDMER Maximum limit of 0.2 mg/L from the onset of pit filling to approximately the end of Mine Year 13, and expected to exceed the MDMER Monthly Mean limit of 0.1 mg/L until approximately Mine Year 24 (Figure 5.1).
 - It is noted that the pit does not discharge during the filling phase; therefore, MDMER limits do not directly apply during this period and are referenced for screening purposes only. However, if arsenic concentrations exceed MDMER limits during periods of discharge, treatment will be implemented.
- The concentrations of the other metals with MDMER limits are expected to peak at the onset of pit filling but remain below their respective limits throughout the pit filling period. Sulphate and nitrogen species concentrations also spike at the start of pit filling and decrease gradually as the pit fills.

Pit Overflow Phase (Mine Year 25 Month 10+)

The water level in Keats pit reaches its maximum elevation and starts overflowing near the end of Mine Year 25. Once pit overflow is established, modelled parameter concentrations steadily decline and move toward long-term stabilization (Figure 5.1; Table 5.7). Modelled results for the pit overflow phase are summarized as follows:

- Total arsenic concentrations (median: 0.0594 mg/L, range: 0.0377 to 0.0948 mg/L) are expected to be below MDMER limits at the onset of the pit overflow period and continue to decrease over time. Similar declining trends are observed for the other MDMER-applicable metals, as well as sulphate.
- The pie charts shown in Figure 5.4 indicate that groundwater infiltration is the primary contributor to total mass loads in pit water during the overflow period for most parameters, though runoff from the portion of the pit walls that is exposed to the atmosphere above the spillway crest elevation is the main contributor of total arsenic.





Notes:

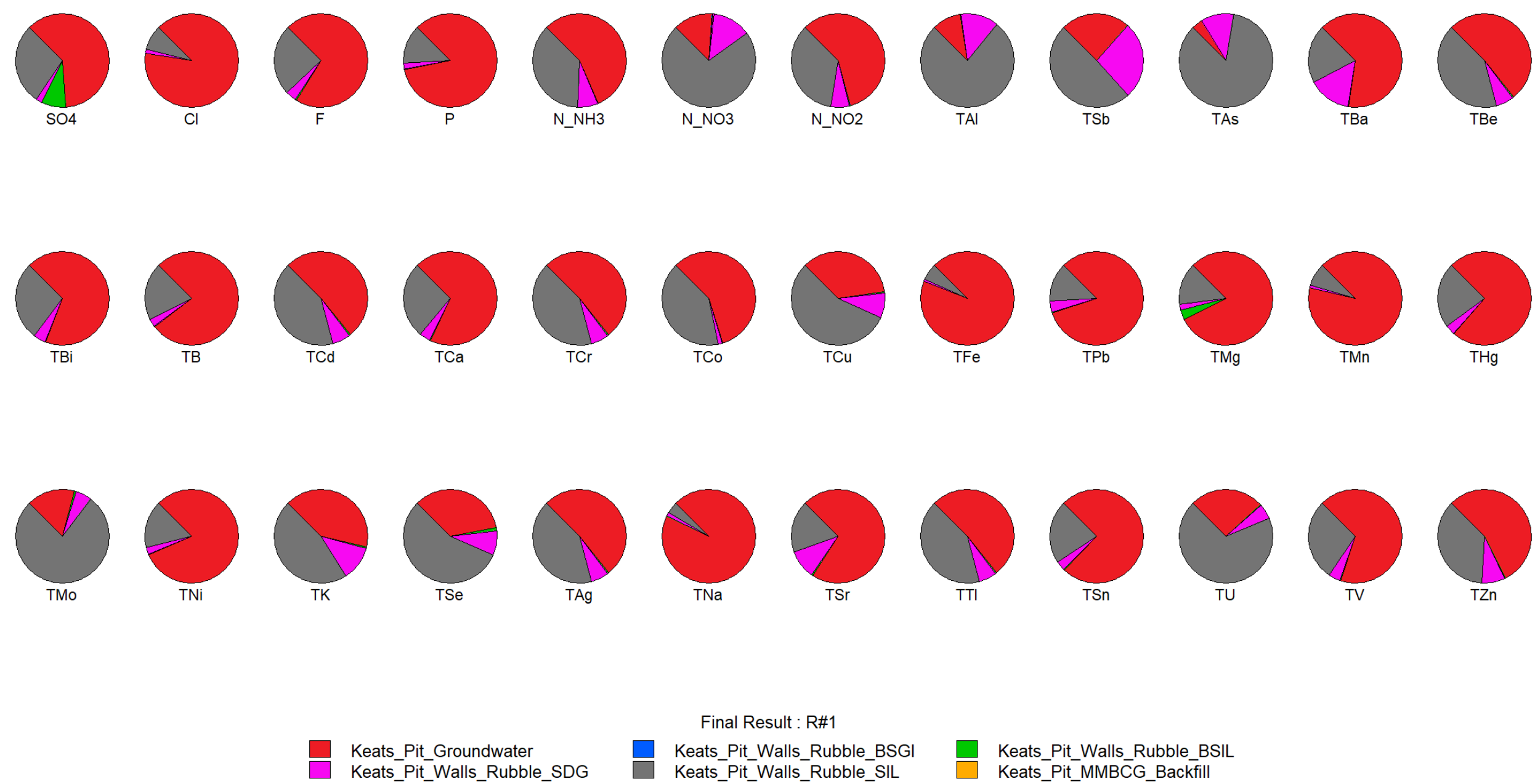
Vertical grey lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).

“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the MDMER Schedule 4 Table 1. The MDMER effluent quality limits are plotted as dashed lines.

mg/L = milligram(s) per litre; as N = expressed as nitrogen

Figure 5.1 Time-Series Plots Showing Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc and Nitrogen Species Concentrations in Keats Pit: Normal – Expected Case Scenario

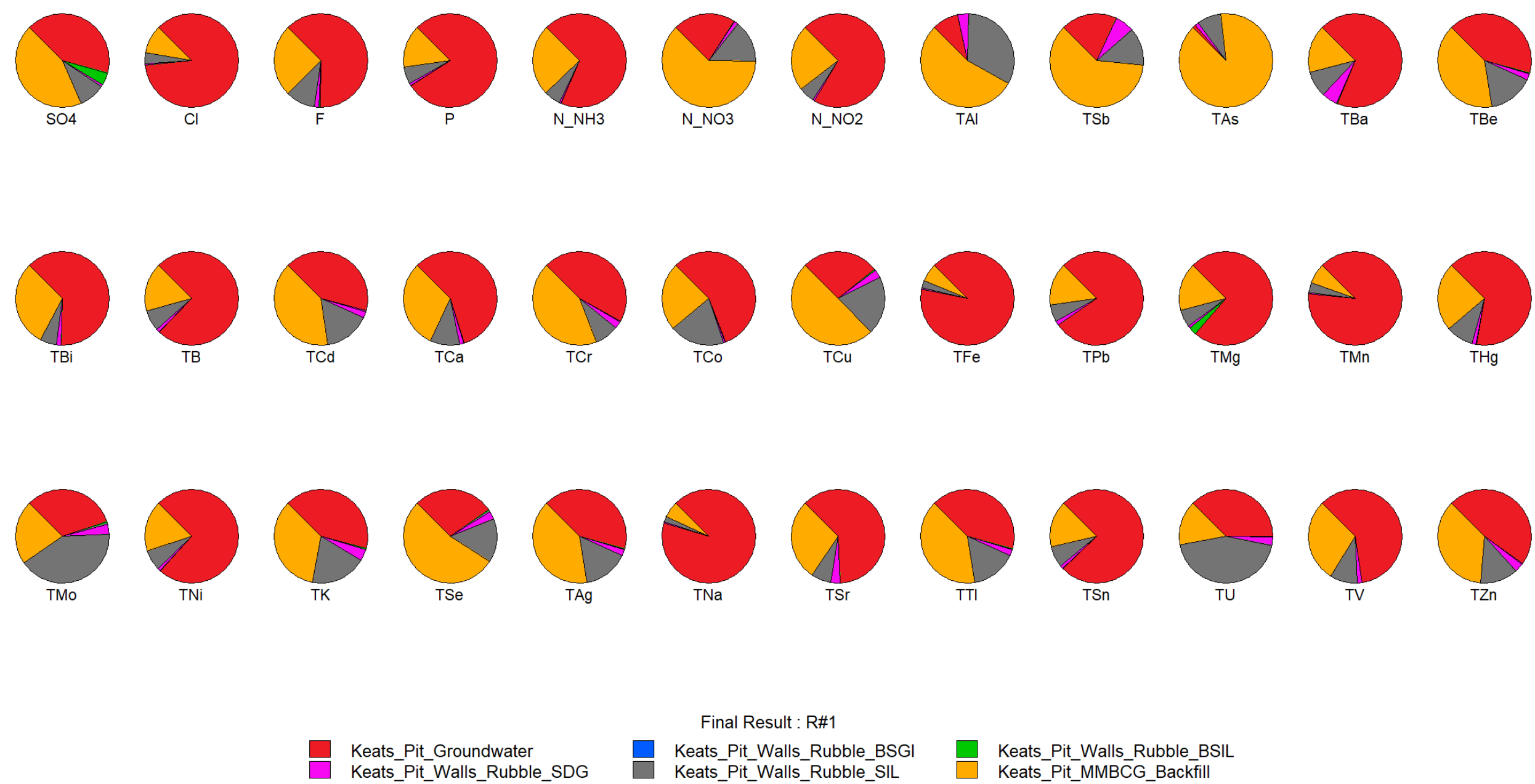




Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; MMBCG = mineralized material below cut-off grade

Figure 5.2 Relative Contribution of Each Source Term to Total Mass Loads in Keats Pit During the Pit Dewatering Phase: Normal – Expected Case Scenario

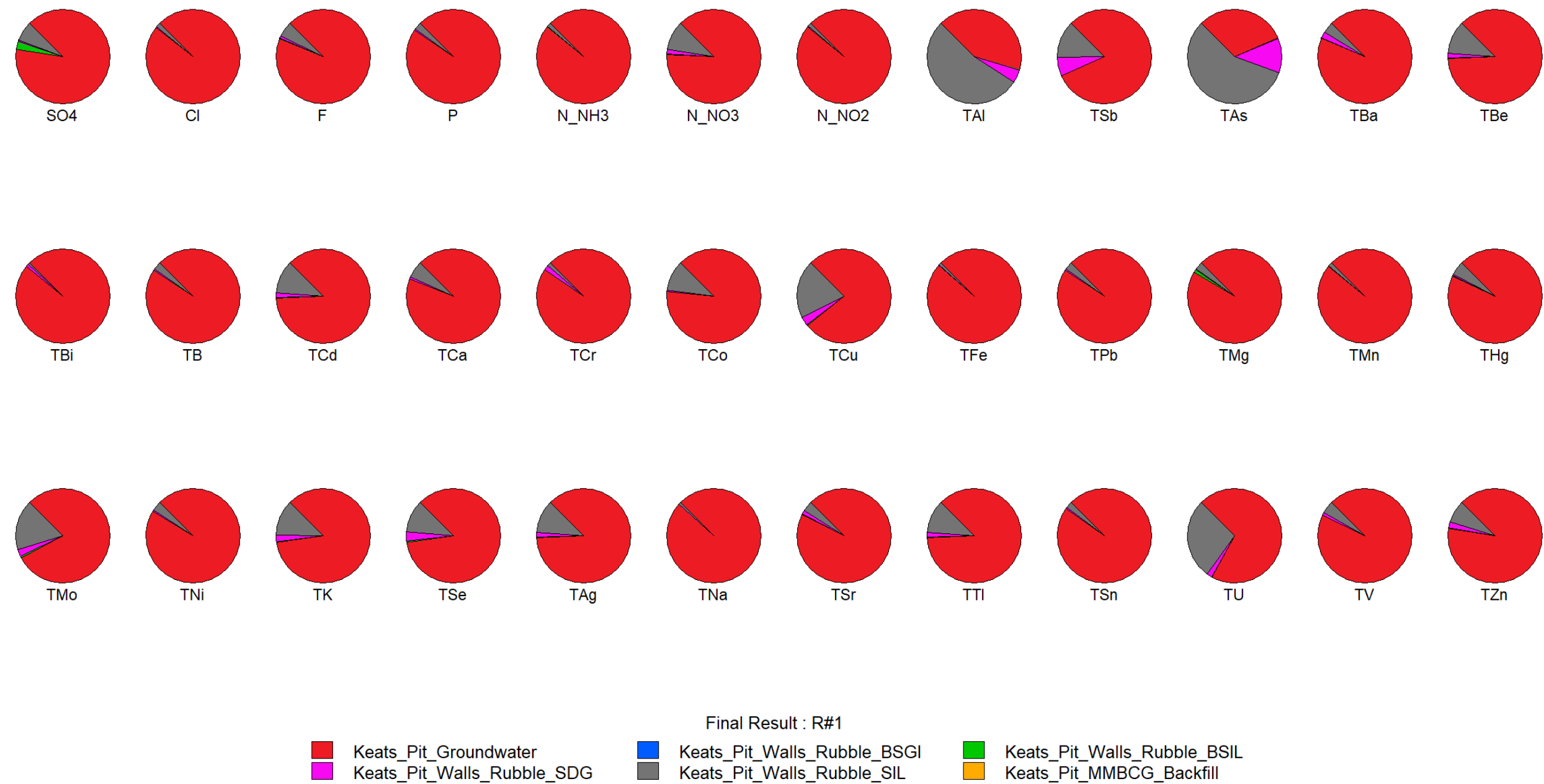




Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; MMBCG = mineralized material below cut-off grade

Figure 5.3 Relative Contribution of Each Source Term to Total Mass Loads in Keats Pit During the Pit Filling Phase: Normal – Expected Case Scenario





Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; MMBCG = mineralized material below cut-off grade

Figure 5.4 Relative Contribution of Each Source Term to Total Mass Loads in Keats Pit During the Pit Overflow Phase: Normal – Expected Case Scenario



Table 5.7 Summary Statistics for Keats Pit Water Quality: Normal – Expected Case Scenario

Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Overflow ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Major anions	Sulphate	mg/L	-	-	2.94	3.68	6.21	6.36	4.67	6.23	15.5	18	2.83	3.52	4.51	4.65
	Chloride	mg/L	-	-	2.76	3.17	4.1	4.24	2.62	2.97	4.31	4.62	2.11	2.3	2.58	2.62
	Fluoride	mg/L	-	-	0.088	0.107	0.154	0.178	0.102	0.126	0.246	0.277	0.0723	0.0836	0.0999	0.102
Nutrients	Phosphorus	mg/L	-	-	0.068	0.0794	0.102	0.113	0.0684	0.0797	0.13	0.142	0.0528	0.0586	0.067	0.0683
	Ammonia (as N)	mg/L	-	-	0.0467	0.0618	0.0776	0.0808	0.0391	0.0482	0.0943	0.108	0.0281	0.0322	0.0382	0.0391
	Nitrate (as N)	mg/L	-	-	0.0603	0.241	0.369	0.399	0.125	0.184	0.531	0.641	0.0621	0.0856	0.119	0.124
	Nitrite (as N)	mg/L	-	-	0.0091	0.0119	0.0148	0.0154	0.0076	0.00929	0.0177	0.0202	0.00553	0.0063	0.00742	0.00759
Total metals and metalloids	Aluminum	mg/L	-	-	0.0226	0.0421	0.118	0.138	0.0519	0.0744	0.201	0.237	0.0252	0.0352	0.0497	0.0518
	Antimony	mg/L	-	-	0.00132	0.00213	0.00522	0.00611	0.00272	0.00396	0.0116	0.0136	0.00136	0.00187	0.00261	0.00272
	Arsenic	mg/L	0.2	0.1	0.0122	0.025	0.0745	0.0871	0.0952	0.15	0.524	0.621	0.0377	0.0594	0.0904	0.0948
	Barium	mg/L	-	-	0.0122	0.0155	0.0241	0.0278	0.0125	0.0149	0.0254	0.0282	0.00918	0.0104	0.0122	0.0125
	Beryllium	mg/L	-	-	0.0000849	0.000115	0.000202	0.000236	0.000128	0.000169	0.0004	0.000461	0.0000786	0.0000971	0.000124	0.000128
	Bismuth	mg/L	-	-	0.00149	0.00184	0.00276	0.00318	0.0017	0.00216	0.0046	0.00522	0.00118	0.00137	0.00166	0.0017
	Boron	mg/L	-	-	0.0354	0.0417	0.0571	0.0658	0.0359	0.0424	0.0726	0.0801	0.0271	0.0303	0.0351	0.0358
	Cadmium	mg/L	-	-	0.0000085	0.0000115	0.0000202	0.0000236	0.0000128	0.0000169	0.00004	0.0000462	0.00000786	0.00000971	0.0000124	0.0000128
	Calcium	mg/L	-	-	8.14	9.99	14.8	17.1	10.2	12.8	27.2	30.9	6.95	8.17	9.93	10.2
	Chromium	mg/L	-	-	0.000849	0.00115	0.00202	0.00236	0.00117	0.00157	0.00398	0.00459	0.000713	0.000884	0.00113	0.00117
	Cobalt	mg/L	-	-	0.000375	0.00049	0.00082	0.000947	0.00044	0.000542	0.00103	0.00117	0.000303	0.000354	0.000428	0.000439
	Copper	mg/L	0.2	0.1	0.000551	0.000814	0.00172	0.00202	0.00104	0.00143	0.00375	0.00437	0.000573	0.000748	0.001	0.00104
	Iron	mg/L	-	-	0.173	0.199	0.254	0.265	0.16	0.177	0.236	0.248	0.132	0.142	0.157	0.159
	Lead	mg/L	0.16	0.08	0.000343	0.000403	0.000516	0.000589	0.000345	0.000402	0.000653	0.000716	0.000266	0.000295	0.000338	0.000344
	Magnesium	mg/L	-	-	2.55	2.95	3.88	4.21	2.61	3.09	5.24	5.79	1.97	2.21	2.56	2.61
	Manganese	mg/L	-	-	0.16	0.184	0.237	0.244	0.148	0.165	0.223	0.236	0.121	0.131	0.146	0.148
	Mercury	mg/L	-	-	0.0000188	0.0000226	0.0000318	0.0000367	0.0000213	0.000026	0.0000499	0.0000561	0.0000153	0.0000175	0.0000208	0.0000213
	Molybdenum	mg/L	-	-	0.00345	0.00588	0.0153	0.0178	0.00329	0.00446	0.00917	0.0105	0.0019	0.00242	0.00317	0.00328
	Nickel	mg/L	0.5	0.25	0.00138	0.00162	0.00212	0.00242	0.00145	0.00171	0.00294	0.00325	0.00109	0.00122	0.00141	0.00144
	Potassium	mg/L	-	-	0.383	0.554	1.09	1.27	0.513	0.671	1.51	1.74	0.317	0.39	0.496	0.512
	Selenium	mg/L	-	-	0.000533	0.000782	0.00166	0.00195	0.000953	0.00134	0.00367	0.00429	0.000515	0.000679	0.000916	0.000951
	Silver	mg/L	-	-	0.0000849	0.000115	0.000202	0.000236	0.000128	0.000169	0.0004	0.000461	0.0000786	0.0000971	0.000124	0.000128
	Sodium	mg/L	-	-	3.27	3.75	4.78	5.04	3	3.32	4.33	4.54	2.49	2.68	2.95	2.99



Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Overflow ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Total metals and metalloids (cont'd)	Strontium	mg/L	-	-	0.106	0.13	0.188	0.217	0.127	0.158	0.324	0.367	0.0882	0.103	0.123	0.127
	Thallium	mg/L	-	-	0.0000849	0.000115	0.000202	0.000236	0.000128	0.000169	0.0004	0.000461	0.0000786	0.0000971	0.000124	0.000128
	Tin	mg/L	-	-	0.00144	0.00172	0.0024	0.00277	0.00142	0.00169	0.00287	0.00317	0.00108	0.0012	0.00139	0.00142
	Uranium	mg/L	-	-	0.000299	0.000465	0.00111	0.0013	0.000334	0.000418	0.000695	0.000786	0.000214	0.000259	0.000324	0.000334
	Vanadium	mg/L	-	-	0.0015	0.00186	0.0028	0.00323	0.00178	0.00223	0.00463	0.00525	0.00123	0.00143	0.00173	0.00178
	Zinc	mg/L	0.8	0.4	0.00412	0.00548	0.00937	0.0109	0.00564	0.00732	0.0167	0.0192	0.00359	0.00436	0.00547	0.00563
Dissolved metals and metalloids	Aluminum	mg/L	-	-	0.0226	0.0421	0.118	0.138	0.0519	0.0744	0.201	0.237	0.0252	0.0352	0.0497	0.0518
	Antimony	mg/L	-	-	0.00132	0.00213	0.00522	0.00611	0.00272	0.00396	0.0116	0.0136	0.00136	0.00187	0.00261	0.00272
	Arsenic	mg/L	-	-	0.0122	0.025	0.0745	0.0871	0.0952	0.15	0.524	0.621	0.0377	0.0594	0.0904	0.0948
	Barium	mg/L	-	-	0.0122	0.0155	0.0241	0.0278	0.0125	0.0149	0.0254	0.0282	0.00918	0.0104	0.0122	0.0125
	Beryllium	mg/L	-	-	0.0000849	0.000115	0.000202	0.000236	0.000128	0.000169	0.0004	0.000461	0.0000786	0.0000971	0.000124	0.000128
	Bismuth	mg/L	-	-	0.00149	0.00184	0.00276	0.00318	0.0017	0.00216	0.0046	0.00522	0.00118	0.00137	0.00166	0.0017
	Boron	mg/L	-	-	0.0354	0.0417	0.0571	0.0658	0.0359	0.0424	0.0726	0.0801	0.0271	0.0303	0.0351	0.0358
	Cadmium	mg/L	-	-	0.0000085	0.0000115	0.0000202	0.0000236	0.0000128	0.0000169	0.00004	0.0000462	0.00000786	0.00000971	0.0000124	0.0000128
	Calcium	mg/L	-	-	8.14	9.99	14.8	17.1	10.2	12.8	27.2	30.9	6.95	8.17	9.93	10.2
	Chromium	mg/L	-	-	0.000849	0.00115	0.00202	0.00236	0.00117	0.00157	0.00398	0.00459	0.000713	0.000884	0.00113	0.00117
	Cobalt	mg/L	-	-	0.000375	0.00049	0.00082	0.000947	0.00044	0.000542	0.00103	0.00117	0.000303	0.000354	0.000428	0.000439
	Copper	mg/L	-	-	0.000551	0.000814	0.00172	0.00202	0.00104	0.00143	0.00375	0.00437	0.000573	0.000748	0.001	0.00104
	Iron	mg/L	-	-	0.173	0.199	0.254	0.265	0.16	0.177	0.236	0.248	0.132	0.142	0.157	0.159
	Lead	mg/L	-	-	0.000343	0.000403	0.000516	0.000589	0.000345	0.000402	0.000653	0.000716	0.000266	0.000295	0.000338	0.000344
	Magnesium	mg/L	-	-	2.55	2.95	3.88	4.21	2.61	3.09	5.24	5.79	1.97	2.21	2.56	2.61
	Manganese	mg/L	-	-	0.16	0.184	0.237	0.244	0.148	0.165	0.223	0.236	0.121	0.131	0.146	0.148
	Mercury	mg/L	-	-	0.0000188	0.0000226	0.0000318	0.0000367	0.0000213	0.000026	0.0000499	0.0000561	0.0000153	0.0000175	0.0000208	0.0000213
	Molybdenum	mg/L	-	-	0.00345	0.00588	0.0153	0.0178	0.00329	0.00446	0.00917	0.0105	0.0019	0.00242	0.00317	0.00328
	Nickel	mg/L	-	-	0.00138	0.00162	0.00212	0.00242	0.00145	0.00171	0.00294	0.00325	0.00109	0.00122	0.00141	0.00144
	Potassium	mg/L	-	-	0.383	0.554	1.09	1.27	0.513	0.671	1.51	1.74	0.317	0.39	0.496	0.512
	Selenium	mg/L	-	-	0.000533	0.000782	0.00166	0.00195	0.000953	0.00134	0.00367	0.00429	0.000515	0.000679	0.000916	0.000951
	Silver	mg/L	-	-	0.0000849	0.000115	0.000202	0.000236	0.000128	0.000169	0.0004	0.000461	0.0000786	0.0000971	0.000124	0.000128
	Sodium	mg/L	-	-	3.27	3.75	4.78	5.04	3	3.32	4.33	4.54	2.49	2.68	2.95	2.99
	Strontium	mg/L	-	-	0.106	0.13	0.188	0.217	0.127	0.158	0.324	0.367	0.0882	0.103	0.123	0.127
	Thallium	mg/L	-	-	0.0000849	0.000115	0.000202	0.000236	0.000128	0.000169	0.0004	0.000461	0.0000786	0.0000971	0.000124	0.000128



Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Overflow ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Dissolved metals and metalloids (cont'd)	Tin	mg/L	-	-	0.00144	0.00172	0.0024	0.00277	0.00142	0.00169	0.00287	0.00317	0.00108	0.0012	0.00139	0.00142
	Uranium	mg/L	-	-	0.000299	0.000465	0.00111	0.0013	0.000334	0.000418	0.000695	0.000786	0.000214	0.000259	0.000324	0.000334
	Vanadium	mg/L	-	-	0.0015	0.00186	0.0028	0.00323	0.00178	0.00223	0.00463	0.00525	0.00123	0.00143	0.00173	0.00178
	Zinc	mg/L	-	-	0.00412	0.00548	0.00937	0.0109	0.00564	0.00732	0.0167	0.0192	0.00359	0.00436	0.00547	0.00563

Notes:

^a MDMER Schedule 4 Table 1. “Maximum” refers to the maximum concentration of any grab sample (mg/L), and “Monthly Mean” refers to the maximum monthly mean concentration (mg/L). Orange shading indicates values that are above the Maximum criteria and grey shading indicates values that are above the Monthly Mean criteria.

^b Keats pit dewatering starts in Mine Year 1 Month 1 and ends in Mine Year 7 Month 12.

^c Keats pit filling starts in Mine Year 8 Month 1 and ends in Mine Year 25 Month 9.

^d Keats pit overflow starts in Mine Year 25 Month 10.

mg/L = milligram(s) per litre; as N = expressed as nitrogen; "-" = no value



5.4.1.2 Iceberg Pit

Pit Dewatering Phase (Mine Year 2 Month 1 to Mine Year 4 Month 4)

Concentration trends in Iceberg pit during the pit dewatering phase are similar to those in Keats pit, with seasonally fluctuating but generally lower concentrations than the pit filling phase for most modelled parameters (Figure 5.5; Table 5.8). However, total arsenic concentrations (median: 0.0346 mg/L, range: 0.0199 to 0.102 mg/L) are expected to marginally exceed the MDMER Monthly Mean limit of 0.1 mg/L during the summer months in Mine Years 2 and 3, and nitrogen species concentrations reach a maximum near the end of the pit dewatering period. The concentrations of other metals with MDMER limits remain below the guidelines during this phase.

The pie charts shown in Figure 5.6 indicate that runoff/seepage from SIL waste rock exposed on pit walls and in pit rubble is the dominant source of some metals to pit water, including arsenic and copper, during the Iceberg pit dewatering phase. Groundwater infiltration is the other main source of mass loadings, though flushing from backfilled PAG waste rock, which is placed in Iceberg pit in Mine Years 4 and 5, also influences pit water quality.

Pit Filling Phase (Mine Year 4 Month 5 to Mine Year 31 Month 10)

Concentration trends in Iceberg pit during the pit filling phase are similar to those in Keats pit. Most parameter concentrations increase abruptly at the start of the active closure phase in Mine Year 8, and then gradually decline as the pit fills and the volume of pit water increases (Figure 5.5; Table 5.8). The modelled results are summarized as follows:

- The increase in parameter concentrations at the onset of pit filling in active closure is expected due to the placement of MMBCG backfill (10% of the total MMBCG stockpile volume) in Mine Year 8. The pie charts shown in Figure 5.7 indicate that the "first flush" from MMBCG backfill is the primary source of mass loading to Iceberg pit water at this time for parameters including arsenic and nitrate, though mass loading associated with groundwater infiltration, runoff/seepage from pit walls and rubble, and backfilled PAG waste rock still influence overall pit water quality.
- Total arsenic concentrations (median: 0.0860 mg/L, range: 0.0483 to 0.162 mg/L) are expected to exceed the MDMER Monthly Mean limit of 0.1 mg/L until approximately Mine Year 17 (Figure 5.5) but do not exceed the MDMER Maximum limit of 0.2 mg/L at any point during pit filling.
 - As noted for Keats pit, the MDMER limits do not directly apply to Iceberg pit water quality during the pit filling phase as it is not actively discharging. However, if arsenic concentrations exceed MDMER limits during periods of discharge, treatment will be implemented.
- The concentrations of the other metals with MDMER limits are also expected to peak at the onset of pit filling but remain below their respective limits. Similarly, sulphate and nitrogen species concentrations also spike at the start of pit filling and decrease gradually as the pit fills.

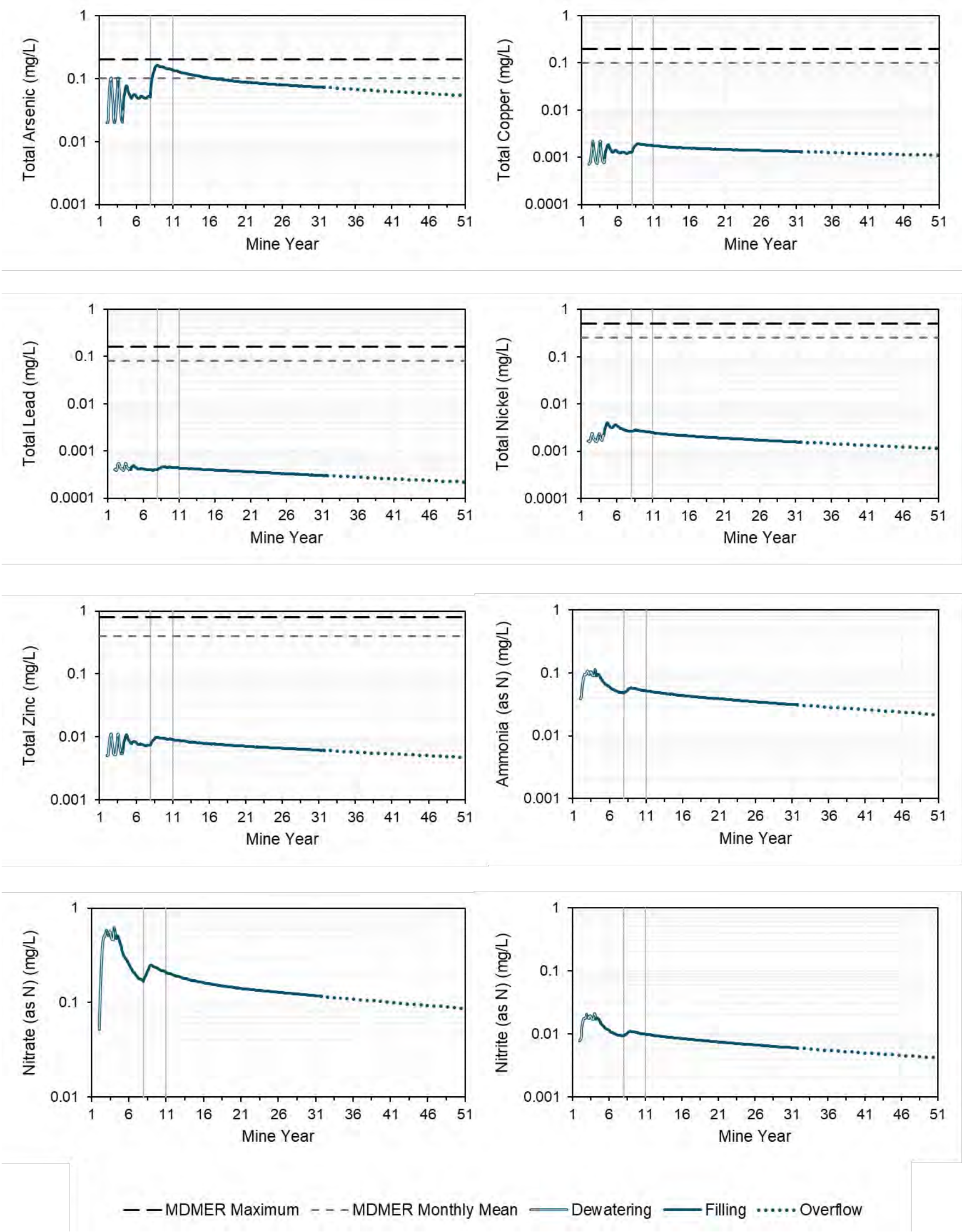


Pit Overflow Phase (Mine Year 31 Month 11+)

The water level in Iceberg pit reaches its maximum elevation and starts overflowing near the end of Mine Year 31. Once pit overflow is established, modelled parameter concentrations steadily decline and stabilize (Figure 5.5; Table 5.8). Modelled results for the pit overflow phase are summarized as follows:

- Total arsenic concentrations (median: 0.0621 mg/L, range: 0.0540 to 0.0723 mg/L) are expected to be below MDMER criteria at the onset of pit overflow and continue to decrease over time. Similar declining trends are observed for the other MDMER-applicable metals, as well as sulphate.
- The pie charts shown in Figure 5.8 indicate that the weathering of SIL waste rock exposed on pit walls above the spillway crest elevation, and to a lesser extent SDG waste rock, is the primary contributor to the total mass loads in pit water during the overflow period.





Notes:

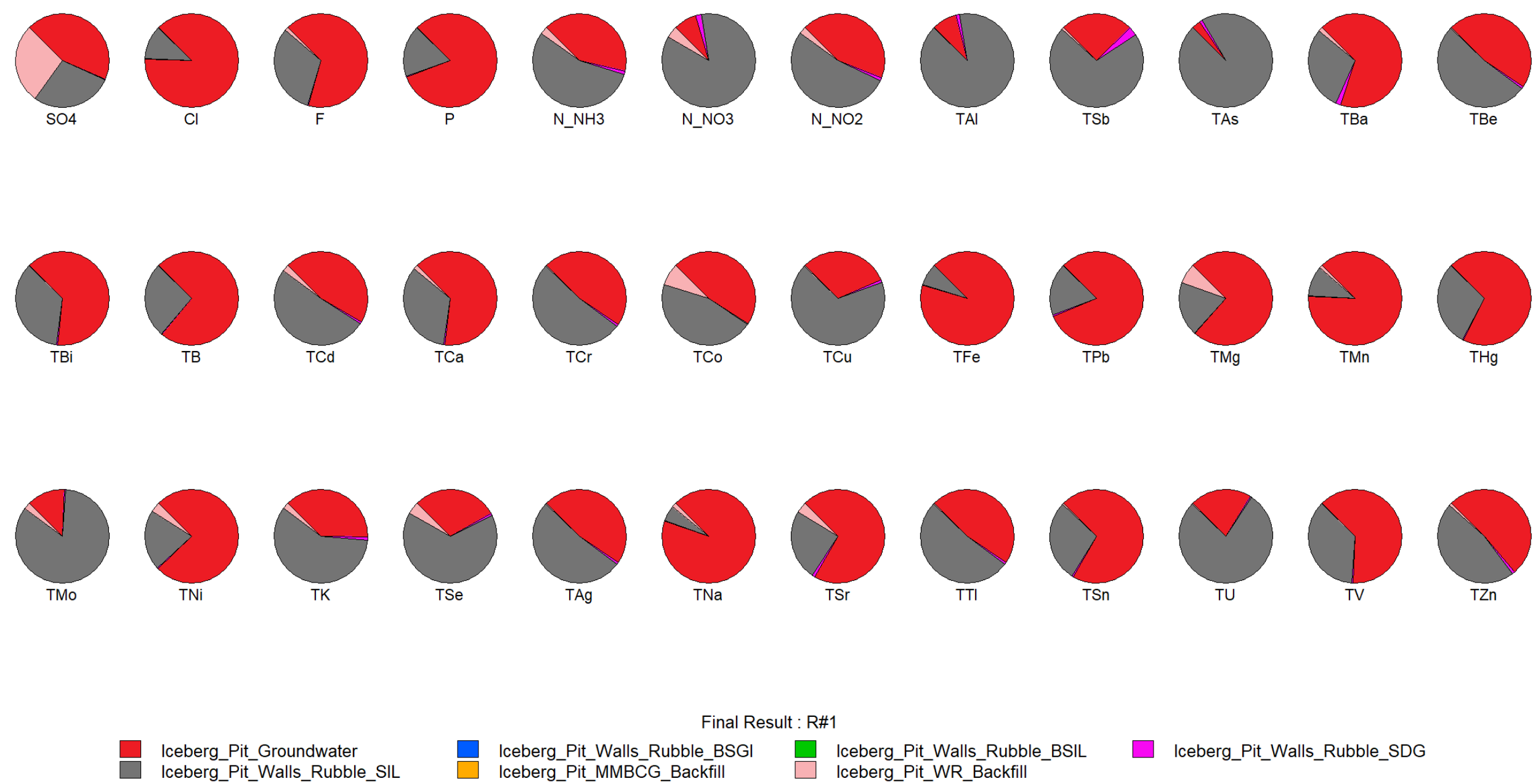
Vertical grey lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).

“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the MDMER Schedule 4 Table 1. The MDMER effluent quality limits are plotted as dashed lines.

mg/L = milligram(s) per litre; as N = expressed as nitrogen

Figure 5.5 Time-Series Plots Showing Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, and Nitrogen Species Concentrations in Iceberg Pit: Normal – Expected Case Scenario

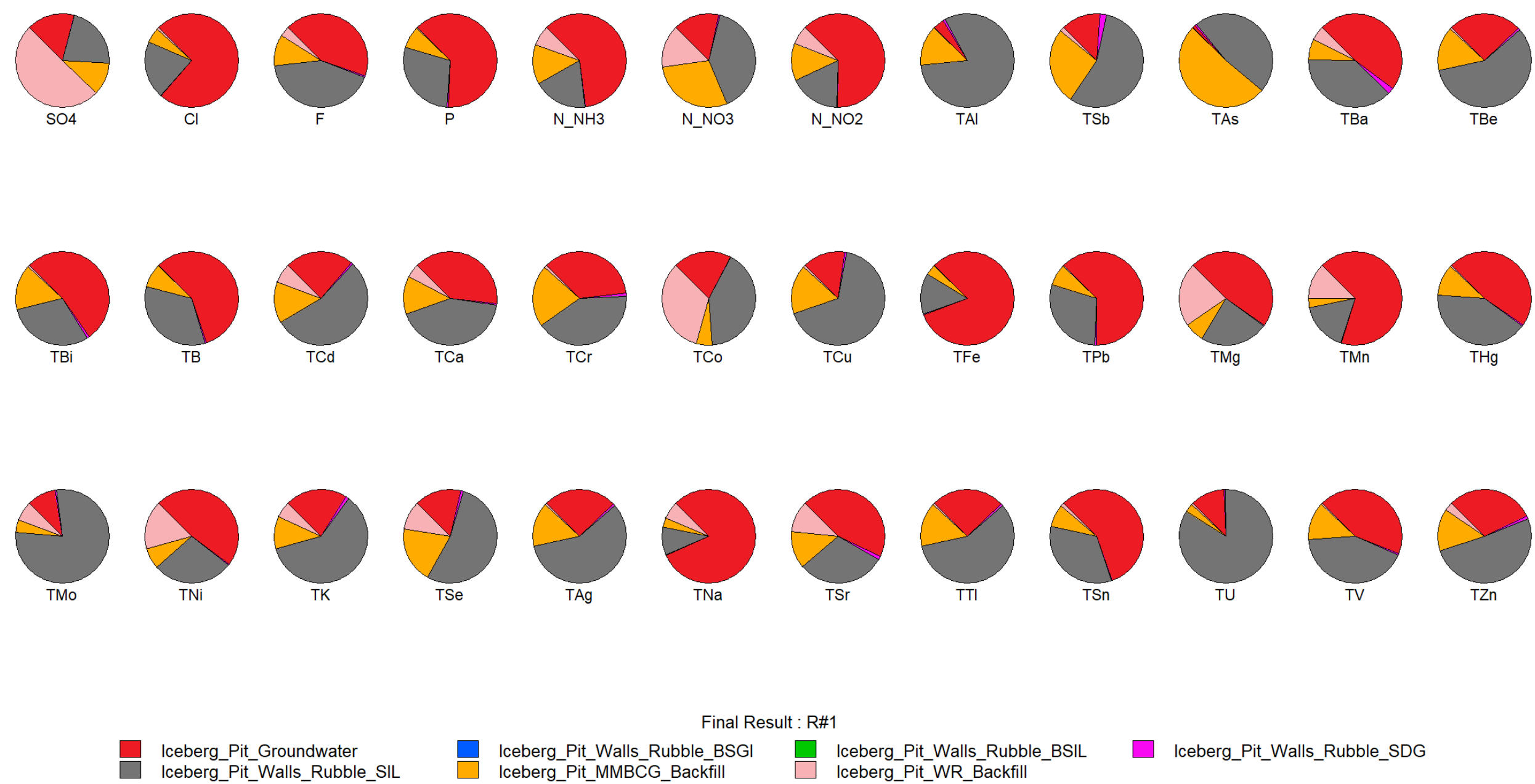




Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; MMBCG = mineralized material below cut-off grade; WR = waste rock

Figure 5.6 Relative Contribution of Each Source Term to Total Mass Loads in Iceberg Pit During the Pit Dewatering Phase: Normal – Expected Case Scenario

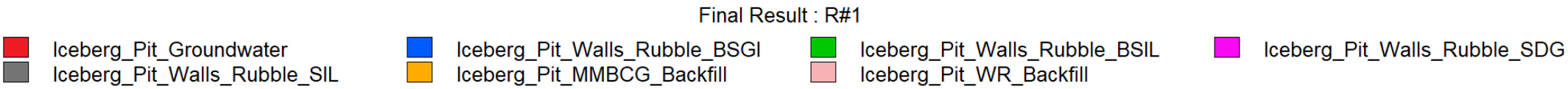
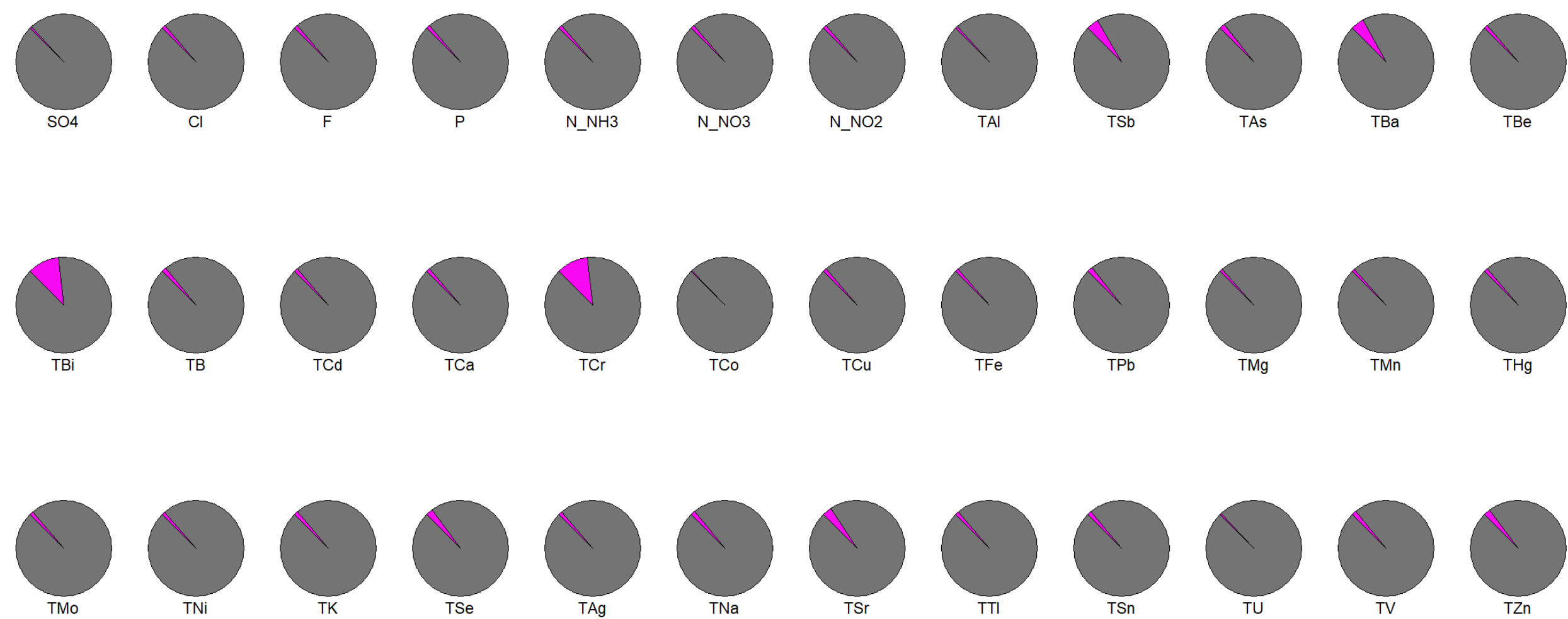




Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; MMBCG = mineralized material below cut-off grade; WR = waste rock

Figure 5.7 Relative Contribution of Each Source Term to Total Mass Loads in Iceberg Pit During the Pit Filling Phase: Normal – Expected Case Scenario





Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; MMBCG = mineralized material below cut-off grade; WR = waste rock

Figure 5.8 Relative Contribution of Each Source Term to Total Mass Loads in Iceberg Pit During the Pit Overflow Phase: Normal – Expected Case Scenario



Table 5.8 Summary Statistics for Iceberg Pit Water Quality: Normal – Expected Case Scenario

Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Overflow ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Major anions	Sulphate	mg/L	-	-	3.37	4.46	13.9	19.5	8.15	10.9	33	53.7	5.85	6.86	7.99	8.12
	Chloride	mg/L	-	-	3.15	3.38	3.98	3.99	2.12	2.75	3.31	3.65	1.51	1.78	2.08	2.11
	Fluoride	mg/L	-	-	0.104	0.12	0.179	0.18	0.104	0.128	0.159	0.197	0.0805	0.0909	0.103	0.104
Nutrients	Phosphorus	mg/L	-	-	0.078	0.0848	0.109	0.109	0.059	0.0749	0.0898	0.0959	0.0434	0.0502	0.0579	0.0588
	Ammonia (as N)	mg/L	-	-	0.0388	0.0942	0.108	0.113	0.031	0.0413	0.0632	0.0954	0.0217	0.0258	0.0304	0.0309
	Nitrate (as N)	mg/L	-	-	0.0519	0.499	0.591	0.627	0.117	0.152	0.282	0.513	0.087	0.1	0.115	0.117
	Nitrite (as N)	mg/L	-	-	0.00773	0.0178	0.0204	0.0213	0.00597	0.00797	0.0121	0.018	0.00417	0.00496	0.00585	0.00596
Total metals and metalloids	Aluminum	mg/L	-	-	0.0339	0.0556	0.155	0.155	0.0756	0.0939	0.112	0.12	0.0765	0.0817	0.0871	0.088
	Antimony	mg/L	-	-	0.00159	0.00231	0.00536	0.00538	0.00272	0.00327	0.0049	0.0052	0.00207	0.00236	0.00268	0.00272
	Arsenic	mg/L	0.2	0.1	0.0199	0.0346	0.101	0.102	0.0483	0.086	0.148	0.162	0.054	0.0621	0.0712	0.0723
	Barium	mg/L	-	-	0.0138	0.0161	0.0233	0.0234	0.0125	0.0157	0.0206	0.0272	0.00942	0.0108	0.0123	0.0125
	Beryllium	mg/L	-	-	0.000107	0.000131	0.00025	0.000251	0.000146	0.000166	0.00021	0.000218	0.000119	0.000131	0.000144	0.000146
	Bismuth	mg/L	-	-	0.00179	0.00201	0.00324	0.00325	0.00141	0.00194	0.00269	0.00279	0.000956	0.00115	0.00138	0.0014
	Boron	mg/L	-	-	0.0414	0.0455	0.0654	0.0656	0.0325	0.0416	0.0514	0.0557	0.0238	0.0276	0.0319	0.0324
	Cadmium	mg/L	-	-	0.0000107	0.0000135	0.000025	0.0000251	0.0000156	0.0000186	0.000024	0.0000314	0.0000125	0.0000139	0.0000154	0.0000156
	Calcium	mg/L	-	-	9.76	11.3	17.3	17.4	10.4	12.8	16.3	20	8	9.04	10.2	10.4
	Chromium	mg/L	-	-	0.00107	0.00131	0.0025	0.00251	0.00104	0.00143	0.0021	0.00218	0.00071	0.000853	0.00101	0.00103
	Cobalt	mg/L	-	-	0.000476	0.000692	0.00106	0.00107	0.000852	0.00107	0.00215	0.00268	0.000654	0.000741	0.000839	0.000851
	Copper	mg/L	0.2	0.1	0.000724	0.000991	0.00221	0.00221	0.00121	0.00146	0.00184	0.00193	0.0011	0.0012	0.00131	0.00132
	Iron	mg/L	-	-	0.196	0.209	0.234	0.235	0.123	0.162	0.193	0.213	0.086	0.102	0.12	0.123
	Lead	mg/L	0.16	0.08	0.000391	0.000426	0.000549	0.000551	0.000298	0.000378	0.000452	0.000484	0.00022	0.000254	0.000293	0.000298
	Magnesium	mg/L	-	-	2.85	3.33	4.54	5.3	2.83	3.71	7.41	10.8	2.04	2.39	2.78	2.82
	Manganese	mg/L	-	-	0.183	0.2	0.228	0.228	0.136	0.179	0.26	0.3	0.0959	0.113	0.133	0.136
	Mercury	mg/L	-	-	0.0000222	0.0000245	0.0000368	0.0000369	0.0000206	0.000025	0.0000305	0.0000319	0.0000158	0.0000179	0.0000203	0.0000205
	Molybdenum	mg/L	-	-	0.00517	0.00833	0.0215	0.0215	0.00744	0.00953	0.0154	0.0243	0.00565	0.00643	0.00732	0.00743
	Nickel	mg/L	0.5	0.25	0.0016	0.00189	0.00236	0.00237	0.00156	0.002	0.00326	0.00402	0.00114	0.00132	0.00153	0.00155
	Potassium	mg/L	-	-	0.48	0.633	1.29	1.3	0.69	0.827	1.08	1.5	0.554	0.614	0.682	0.69
	Selenium	mg/L	-	-	0.000696	0.00107	0.00214	0.00214	0.00114	0.00146	0.00215	0.00325	0.000868	0.000989	0.00113	0.00114
	Silver	mg/L	-	-	0.000107	0.000131	0.00025	0.000251	0.000146	0.000166	0.00021	0.000218	0.000119	0.000131	0.000144	0.000146
	Sodium	mg/L	-	-	3.66	3.97	4.34	4.53	2.37	3.17	4.63	5.79	1.63	1.96	2.32	2.37



Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Overflow ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Total metals and metalloids (cont'd)	Strontium	mg/L	-	-	0.121	0.147	0.191	0.192	0.122	0.156	0.231	0.324	0.0899	0.104	0.12	0.121
	Thallium	mg/L	-	-	0.000107	0.000131	0.00025	0.000251	0.000146	0.000166	0.00021	0.000218	0.000119	0.000131	0.000144	0.000146
	Tin	mg/L	-	-	0.00169	0.00188	0.00275	0.00276	0.00131	0.0017	0.00216	0.00255	0.000941	0.0011	0.00128	0.0013
	Uranium	mg/L	-	-	0.000425	0.000626	0.00153	0.00154	0.000736	0.000808	0.000901	0.00125	0.000639	0.000684	0.000731	0.000739
	Vanadium	mg/L	-	-	0.00181	0.00203	0.0033	0.00331	0.00171	0.00214	0.00273	0.00284	0.00128	0.00147	0.00168	0.0017
	Zinc	mg/L	0.8	0.4	0.00505	0.00614	0.011	0.0111	0.0061	0.0074	0.00957	0.0108	0.00477	0.00536	0.00602	0.0061
Dissolved metals and metalloids	Aluminum	mg/L	-	-	0.0339	0.0556	0.155	0.155	0.0756	0.0939	0.112	0.12	0.0765	0.0817	0.0871	0.088
	Antimony	mg/L	-	-	0.00159	0.00231	0.00536	0.00538	0.00272	0.00327	0.0049	0.0052	0.00207	0.00236	0.00268	0.00272
	Arsenic	mg/L	-	-	0.0199	0.0346	0.101	0.102	0.0483	0.086	0.148	0.162	0.054	0.0621	0.0712	0.0723
	Barium	mg/L	-	-	0.0138	0.0161	0.0233	0.0234	0.0125	0.0157	0.0206	0.0272	0.00942	0.0108	0.0123	0.0125
	Beryllium	mg/L	-	-	0.000107	0.000131	0.00025	0.000251	0.000146	0.000166	0.00021	0.000218	0.000119	0.000131	0.000144	0.000146
	Bismuth	mg/L	-	-	0.00179	0.00201	0.00324	0.00325	0.00141	0.00194	0.00269	0.00279	0.000956	0.00115	0.00138	0.0014
	Boron	mg/L	-	-	0.0414	0.0455	0.0654	0.0656	0.0325	0.0416	0.0514	0.0557	0.0238	0.0276	0.0319	0.0324
	Cadmium	mg/L	-	-	0.0000107	0.0000135	0.000025	0.0000251	0.0000156	0.0000186	0.000024	0.0000314	0.0000125	0.0000139	0.0000154	0.0000156
	Calcium	mg/L	-	-	9.76	11.3	17.3	17.4	10.4	12.8	16.3	20	8	9.04	10.2	10.4
	Chromium	mg/L	-	-	0.00107	0.00131	0.0025	0.00251	0.00104	0.00143	0.0021	0.00218	0.00071	0.000853	0.00101	0.00103
	Cobalt	mg/L	-	-	0.000476	0.000692	0.00106	0.00107	0.000852	0.00107	0.00215	0.00268	0.000654	0.000741	0.000839	0.000851
	Copper	mg/L	-	-	0.000724	0.000991	0.00221	0.00221	0.00121	0.00146	0.00184	0.00193	0.0011	0.0012	0.00131	0.00132
	Iron	mg/L	-	-	0.196	0.209	0.234	0.235	0.123	0.162	0.193	0.213	0.086	0.102	0.12	0.123
	Lead	mg/L	-	-	0.000391	0.000426	0.000549	0.000551	0.000298	0.000378	0.000452	0.000484	0.00022	0.000254	0.000293	0.000298
	Magnesium	mg/L	-	-	2.85	3.33	4.54	5.3	2.83	3.71	7.41	10.8	2.04	2.39	2.78	2.82
	Manganese	mg/L	-	-	0.183	0.2	0.228	0.228	0.136	0.179	0.26	0.3	0.0959	0.113	0.133	0.136
	Mercury	mg/L	-	-	0.0000222	0.0000245	0.0000368	0.0000369	0.0000206	0.000025	0.0000305	0.0000319	0.0000158	0.0000179	0.0000203	0.0000205
	Molybdenum	mg/L	-	-	0.00517	0.00833	0.0215	0.0215	0.00744	0.00953	0.0154	0.0243	0.00565	0.00643	0.00732	0.00743
	Nickel	mg/L	-	-	0.0016	0.00189	0.00236	0.00237	0.00156	0.002	0.00326	0.00402	0.00114	0.00132	0.00153	0.00155
	Potassium	mg/L	-	-	0.48	0.633	1.29	1.3	0.69	0.827	1.08	1.5	0.554	0.614	0.682	0.69
	Selenium	mg/L	-	-	0.000696	0.00107	0.00214	0.00214	0.00114	0.00146	0.00215	0.00325	0.000868	0.000989	0.00113	0.00114
	Silver	mg/L	-	-	0.000107	0.000131	0.00025	0.000251	0.000146	0.000166	0.00021	0.000218	0.000119	0.000131	0.000144	0.000146
	Sodium	mg/L	-	-	3.66	3.97	4.34	4.53	2.37	3.17	4.63	5.79	1.63	1.96	2.32	2.37
	Strontium	mg/L	-	-	0.121	0.147	0.191	0.192	0.122	0.156	0.231	0.324	0.0899	0.104	0.12	0.121
	Thallium	mg/L	-	-	0.000107	0.000131	0.00025	0.000251	0.000146	0.000166	0.00021	0.000218	0.000119	0.000131	0.000144	0.000146



Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Overflow ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Dissolved metals and metalloids (cont'd)	Tin	mg/L	-	-	0.00169	0.00188	0.00275	0.00276	0.00131	0.0017	0.00216	0.00255	0.000941	0.0011	0.00128	0.0013
	Uranium	mg/L	-	-	0.000425	0.000626	0.00153	0.00154	0.000736	0.000808	0.000901	0.00125	0.000639	0.000684	0.000731	0.000739
	Vanadium	mg/L	-	-	0.00181	0.00203	0.0033	0.00331	0.00171	0.00214	0.00273	0.00284	0.00128	0.00147	0.00168	0.0017
	Zinc	mg/L	-	-	0.00505	0.00614	0.011	0.0111	0.0061	0.0074	0.00957	0.0108	0.00477	0.00536	0.00602	0.0061

Notes:

^a MDMER Schedule 4 Table 1. “Maximum” refers to the maximum concentration of any grab sample (mg/L), and “Monthly Mean” refers to the maximum monthly mean concentration (mg/L). Orange shading indicates values that are above the Maximum criteria and grey shading indicates values that are above the Monthly Mean criteria.

^b Iceberg pit dewatering starts in Mine Year 2 Month 1 and ends in Mine Year 4 Month 4.

^c Iceberg pit filling starts in Mine Year 4 Month 5 and ends in Mine Year 31 Month 10.

^d Iceberg pit overflow starts in Mine Year 31 Month 11.

mg/L = milligram(s) per litre; as N = expressed as nitrogen; "-" = no value



5.4.1.3 Dome Pit

Pit Dewatering Phase (Mine Year 1 Month 1 to Mine Year 3 Month 12)

Modelled concentration trends in Dome pit fluctuate seasonally like in the other pits (Figure 5.9; Table 5.9); however, the concentrations of most parameters are approximately an order of magnitude lower. No parameters with MDMER limits are expected to have concentrations above the guidelines during this pit phase.

The pie charts shown in Figure 5.10 indicate that groundwater infiltration is the primary contributor to pit water for most parameters during dewatering, whereas runoff and seepage from SIL waste rock exposed on pit walls and in pit rubble are the primary sources of arsenic mass loading. The concentrations of parameters largely sourced from pit wall and rubble weathering are generally lower during the pit dewatering phase relative to subsequent pit phases, whereas parameters largely sourced from groundwater are generally higher.

Pit Filling Phase (Mine Year 4 Month 1 to Mine Year 5 Month 12)

Modelled concentration trends in Dome pit during the pit filling phase are characterized by increasing concentrations relative to the pit dewatering phase, though the rate and magnitude of increase is lower than in Keats pit and Iceberg pit (Figure 5.9; Table 5.9). No parameters with MDMER limits are expected to have concentrations exceeding the criteria.

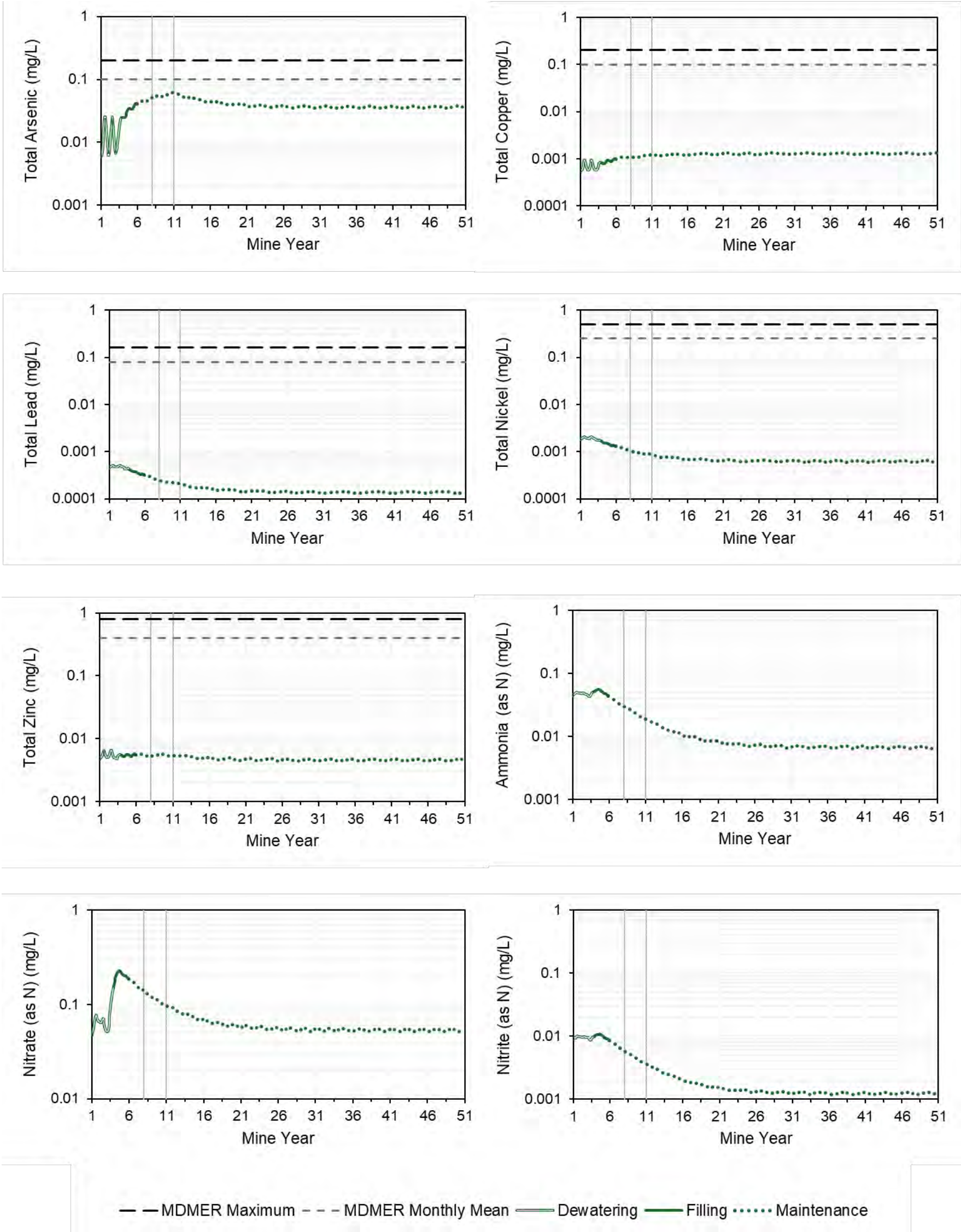
The pie charts shown in Figure 5.11 indicate that groundwater infiltration remains a major source of mass loading to Dome pit water during filling; however, for most parameters, greater proportions of total mass loads are attributable to the weathering of pit walls and rubble compared to the dewatering phase.

Pit Maintenance Phase (Mine Year 6 Month 1+)

The water level in Dome pit is not expected to rise above the spillway crest elevation and overflow but instead will reach a stable maximum elevation in Mine Year 6. Parameter concentrations are generally elevated relative to earlier pit phases during the initial years of the maintenance phase in active closure, but do not exceed applicable MDMER limits and stabilize in post-closure (Figure 5.9; Table 5.9).

The pie charts shown in Figure 5.12 indicate that the weathering of SIL and SDG waste rock exposed to the atmosphere on pit walls above the spillway crest elevation is the primary contributor of mass loading to pit water during the maintenance phase.





Notes:

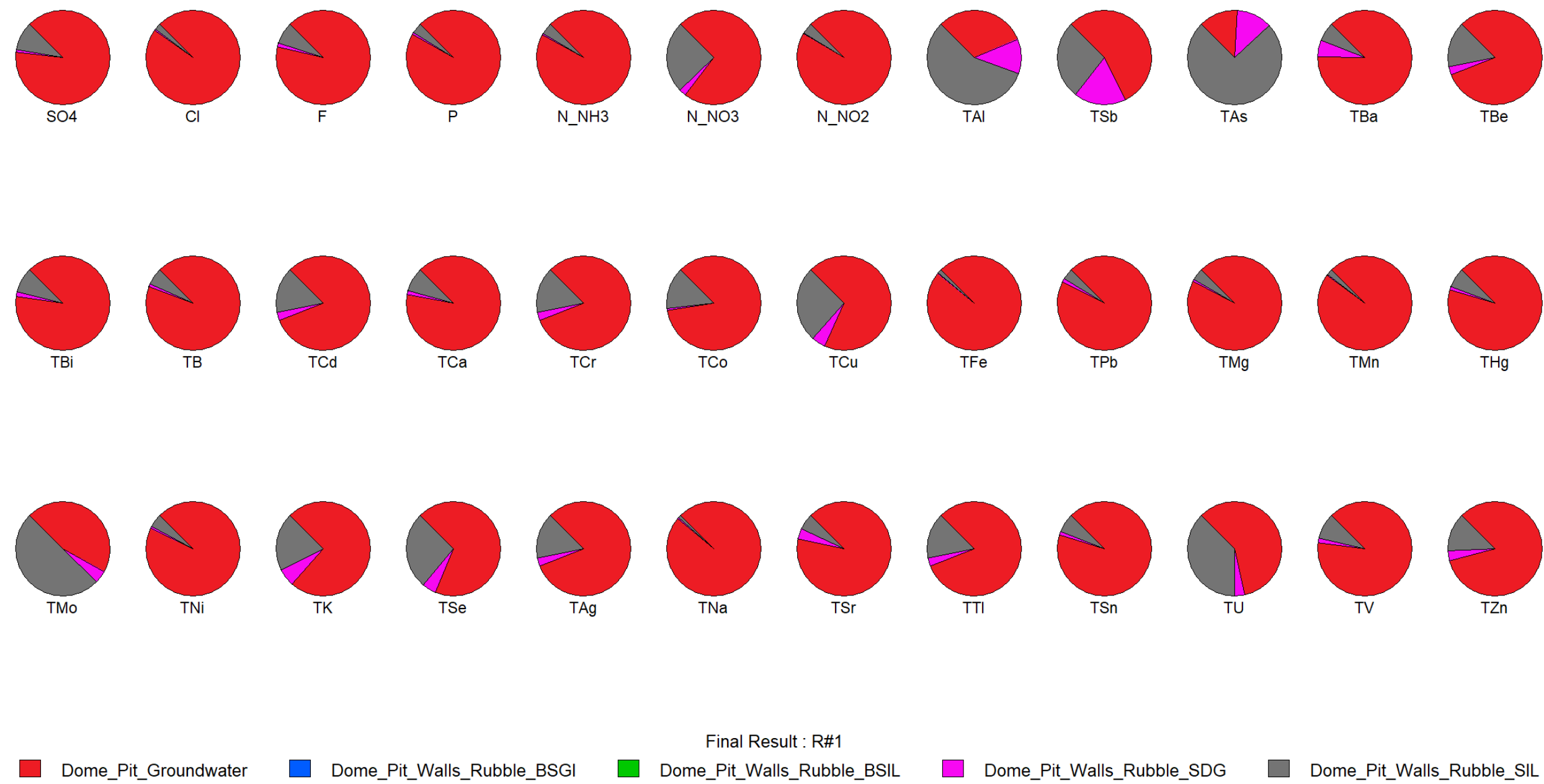
Vertical grey lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).

“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the MDMER Schedule 4 Table 1. The MDMER effluent quality limits are plotted as dashed lines.

mg/L = milligram(s) per litre; as N = expressed as nitrogen

Figure 5.9 Time-Series Plots Showing Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, and Nitrogen Species Concentrations in Dome Pit: Normal – Expected Case Scenario

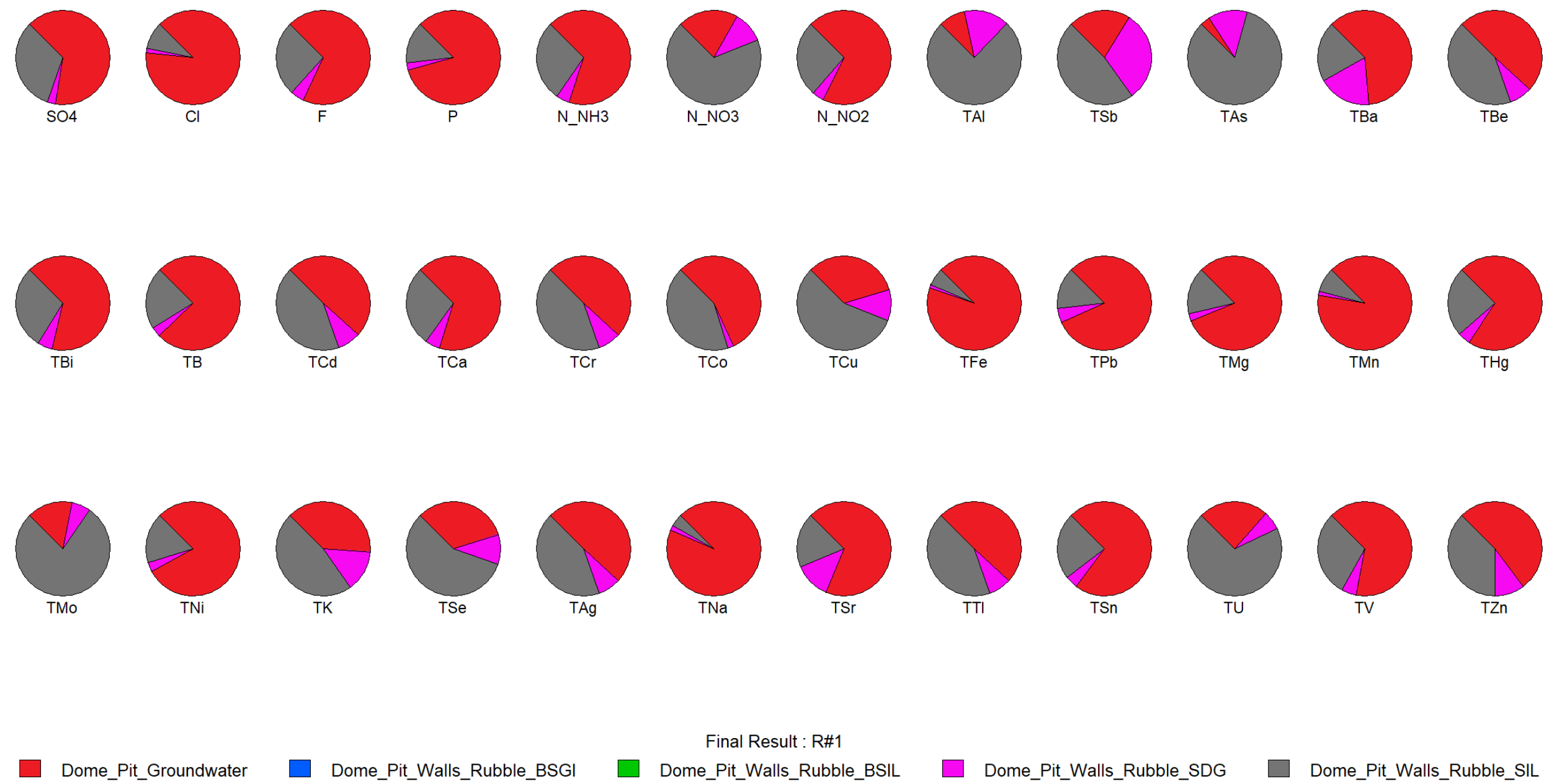




Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone

Figure 5.10 Relative Contribution of Each Source Term to Total Mass Loads in Dome Pit During the Pit Dewatering Phase: Normal – Expected Case Scenario





Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; MMBCG = mineralized material below cut-off grade

Figure 5.11 Relative Contribution of Each Source Term to Total Mass Loads in Dome Pit During the Pit Filling Phase: Normal – Expected Case Scenario





Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone

Figure 5.12 Relative Contribution of Each Source Term to Total Mass Loads in Dome Pit During the Pit Maintenance Phase: Normal – Expected Case Scenario



Table 5.9 Summary Statistics for Dome Pit Water Quality: Normal – Expected Case Scenario

Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Maintenance ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Major anions	Sulphate	mg/L	-	-	3.3	3.59	4.21	4.21	3.05	3.22	3.38	3.43	2.3	2.44	2.8	3.07
	Chloride	mg/L	-	-	3.28	3.94	4.11	4.12	2.33	2.72	3.15	3.22	0.59	0.639	1.6	2.29
	Fluoride	mg/L	-	-	0.107	0.116	0.133	0.134	0.0933	0.0997	0.106	0.108	0.0618	0.0658	0.0817	0.0922
Nutrients	Phosphorus	mg/L	-	-	0.0814	0.0947	0.101	0.101	0.0611	0.0694	0.0784	0.08	0.0235	0.0253	0.0457	0.0601
	Ammonia (as N)	mg/L	-	-	0.0435	0.0483	0.0504	0.0514	0.0441	0.0522	0.0559	0.0561	0.00647	0.00708	0.0285	0.0433
	Nitrate (as N)	mg/L	-	-	0.0473	0.066	0.133	0.155	0.167	0.202	0.225	0.227	0.0513	0.0555	0.13	0.184
	Nitrite (as N)	mg/L	-	-	0.00867	0.00961	0.00994	0.01	0.00844	0.0101	0.0107	0.0108	0.00118	0.00129	0.00544	0.00828
Total metals and metalloids	Aluminum	mg/L	-	-	0.0142	0.026	0.0445	0.0446	0.0422	0.0554	0.0667	0.0668	0.0641	0.0968	0.101	0.101
	Antimony	mg/L	-	-	0.00114	0.00162	0.00243	0.00243	0.00217	0.00265	0.00306	0.00307	0.00197	0.00213	0.00374	0.00408
	Arsenic	mg/L	0.2	0.1	0.00586	0.0135	0.0254	0.0254	0.0248	0.0339	0.0415	0.0415	0.0347	0.0375	0.0561	0.0617
	Barium	mg/L	-	-	0.0147	0.016	0.0191	0.0191	0.0142	0.015	0.0156	0.0157	0.00867	0.00932	0.0137	0.0147
	Beryllium	mg/L	-	-	0.0000955	0.000108	0.000135	0.000135	0.000109	0.000115	0.000121	0.000122	0.000113	0.000122	0.000127	0.000127
	Bismuth	mg/L	-	-	0.0018	0.00196	0.00228	0.00228	0.00163	0.00174	0.00183	0.00185	0.000281	0.000317	0.00148	0.00164
	Boron	mg/L	-	-	0.0433	0.0479	0.0532	0.0533	0.035	0.0383	0.0418	0.0425	0.0131	0.0142	0.0287	0.0344
	Cadmium	mg/L	-	-	0.00000955	0.0000108	0.0000135	0.0000135	0.0000109	0.0000116	0.0000122	0.0000122	0.0000113	0.0000123	0.0000128	0.0000128
	Calcium	mg/L	-	-	9.88	10.7	12.4	12.4	8.83	9.4	9.91	10.1	6.05	6.45	7.91	8.79
	Chromium	mg/L	-	-	0.000955	0.00108	0.00135	0.00135	0.00109	0.00115	0.00121	0.00122	0.000281	0.000314	0.00121	0.00127
	Cobalt	mg/L	-	-	0.000437	0.000483	0.000585	0.000586	0.000457	0.00048	0.000496	0.000498	0.000433	0.000453	0.000472	0.000488
	Copper	mg/L	0.2	0.1	0.000539	0.000675	0.000925	0.000926	0.000786	0.000904	0.001	0.00101	0.00095	0.00127	0.00133	0.00133
	Iron	mg/L	-	-	0.206	0.252	0.259	0.26	0.141	0.168	0.198	0.202	0.0247	0.0268	0.0925	0.138
	Lead	mg/L	0.16	0.08	0.000414	0.000475	0.000514	0.000514	0.000318	0.000357	0.000399	0.000407	0.000132	0.000142	0.000245	0.000313
	Magnesium	mg/L	-	-	2.97	3.42	3.68	3.69	2.27	2.55	2.86	2.92	0.859	0.927	1.74	2.23
	Manganese	mg/L	-	-	0.191	0.231	0.239	0.24	0.134	0.157	0.183	0.187	0.031	0.0336	0.0908	0.131
	Mercury	mg/L	-	-	0.000023	0.000025	0.0000284	0.0000284	0.0000194	0.0000209	0.0000224	0.0000228	0.0000118	0.0000126	0.0000165	0.0000191
	Molybdenum	mg/L	-	-	0.00253	0.00396	0.00629	0.0063	0.00576	0.00726	0.00858	0.00859	0.00387	0.00424	0.0107	0.0119
	Nickel	mg/L	0.5	0.25	0.00167	0.0019	0.00207	0.00207	0.0013	0.00145	0.00161	0.00164	0.000602	0.000646	0.00101	0.00128
	Potassium	mg/L	-	-	0.398	0.478	0.633	0.634	0.528	0.588	0.643	0.646	0.535	0.573	0.7	0.748
	Selenium	mg/L	-	-	0.000514	0.000646	0.000888	0.000889	0.000756	0.000871	0.000968	0.000972	0.000679	0.000734	0.0011	0.00119
	Silver	mg/L	-	-	0.0000955	0.000108	0.000135	0.000135	0.000109	0.000115	0.000121	0.000122	0.000113	0.000122	0.000127	0.000127
	Sodium	mg/L	-	-	3.89	4.8	4.92	4.93	2.64	3.16	3.74	3.82	0.348	0.382	1.7	2.59



Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Maintenance ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Total metals and metalloids (cont'd)	Strontium	mg/L	-	-	0.131	0.142	0.163	0.163	0.115	0.123	0.13	0.132	0.0623	0.0668	0.101	0.114
	Thallium	mg/L	-	-	0.0000955	0.000108	0.000135	0.000135	0.000109	0.000115	0.000121	0.000122	0.000113	0.000122	0.000127	0.000127
	Tin	mg/L	-	-	0.00176	0.00192	0.00217	0.00217	0.00146	0.00159	0.00171	0.00174	0.000424	0.000462	0.00124	0.00144
	Uranium	mg/L	-	-	0.00026	0.000356	0.000522	0.000522	0.00046	0.000555	0.000634	0.000636	0.000604	0.000784	0.000817	0.00083
	Vanadium	mg/L	-	-	0.00181	0.00196	0.00229	0.0023	0.00165	0.00175	0.00184	0.00187	0.000879	0.000947	0.00151	0.00166
	Zinc	mg/L	0.8	0.4	0.00473	0.00528	0.00652	0.00653	0.0052	0.00544	0.00567	0.00567	0.0044	0.00469	0.00552	0.00571
Dissolved metals and metalloids	Aluminum	mg/L	-	-	0.0142	0.026	0.0445	0.0446	0.0422	0.0554	0.0667	0.0668	0.0641	0.0968	0.101	0.101
	Antimony	mg/L	-	-	0.00114	0.00162	0.00243	0.00243	0.00217	0.00265	0.00306	0.00307	0.00197	0.00213	0.00374	0.00408
	Arsenic	mg/L	-	-	0.00586	0.0135	0.0254	0.0254	0.0248	0.0339	0.0415	0.0415	0.0347	0.0375	0.0561	0.0617
	Barium	mg/L	-	-	0.0147	0.016	0.0191	0.0191	0.0142	0.015	0.0156	0.0157	0.00867	0.00932	0.0137	0.0147
	Beryllium	mg/L	-	-	0.0000955	0.000108	0.000135	0.000135	0.000109	0.000115	0.000121	0.000122	0.000113	0.000122	0.000127	0.000127
	Bismuth	mg/L	-	-	0.0018	0.00196	0.00228	0.00228	0.00163	0.00174	0.00183	0.00185	0.000281	0.000317	0.00148	0.00164
	Boron	mg/L	-	-	0.0433	0.0479	0.0532	0.0533	0.035	0.0383	0.0418	0.0425	0.0131	0.0142	0.0287	0.0344
	Cadmium	mg/L	-	-	0.00000955	0.0000108	0.0000135	0.0000135	0.0000109	0.0000116	0.0000122	0.0000122	0.0000113	0.0000123	0.0000128	0.0000128
	Calcium	mg/L	-	-	9.88	10.7	12.4	12.4	8.83	9.4	9.91	10.1	6.05	6.45	7.91	8.79
	Chromium	mg/L	-	-	0.000955	0.00108	0.00135	0.00135	0.00109	0.00115	0.00121	0.00122	0.000281	0.000314	0.00121	0.00127
	Cobalt	mg/L	-	-	0.000437	0.000483	0.000585	0.000586	0.000457	0.00048	0.000496	0.000498	0.000433	0.000453	0.000472	0.000488
	Copper	mg/L	-	-	0.000539	0.000675	0.000925	0.000926	0.000786	0.000904	0.001	0.00101	0.00095	0.00127	0.00133	0.00133
	Iron	mg/L	-	-	0.206	0.252	0.259	0.26	0.141	0.168	0.198	0.202	0.0247	0.0268	0.0925	0.138
	Lead	mg/L	-	-	0.000414	0.000475	0.000514	0.000514	0.000318	0.000357	0.000399	0.000407	0.000132	0.000142	0.000245	0.000313
	Magnesium	mg/L	-	-	2.97	3.42	3.68	3.69	2.27	2.55	2.86	2.92	0.859	0.927	1.74	2.23
	Manganese	mg/L	-	-	0.191	0.231	0.239	0.24	0.134	0.157	0.183	0.187	0.031	0.0336	0.0908	0.131
	Mercury	mg/L	-	-	0.000023	0.000025	0.0000284	0.0000284	0.0000194	0.0000209	0.0000224	0.0000228	0.0000118	0.0000126	0.0000165	0.0000191
	Molybdenum	mg/L	-	-	0.00253	0.00396	0.00629	0.0063	0.00576	0.00726	0.00858	0.00859	0.00387	0.00424	0.0107	0.0119
	Nickel	mg/L	-	-	0.00167	0.0019	0.00207	0.00207	0.0013	0.00145	0.00161	0.00164	0.000602	0.000646	0.00101	0.00128
	Potassium	mg/L	-	-	0.398	0.478	0.633	0.634	0.528	0.588	0.643	0.646	0.535	0.573	0.7	0.748
	Selenium	mg/L	-	-	0.000514	0.000646	0.000888	0.000889	0.000756	0.000871	0.000968	0.000972	0.000679	0.000734	0.0011	0.00119
	Silver	mg/L	-	-	0.0000955	0.000108	0.000135	0.000135	0.000109	0.000115	0.000121	0.000122	0.000113	0.000122	0.000127	0.000127
	Sodium	mg/L	-	-	3.89	4.8	4.92	4.93	2.64	3.16	3.74	3.82	0.348	0.382	1.7	2.59
	Strontium	mg/L	-	-	0.131	0.142	0.163	0.163	0.115	0.123	0.13	0.132	0.0623	0.0668	0.101	0.114
	Thallium	mg/L	-	-	0.0000955	0.000108	0.000135	0.000135	0.000109	0.000115	0.000121	0.000122	0.000113	0.000122	0.000127	0.000127



Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Maintenance ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Dissolved metals and metalloids (cont'd)	Tin	mg/L	-	-	0.00176	0.00192	0.00217	0.00217	0.00146	0.00159	0.00171	0.00174	0.000424	0.000462	0.00124	0.00144
	Uranium	mg/L	-	-	0.00026	0.000356	0.000522	0.000522	0.00046	0.000555	0.000634	0.000636	0.000604	0.000784	0.000817	0.00083
	Vanadium	mg/L	-	-	0.00181	0.00196	0.00229	0.0023	0.00165	0.00175	0.00184	0.00187	0.000879	0.000947	0.00151	0.00166
	Zinc	mg/L	-	-	0.00473	0.00528	0.00652	0.00653	0.0052	0.00544	0.00567	0.00567	0.0044	0.00469	0.00552	0.00571

Notes:

^a MDMER Schedule 4 Table 1. “Maximum” refers to the maximum concentration of any grab sample (mg/L), and “Monthly Mean” refers to the maximum monthly mean concentration (mg/L). Orange shading indicates values that are above the Maximum criteria and grey shading indicates values that are above the Monthly Mean criteria.

^b Dome pit dewatering starts in Mine Year 1 Month 1 and ends in Mine Year 3 Month 12.

^c Dome pit filling starts in Mine Year 4 Month 1 and ends in Mine Year 5 Month 12.

^d The water level in Dome pit reaches a stable maximum elevation that is naturally maintained starting in Mine Year 6 Month 1.

mg/L = milligram(s) per litre; as N = expressed as nitrogen; "-" = no value



5.4.1.4 Jackpot Pit

Pit Dewatering Phase (Mine Year 1 Month 1 to Mine Year 3 Month 12)

Modelled parameter concentrations in Jackpot pit during the pit dewatering phase fluctuate seasonally similar to the other pits, with the highest concentrations occurring in the summer months with lower dewatering volumes (Figure 5.13; Table 5.10). During this pit phase, total arsenic concentrations (median: 0.0489 mg/L, range: 0.0203 to 0.104 mg/L) are predicted to marginally exceed the MDMER Monthly Mean limit of 0.1 mg/L during July and August in Mine Years 1 and 2, and nitrogen species concentrations reach a maximum in Mine Year 2. The concentrations of other metals with MDMER limits fluctuate but remain below the guidelines during this pit phase.

The pie charts shown in Figure 5.14 indicate that runoff and seepage from SIL waste rock exposed on pit walls and in pit rubble is the dominant source of some metals to pit water, particularly arsenic and copper, during the Jackpot pit dewatering phase. Groundwater infiltration is the other main source of mass loading to pit water during this period.

Pit Filling Phase (Mine Year 4 Month 1 to Mine Year 10 Month 12)

Concentration trends in the Jackpot pit during the pit filling phase are primarily controlled by the dominant source of mass loading for each parameter. The concentrations of parameters that were largely influenced by groundwater infiltration during the dewatering phase (e.g., nitrogen species) decrease during pit filling, while the concentrations of parameters mainly sourced from pit wall and rubble runoff/seepage (e.g., arsenic and copper) increase or remain relatively unchanged (Figure 5.13 to Figure 5.14; Table 5.10). The model results for this phase are summarized as follows:

- Total arsenic concentrations (median: 0.107 mg/L, range: 0.0811 to 0.117 mg/L) are expected to fluctuate close to or above the MDMER Monthly Mean limit of 0.1 mg/L during the entirety of the pit filling phase (Figure 5.13), but are not expected to exceed the MDMER Maximum limit of 0.2 mg/L.
 - As noted for Keats pit and Iceberg pit, the MDMER criteria do not directly apply to Jackpot pit water quality during the pit filling phase as it is not actively discharging. However, if arsenic concentrations exceed MDMER limits during periods of discharge, treatment will be implemented.
- The concentrations of the other metals with MDMER criteria are expected to remain below MDMER limits during pit filling.
- Higher proportions of the total mass loads in pit water are associated with the weathering of exposed SIL waste rock during pit filling (Figure 5.15) as Jackpot pit becomes a groundwater recharge feature during Mine Year 5.

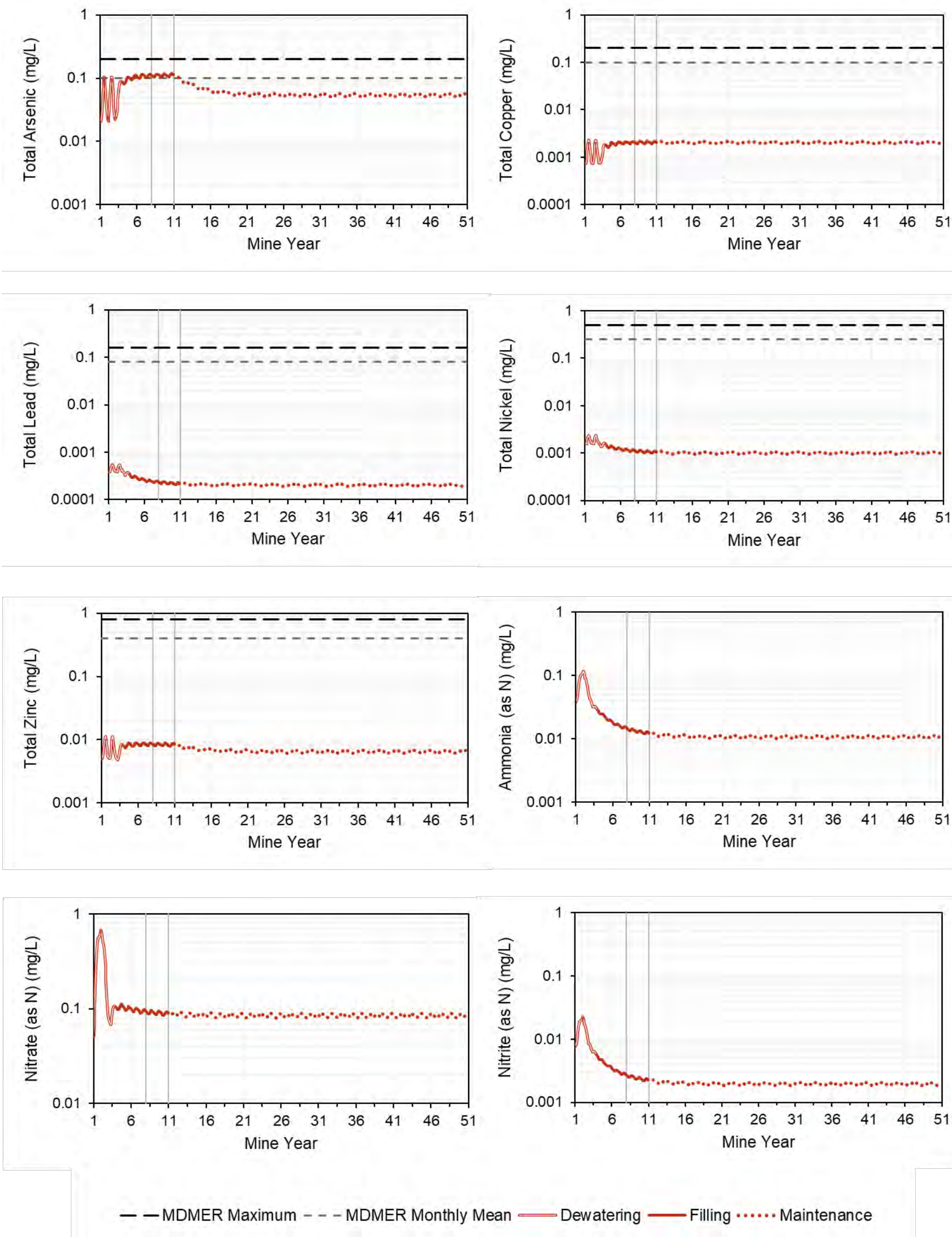


Pit Maintenance Phase (Mine Year 11 Month 1+)

The water level in Jackpot pit is not expected to rise above the spillway crest elevation and overflow but instead will reach a stable maximum elevation by the start of post-closure (Mine Year 11). Parameter concentrations that generally increase during the pit filling phase decline during the first few years of the maintenance phase and then stabilize (Figure 5.13; Table 5.10). Modelled results for the pit maintenance phase are summarized as follows:

- Total arsenic concentrations (median: 0.0621 mg/L, range: 0.0540 to 0.0723 mg/L) are expected to be above the MDMER Monthly Mean limit for the first year of the maintenance phase but then decline and stabilize at concentrations below the guideline. The other MDMER-applicable metals also stabilize and do not exceed their respective limits.
- The pie charts shown in Figure 5.16 indicate that the weathering of SIL waste rock exposed on pit walls above the spillway crest elevation, and to a lesser extent SDG waste rock, is the primary contributor of mass loading to Jackpot pit water once a stable maximum water level is reached.





Notes:

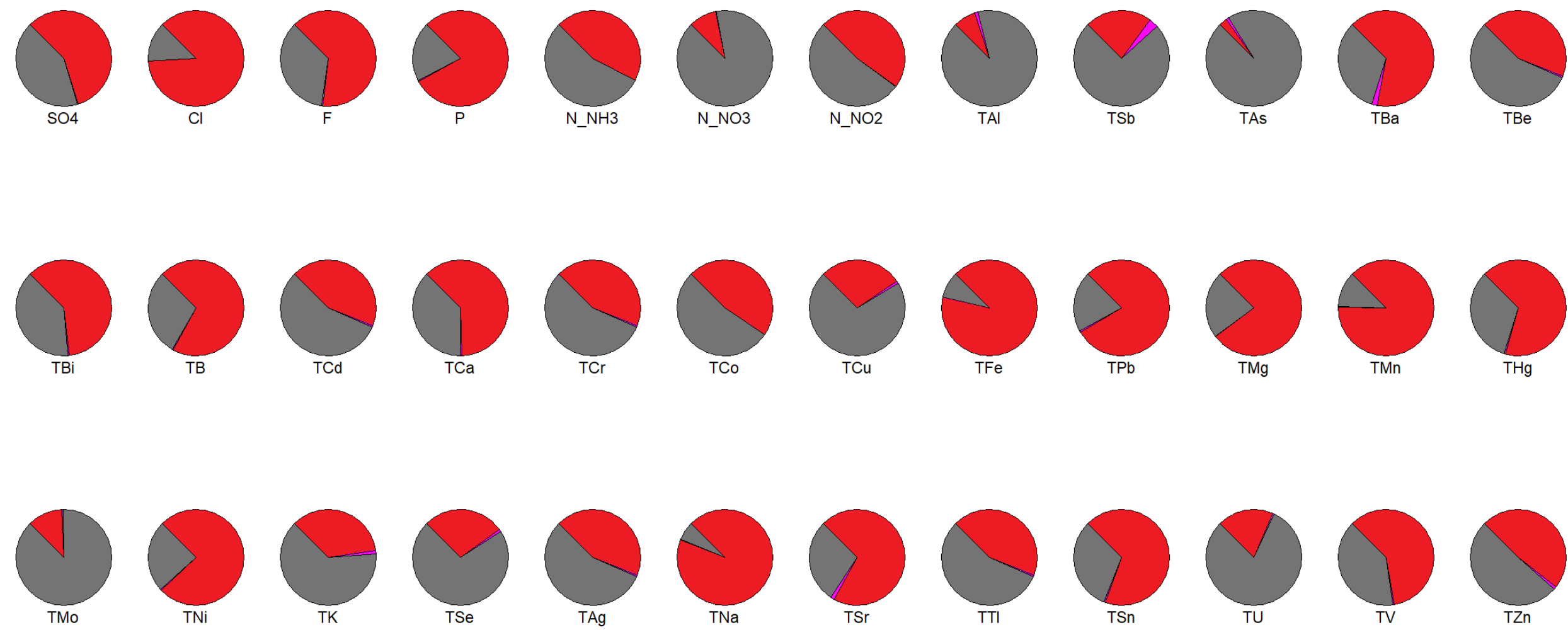
Vertical grey lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).

“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the MDMER Schedule 4 Table 1. The MDMER effluent quality limits are plotted as dashed lines.

mg/L = milligram(s) per litre; as N = expressed as nitrogen

Figure 5.13 Time-Series Plots Showing Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, and Nitrogen Species Concentrations in Jackpot Pit: Normal – Expected Case Scenario





Final Result : R#1

Jackpot_Pit_Groundwater Jackpot_Pit_Walls_Rubble_BSGI Jackpot_Pit_Walls_Rubble_BSIL Jackpot_Pit_Walls_Rubble_SDG Jackpot_Pit_Walls_Rubble_SIL

Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone

Figure 5.14 Relative Contribution of Each Source Term to Total Mass Loads in Jackpot Pit During the Pit Dewatering Phase: Normal – Expected Case Scenario





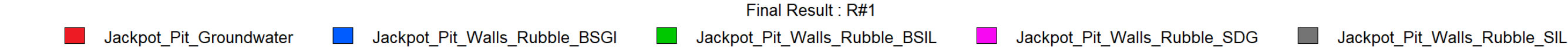
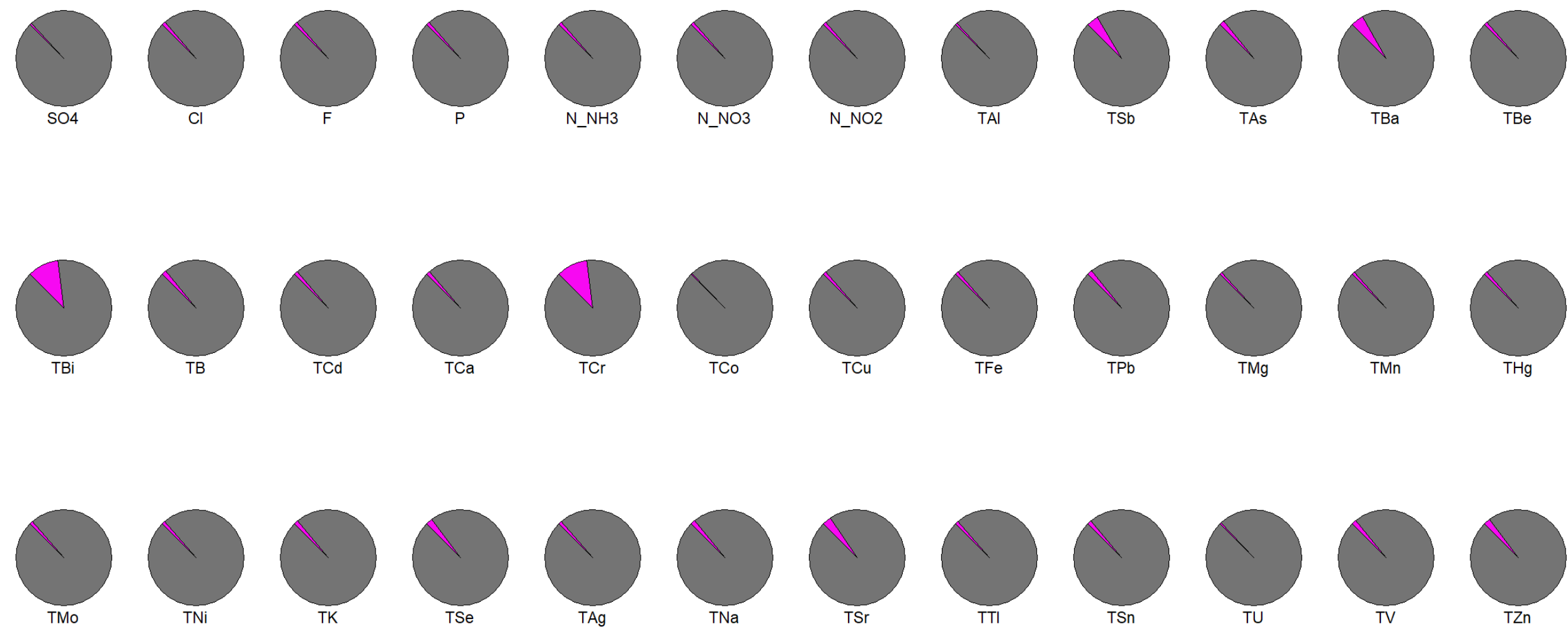
Final Result : R#1

Jackpot_Pit_Groundwater Jackpot_Pit_Walls_Rubble_BSGI Jackpot_Pit_Walls_Rubble_BSIL Jackpot_Pit_Walls_Rubble_SDG Jackpot_Pit_Walls_Rubble_SIL

Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone

Figure 5.15 Relative Contribution of Each Source Term to Total Mass Loads in Jackpot Pit During the Pit Filling Phase: Normal – Expected Case Scenario





Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.
BSGI = black siltstone and interbedded greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone

Figure 5.16 Relative Contribution of Each Source Term to Total Mass Loads in Jackpot Pit During the Pit Maintenance Phase: Normal – Expected Case Scenario



Table 5.10 Summary Statistics for Jackpot Pit Water Quality: Normal – Expected Case Scenario

Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Maintenance ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Major anions	Sulphate	mg/L	-	-	3.07	3.92	6.33	6.38	3.98	4.3	4.61	4.69	3.9	4.14	4.32	4.38
	Chloride	mg/L	-	-	2.3	3.19	3.87	3.9	1.06	1.3	1.95	2.22	0.924	0.982	1.04	1.12
	Fluoride	mg/L	-	-	0.0927	0.116	0.178	0.179	0.0998	0.109	0.12	0.124	0.097	0.103	0.107	0.109
Nutrients	Phosphorus	mg/L	-	-	0.0649	0.079	0.106	0.107	0.04	0.0465	0.0602	0.0648	0.0369	0.0392	0.0412	0.0431
	Ammonia (as N)	mg/L	-	-	0.0289	0.0489	0.11	0.119	0.0119	0.0152	0.0247	0.028	0.0102	0.0108	0.0115	0.0124
	Nitrate (as N)	mg/L	-	-	0.051	0.158	0.626	0.678	0.0849	0.0949	0.106	0.111	0.0805	0.0855	0.0894	0.0924
	Nitrite (as N)	mg/L	-	-	0.00559	0.00949	0.0207	0.0223	0.00219	0.00284	0.00473	0.0054	0.00185	0.00197	0.00211	0.00227
Total metals and metalloids	Aluminum	mg/L	-	-	0.0344	0.0762	0.158	0.159	0.122	0.16	0.173	0.174	0.156	0.165	0.173	0.174
	Antimony	mg/L	-	-	0.00159	0.0028	0.00545	0.00548	0.00402	0.00507	0.00544	0.00544	0.00228	0.00247	0.00382	0.0052
	Arsenic	mg/L	0.2	0.1	0.0203	0.0489	0.104	0.104	0.0811	0.107	0.116	0.117	0.0509	0.0552	0.0831	0.112
	Barium	mg/L	-	-	0.0122	0.0152	0.0231	0.0233	0.0127	0.014	0.0154	0.0159	0.00974	0.0105	0.0118	0.0134
	Beryllium	mg/L	-	-	0.000104	0.000144	0.000252	0.000254	0.000172	0.000199	0.000211	0.000212	0.000185	0.000196	0.000205	0.000209
	Bismuth	mg/L	-	-	0.00161	0.00203	0.00322	0.00324	0.00192	0.00209	0.00226	0.00232	0.000204	0.000224	0.00112	0.00202
	Boron	mg/L	-	-	0.036	0.0442	0.0646	0.0651	0.0317	0.0354	0.0409	0.0419	0.0194	0.0209	0.027	0.0334
	Cadmium	mg/L	-	-	0.0000105	0.0000144	0.0000252	0.0000254	0.0000172	0.0000199	0.0000211	0.0000212	0.0000185	0.0000196	0.0000205	0.0000209
	Calcium	mg/L	-	-	8.74	10.9	17.2	17.3	10.1	11	11.9	12.2	9.47	10.1	10.5	10.9
	Chromium	mg/L	-	-	0.00104	0.00144	0.00252	0.00254	0.00172	0.00199	0.00211	0.00212	0.000204	0.000224	0.00111	0.002
	Cobalt	mg/L	-	-	0.000461	0.000619	0.00106	0.00107	0.000715	0.000813	0.000862	0.000866	0.000761	0.000807	0.000843	0.00085
	Copper	mg/L	0.2	0.1	0.000718	0.00118	0.00224	0.00225	0.00162	0.00201	0.00215	0.00215	0.00193	0.00204	0.00214	0.00214
	Iron	mg/L	-	-	0.13	0.199	0.227	0.229	0.046	0.0605	0.105	0.124	0.039	0.0415	0.0443	0.0478
	Lead	mg/L	0.16	0.08	0.000327	0.000396	0.000538	0.000542	0.000206	0.000239	0.000307	0.000329	0.000193	0.000205	0.000214	0.000223
	Magnesium	mg/L	-	-	2.4	2.89	4.02	4.05	1.64	1.88	2.35	2.49	1.4	1.49	1.61	1.74
	Manganese	mg/L	-	-	0.13	0.186	0.221	0.223	0.0567	0.0706	0.109	0.125	0.0498	0.0529	0.0561	0.0598
	Mercury	mg/L	-	-	0.0000195	0.0000243	0.0000364	0.0000367	0.0000194	0.0000214	0.000024	0.0000246	0.0000185	0.0000196	0.0000205	0.0000211
	Molybdenum	mg/L	-	-	0.00521	0.0108	0.0219	0.0221	0.0167	0.0217	0.0234	0.0235	0.00609	0.00661	0.0145	0.0224
	Nickel	mg/L	0.5	0.25	0.00136	0.00163	0.00232	0.00234	0.000998	0.00114	0.00139	0.00146	0.000949	0.00101	0.00105	0.00108
	Potassium	mg/L	-	-	0.474	0.716	1.31	1.32	0.925	1.12	1.18	1.19	0.815	0.879	0.995	1.13
	Selenium	mg/L	-	-	0.000691	0.00114	0.00217	0.00218	0.00158	0.00196	0.00209	0.00209	0.000934	0.00101	0.0015	0.002
	Silver	mg/L	-	-	0.000104	0.000144	0.000252	0.000254	0.000172	0.000199	0.000211	0.000212	0.000185	0.000196	0.000205	0.000209
	Sodium	mg/L	-	-	2.29	3.74	4.13	4.15	0.659	0.923	1.84	2.19	0.519	0.556	0.609	0.667



Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Maintenance ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Total metals and metalloids (cont'd)	Strontium	mg/L	-	-	0.105	0.129	0.189	0.19	0.0926	0.103	0.119	0.122	0.0791	0.0843	0.091	0.0985
	Thallium	mg/L	-	-	0.000104	0.000144	0.000252	0.000254	0.000172	0.000199	0.000211	0.000212	0.000185	0.000196	0.000205	0.000209
	Tin	mg/L	-	-	0.00148	0.00184	0.00273	0.00275	0.00141	0.00157	0.00177	0.00182	0.000648	0.000702	0.00109	0.00149
	Uranium	mg/L	-	-	0.000425	0.000791	0.00156	0.00157	0.00117	0.00148	0.0016	0.0016	0.00128	0.00136	0.00145	0.00156
	Vanadium	mg/L	-	-	0.00163	0.00206	0.00329	0.00331	0.00199	0.00217	0.00233	0.00239	0.0013	0.0014	0.00175	0.00211
	Zinc	mg/L	0.8	0.4	0.00486	0.00648	0.0111	0.0111	0.0074	0.00836	0.00886	0.00891	0.00616	0.00665	0.00744	0.00837
Dissolved metals and metalloids	Aluminum	mg/L	-	-	0.0344	0.0762	0.158	0.159	0.122	0.16	0.173	0.174	0.156	0.165	0.173	0.174
	Antimony	mg/L	-	-	0.00159	0.0028	0.00545	0.00548	0.00402	0.00507	0.00544	0.00544	0.00228	0.00247	0.00382	0.0052
	Arsenic	mg/L	-	-	0.0203	0.0489	0.104	0.104	0.0811	0.107	0.116	0.117	0.0509	0.0552	0.0831	0.112
	Barium	mg/L	-	-	0.0122	0.0152	0.0231	0.0233	0.0127	0.014	0.0154	0.0159	0.00974	0.0105	0.0118	0.0134
	Beryllium	mg/L	-	-	0.000104	0.000144	0.000252	0.000254	0.000172	0.000199	0.000211	0.000212	0.000185	0.000196	0.000205	0.000209
	Bismuth	mg/L	-	-	0.00161	0.00203	0.00322	0.00324	0.00192	0.00209	0.00226	0.00232	0.000204	0.000224	0.00112	0.00202
	Boron	mg/L	-	-	0.036	0.0442	0.0646	0.0651	0.0317	0.0354	0.0409	0.0419	0.0194	0.0209	0.027	0.0334
	Cadmium	mg/L	-	-	0.0000105	0.0000144	0.0000252	0.0000254	0.0000172	0.0000199	0.0000211	0.0000212	0.0000185	0.0000196	0.0000205	0.0000209
	Calcium	mg/L	-	-	8.74	10.9	17.2	17.3	10.1	11	11.9	12.2	9.47	10.1	10.5	10.9
	Chromium	mg/L	-	-	0.00104	0.00144	0.00252	0.00254	0.00172	0.00199	0.00211	0.00212	0.000204	0.000224	0.00111	0.002
	Cobalt	mg/L	-	-	0.000461	0.000619	0.00106	0.00107	0.000715	0.000813	0.000862	0.000866	0.000761	0.000807	0.000843	0.00085
	Copper	mg/L	-	-	0.000718	0.00118	0.00224	0.00225	0.00162	0.00201	0.00215	0.00215	0.00193	0.00204	0.00214	0.00214
	Iron	mg/L	-	-	0.13	0.199	0.227	0.229	0.046	0.0605	0.105	0.124	0.039	0.0415	0.0443	0.0478
	Lead	mg/L	-	-	0.000327	0.000396	0.000538	0.000542	0.000206	0.000239	0.000307	0.000329	0.000193	0.000205	0.000214	0.000223
	Magnesium	mg/L	-	-	2.4	2.89	4.02	4.05	1.64	1.88	2.35	2.49	1.4	1.49	1.61	1.74
	Manganese	mg/L	-	-	0.13	0.186	0.221	0.223	0.0567	0.0706	0.109	0.125	0.0498	0.0529	0.0561	0.0598
	Mercury	mg/L	-	-	0.0000195	0.0000243	0.0000364	0.0000367	0.0000194	0.0000214	0.000024	0.0000246	0.0000185	0.0000196	0.0000205	0.0000211
	Molybdenum	mg/L	-	-	0.00521	0.0108	0.0219	0.0221	0.0167	0.0217	0.0234	0.0235	0.00609	0.00661	0.0145	0.0224
	Nickel	mg/L	-	-	0.00136	0.00163	0.00232	0.00234	0.000998	0.00114	0.00139	0.00146	0.000949	0.00101	0.00105	0.00108
	Potassium	mg/L	-	-	0.474	0.716	1.31	1.32	0.925	1.12	1.18	1.19	0.815	0.879	0.995	1.13
	Selenium	mg/L	-	-	0.000691	0.00114	0.00217	0.00218	0.00158	0.00196	0.00209	0.00209	0.000934	0.00101	0.0015	0.002
	Silver	mg/L	-	-	0.000104	0.000144	0.000252	0.000254	0.000172	0.000199	0.000211	0.000212	0.000185	0.000196	0.000205	0.000209
	Sodium	mg/L	-	-	2.29	3.74	4.13	4.15	0.659	0.923	1.84	2.19	0.519	0.556	0.609	0.667
	Strontium	mg/L	-	-	0.105	0.129	0.189	0.19	0.0926	0.103	0.119	0.122	0.0791	0.0843	0.091	0.0985
	Thallium	mg/L	-	-	0.000104	0.000144	0.000252	0.000254	0.000172	0.000199	0.000211	0.000212	0.000185	0.000196	0.000205	0.000209



Group	Parameter	Unit	MDMER Criteria ^a		Pit Dewatering ^b				Pit Filling ^c				Pit Maintenance ^d			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Dissolved metals and metalloids (cont'd)	Tin	mg/L	-	-	0.00148	0.00184	0.00273	0.00275	0.00141	0.00157	0.00177	0.00182	0.000648	0.000702	0.00109	0.00149
	Uranium	mg/L	-	-	0.000425	0.000791	0.00156	0.00157	0.00117	0.00148	0.0016	0.0016	0.00128	0.00136	0.00145	0.00156
	Vanadium	mg/L	-	-	0.00163	0.00206	0.00329	0.00331	0.00199	0.00217	0.00233	0.00239	0.0013	0.0014	0.00175	0.00211
	Zinc	mg/L	-	-	0.00486	0.00648	0.0111	0.0111	0.0074	0.00836	0.00886	0.00891	0.00616	0.00665	0.00744	0.00837

Notes:

^a MDMER Schedule 4 Table 1. “Maximum” refers to the maximum concentration of any grab sample (mg/L), and “Monthly Mean” refers to the maximum monthly mean concentration (mg/L). Orange shading indicates values that are above the Maximum criteria and grey shading indicates values that are above the Monthly Mean criteria.

^b Jackpot pit dewatering starts in Mine Year 1 Month 1 and ends in Mine Year 3 Month 12.

^c Jackpot pit filling starts in Mine Year 4 Month 1 and ends in Mine Year 10 Month 12.

^d Jackpot pit overflow starts in Mine Year 11 Month 1.

mg/L = milligram(s) per litre; as N = expressed as nitrogen; "-" = no value



5.4.2 Water Management Ponds

This section presents predicted water quality results for the five water management ponds: the north and south WRSF ponds (WR-SP-01 and WR-SP-02), the overburden storage facility pond (OB-SP-01), the ore stockpiles pond (OS-SP-01), and the main contact water pond at the industrial complex (IT-TP-01).

The water management ponds at the Project are designed to provide treatment via sedimentation for pit dewatering during the operation phase and contact water from Project infrastructure collected and diverted to the ponds through ditches during the operation and active closure phases. Effluent from the WR-SP-01, WR-SP-02, OB-SP-01, and OS-SP-01 ponds, as well as water discharged from the open pits during dewatering, will be routed to IT-TP-01, which will then discharge via constructed channels to local surface waterbodies (P-Pond and North Herman's Pond) (Figure 4.2 to Figure 4.6). The ponds for Project infrastructure will be decommissioned during the active closure phase, and pond IT-TP-01 will be decommissioned at the start of post-closure.

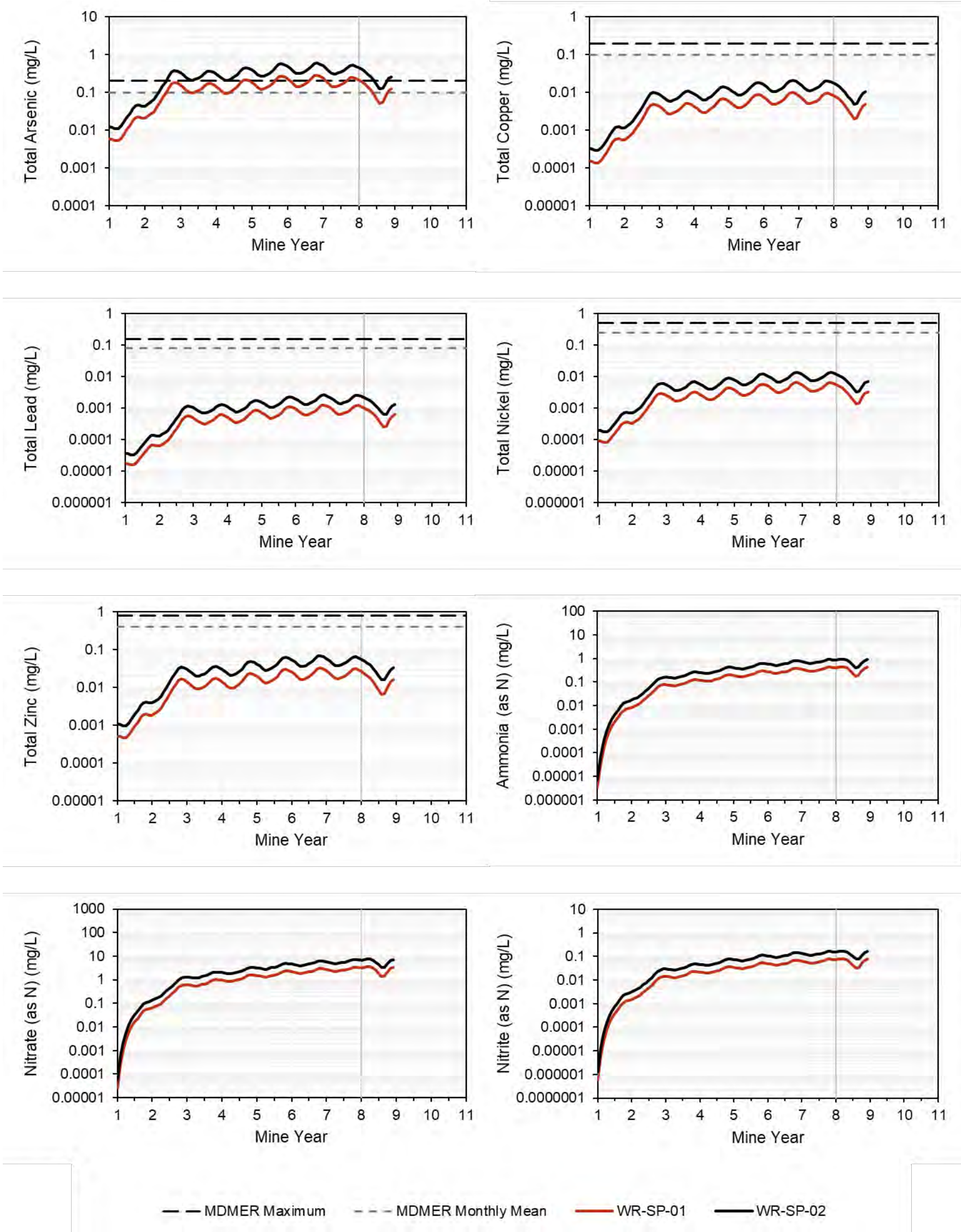
The following pond-specific sections include time-series plots showing temporal trends for MDMER-regulated parameters and nitrogen species, and statistical summary tables. Pie charts are also provided to show the relative mass contributions from various water sources to water quality in pond IT-TP-01, including Project infrastructure pond outflows, pit dewatering, and industrial complex runoff.

5.4.2.1 Waste Rock Storage Facility Ponds (WR-SP-01 and WR-SP-02)

Ponds WR-SP-01 and WR-SP-02 will receive WRSF contact water including surface runoff, toe seepage, and lateral groundwater flows including stockpile basal seepage, from the onset of the operation phase (Mine Year 1) until their decommissioning at the end of Mine Year 8 in active closure. The water quality predictions for the two ponds are presented collectively in Figure 5.17 and Table 5.11, and summarized as follows:

- Total arsenic concentrations in the operation phase (median: 0.193 mg/L, range: 0.00518 to 0.596 mg/L) are expected to increase sharply during the initial years of mining and exceed applicable MDMER limits starting in approximately Mine Year 3. Concentrations fluctuate seasonally but remain elevated relative to MDMER limits into active closure (median: 0.164 mg/L, range: 0.0508 to 0.449 mg/L) until the ponds are decommissioned at the end of Mine Year 8.
 - Pond water with concentrations exceeding MDMER limits will be treated prior to discharge to pond IT-TP-01.
- The concentrations of other metals with MDMER limits are expected to follow the same trend as arsenic but do not exceed the criteria at any point during the operation and active closure phases.
- Predicted concentrations are higher for all modelled parameters in WR-SP-02 than in WR-SP-01, which can likely be attributed to the smaller total volume of WR-SP-02 (Table 2.1).





Notes:

Vertical grey lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10). The WRSF ponds are active from the onset of the operation phase until the end of Mine Year 8 in active closure.

“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the MDMER Schedule 4 Table 1. The MDMER effluent quality limits are plotted as dashed lines.

mg/L = milligram(s) per litre; as N = expressed as nitrogen

Figure 5.17 Time-series Plots Showing Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, and Nitrogen Species Concentrations in Ponds WR-SP-01 and WR-SP-02: Normal – Expected Case Scenario



Table 5.11 Summary Statistics for WR-SP-01 and WR-SP-02 Pond Water Quality: Normal – Expected Case Scenario

Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Major anions	Sulphate	mg/L	-	-	0.375	17.5	51.3	61.3	6.05	19.3	47.3	52.5
	Chloride	mg/L	-	-	0.0622	2.67	7.74	9.09	0.851	2.73	6.7	7.43
	Fluoride	mg/L	-	-	0.00901	0.43	1.27	1.51	0.149	0.477	1.17	1.29
Nutrients	Phosphorus	mg/L	-	-	0.00247	0.106	0.309	0.363	0.034	0.109	0.268	0.297
	Ammonia (as N)	mg/L	-	-	0.197	0.724	0.914	0.172	0.434	0.924	0.936	0.197
	Nitrate (as N)	mg/L	-	-	1.56	5.72	7.23	1.36	3.43	7.31	7.4	1.56
	Nitrite (as N)	mg/L	-	-	0.0359	0.132	0.166	0.0313	0.0789	0.168	0.17	0.0359
Total metals and metalloids	Aluminum	mg/L	-	-	0.0108	0.465	1.34	1.57	0.147	0.471	1.16	1.28
	Antimony	mg/L	-	-	0.000231	0.0104	0.0285	0.0342	0.00277	0.00895	0.0221	0.0246
	Arsenic	mg/L	0.2	0.1	0.00518	0.193	0.499	0.596	0.0508	0.164	0.404	0.449
	Barium	mg/L	-	-	0.000702	0.0374	0.114	0.134	0.0118	0.0379	0.0934	0.104
	Beryllium	mg/L	-	-	0.0000123	0.000531	0.00154	0.00181	0.00017	0.000545	0.00134	0.00148
	Bismuth	mg/L	-	-	0.0000684	0.00209	0.00508	0.00624	0.000413	0.00135	0.00338	0.00378
	Boron	mg/L	-	-	0.00165	0.0718	0.211	0.248	0.0228	0.0731	0.18	0.199
	Cadmium	mg/L	-	-	0.00000123	0.0000531	0.000154	0.000181	0.000017	0.0000545	0.000134	0.000149
	Calcium	mg/L	-	-	0.639	27.5	79.7	93.6	8.77	28.1	69	76.6
	Chromium	mg/L	-	-	0.0000684	0.00209	0.00508	0.00624	0.000413	0.00135	0.00338	0.00378
	Cobalt	mg/L	-	-	0.0000567	0.00239	0.00687	0.00813	0.000785	0.00251	0.00616	0.00683
	Copper	mg/L	0.2	0.1	0.000137	0.00599	0.0177	0.0209	0.00199	0.00637	0.0156	0.0173
	Iron	mg/L	-	-	0.00436	0.214	0.646	0.778	0.0771	0.246	0.602	0.667
	Lead	mg/L	0.16	0.08	0.0000156	0.000746	0.00223	0.00264	0.000253	0.00081	0.00198	0.0022
	Magnesium	mg/L	-	-	0.0979	4.15	11.5	13.5	1.25	4.01	9.85	10.9
	Manganese	mg/L	-	-	0.00333	0.142	0.407	0.478	0.0449	0.144	0.353	0.392
	Mercury	mg/L	-	-	0.00000123	0.0000531	0.000154	0.000181	0.000017	0.0000545	0.000134	0.000148
	Molybdenum	mg/L	-	-	0.000909	0.0277	0.0659	0.0793	0.00602	0.0196	0.0486	0.0542
	Nickel	mg/L	0.5	0.25	0.0000836	0.00394	0.0116	0.0138	0.00135	0.00433	0.0106	0.0118
	Potassium	mg/L	-	-	0.0619	2.65	7.38	8.62	0.773	2.48	6.11	6.78
	Selenium	mg/L	-	-	0.0000928	0.00359	0.00957	0.0114	0.000985	0.00317	0.00782	0.0087
	Silver	mg/L	-	-	0.0000123	0.000531	0.00154	0.00181	0.00017	0.000545	0.00134	0.00148
	Sodium	mg/L	-	-	0.0349	1.57	4.73	5.53	0.511	1.64	4.02	4.47



Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Total metals and metalloids (cont'd)	Strontium	mg/L	-	-	0.00543	0.27	0.822	0.96	0.0863	0.277	0.681	0.757
	Thallium	mg/L	-	-	0.0000123	0.000531	0.00154	0.00181	0.00017	0.000545	0.00134	0.00148
	Tin	mg/L	-	-	0.0000667	0.00246	0.00627	0.00748	0.000629	0.00203	0.00501	0.00557
	Uranium	mg/L	-	-	0.0000909	0.00376	0.0102	0.0119	0.00111	0.00355	0.00873	0.00969
	Vanadium	mg/L	-	-	0.000108	0.00444	0.0122	0.0142	0.00127	0.00409	0.0101	0.0112
	Zinc	mg/L	0.8	0.4	0.000459	0.0202	0.0601	0.0703	0.00645	0.0207	0.0509	0.0565
Dissolved metals and metalloids	Aluminum	mg/L	-	-	0.0108	0.465	1.34	1.57	0.147	0.471	1.16	1.28
	Antimony	mg/L	-	-	0.000231	0.0104	0.0285	0.0342	0.00277	0.00895	0.0221	0.0246
	Arsenic	mg/L	-	-	0.00518	0.193	0.499	0.596	0.0508	0.164	0.404	0.449
	Barium	mg/L	-	-	0.000702	0.0374	0.114	0.134	0.0118	0.0379	0.0934	0.104
	Beryllium	mg/L	-	-	0.0000123	0.000531	0.00154	0.00181	0.00017	0.000545	0.00134	0.00148
	Bismuth	mg/L	-	-	0.0000684	0.00209	0.00508	0.00624	0.000413	0.00135	0.00338	0.00378
	Boron	mg/L	-	-	0.00165	0.0718	0.211	0.248	0.0228	0.0731	0.18	0.199
	Cadmium	mg/L	-	-	0.00000123	0.0000531	0.000154	0.000181	0.000017	0.0000545	0.000134	0.000149
	Calcium	mg/L	-	-	0.639	27.5	79.7	93.6	8.77	28.1	69	76.6
	Chromium	mg/L	-	-	0.0000684	0.00209	0.00508	0.00624	0.000413	0.00135	0.00338	0.00378
	Cobalt	mg/L	-	-	0.0000567	0.00239	0.00687	0.00813	0.000785	0.00251	0.00616	0.00683
	Copper	mg/L	-	-	0.000137	0.00599	0.0177	0.0209	0.00199	0.00637	0.0156	0.0173
	Iron	mg/L	-	-	0.00436	0.214	0.646	0.778	0.0771	0.246	0.602	0.667
	Lead	mg/L	-	-	0.0000156	0.000746	0.00223	0.00264	0.000253	0.00081	0.00198	0.0022
	Magnesium	mg/L	-	-	0.0979	4.15	11.5	13.5	1.25	4.01	9.85	10.9
	Manganese	mg/L	-	-	0.00333	0.142	0.407	0.478	0.0449	0.144	0.353	0.392
	Mercury	mg/L	-	-	0.00000123	0.0000531	0.000154	0.000181	0.000017	0.0000545	0.000134	0.000148
	Molybdenum	mg/L	-	-	0.000909	0.0277	0.0659	0.0793	0.00602	0.0196	0.0486	0.0542
	Nickel	mg/L	-	-	0.0000836	0.00394	0.0116	0.0138	0.00135	0.00433	0.0106	0.0118
	Potassium	mg/L	-	-	0.0619	2.65	7.38	8.62	0.773	2.48	6.11	6.78
	Selenium	mg/L	-	-	0.0000928	0.00359	0.00957	0.0114	0.000985	0.00317	0.00782	0.0087
	Silver	mg/L	-	-	0.0000123	0.000531	0.00154	0.00181	0.00017	0.000545	0.00134	0.00148
	Sodium	mg/L	-	-	0.0349	1.57	4.73	5.53	0.511	1.64	4.02	4.47
	Strontium	mg/L	-	-	0.00543	0.27	0.822	0.96	0.0863	0.277	0.681	0.757
	Thallium	mg/L	-	-	0.0000123	0.000531	0.00154	0.00181	0.00017	0.000545	0.00134	0.00148



Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Dissolved metals and metalloids (cont'd)	Tin	mg/L	-	-	0.0000667	0.00246	0.00627	0.00748	0.000629	0.00203	0.00501	0.00557
	Uranium	mg/L	-	-	0.0000909	0.00376	0.0102	0.0119	0.00111	0.00355	0.00873	0.00969
	Vanadium	mg/L	-	-	0.000108	0.00444	0.0122	0.0142	0.00127	0.00409	0.0101	0.0112
	Zinc	mg/L	-	-	0.000459	0.0202	0.0601	0.0703	0.00645	0.0207	0.0509	0.0565

Notes:

^a MDMER Schedule 4 Table 1. “Maximum” refers to the maximum concentration of any grab sample (mg/L), and “Monthly Mean” refers to the maximum monthly mean concentration (mg/L). Orange shading indicates values that are above the Maximum criteria and grey shading indicates values that are above the Monthly Mean criteria.

^b Ponds WR-SP-01 and WR-SP-02 are active from Mine Year 1 until the end of Mine Year 8.

mg/L = milligram(s) per litre; as N = expressed as nitrogen; "-" = no value

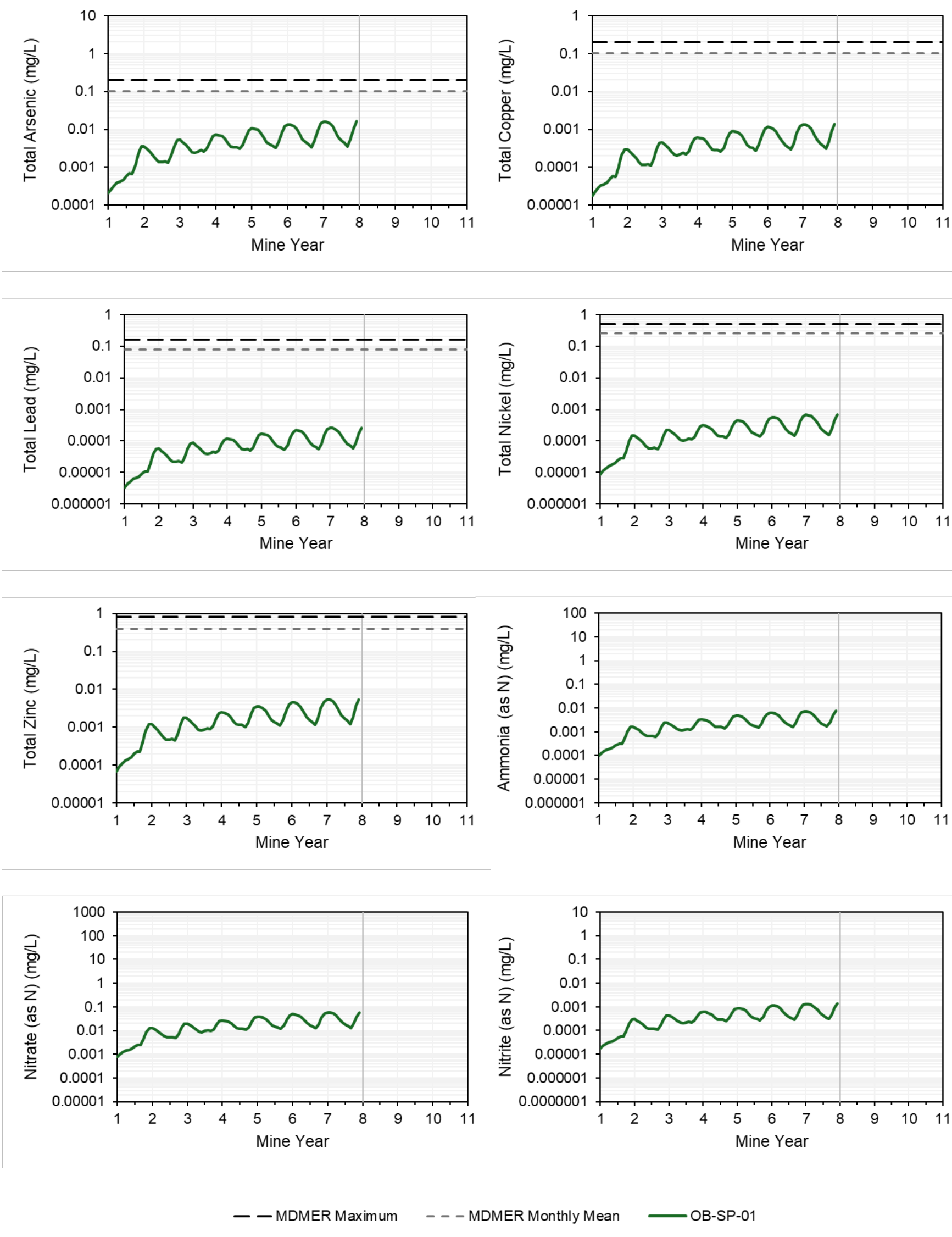


5.4.2.2 Overburden Storage Facility Pond (OB-SP-01)

Pond OB-SP-01 will receive contact water from the overburden storage facility including surface runoff, toe seepage, and lateral groundwater flows including stockpile basal seepage, through the operation phase until it is decommissioned at the end of Mine Year 7. Water quality predictions for OB-SP-01 are presented in Figure 5.18 and Table 5.12, and summarized as follows:

- The concentrations of most parameters are expected to fluctuate seasonally and follow a generally increasing trend through the life of the pond, though no applicable parameters, including arsenic, exceed MDMER limits.
- Generally, predicted metals concentrations in OB-SP-01 are one to two orders of magnitude lower than in the WRSF ponds, which can be largely attributed to the lower leaching rates in the overburden relative to the SIL and SDG units, the main lithologies comprising waste rock in the WRSF.
- Nitrogen species concentrations are also orders of magnitude lower than the in the other ponds as the overburden storage facility is not expected to contain residual nitrogen from explosives.





Notes:

Vertical grey lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10). The OB-SP-01 pond is active during the operation phase and decommissioned at the end of Mine Year 7.

“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the MDMER Schedule 4 Table 1. The MDMER effluent quality limits are plotted as dashed lines.

mg/L = milligram(s) per litre; as N = expressed as nitrogen

Figure 5.18 Time-Series Plots Showing Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, and Nitrogen Species Concentrations in Pond OB-SP-01: Normal – Expected Case Scenario



Table 5.12 Summary Statistics for OB-SP-01 Pond Water Quality: Normal – Expected Case Scenario

Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase ^b (Mine Years 1 to 7)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum
Major anions	Sulphate	mg/L	-	-	0.0836	1.68	5.67	6.46
	Chloride	mg/L	-	-	0.00896	0.18	0.607	0.693
	Fluoride	mg/L	-	-	0.0019	0.0381	0.129	0.147
Nutrients	Phosphorus	mg/L	-	-	0.00035	0.00702	0.0237	0.027
	Ammonia (as N)	mg/L	-	-	0.0000961	0.00193	0.00652	0.00743
	Nitrate (as N)	mg/L	-	-	0.000761	0.0153	0.0516	0.0588
	Nitrite (as N)	mg/L	-	-	0.0000175	0.000351	0.00119	0.00135
Total metals and metalloids	Aluminum	mg/L	-	-	0.00223	0.0448	0.151	0.173
	Antimony	mg/L	-	-	0.0000845	0.0017	0.00573	0.00654
	Arsenic	mg/L	0.2	0.1	0.000208	0.00418	0.0141	0.0161
	Barium	mg/L	-	-	0.0000698	0.0014	0.00473	0.0054
	Beryllium	mg/L	-	-	0.00000175	0.0000351	0.000119	0.000135
	Bismuth	mg/L	-	-	0.0000175	0.000351	0.00119	0.00135
	Boron	mg/L	-	-	0.000298	0.00597	0.0202	0.023
	Cadmium	mg/L	-	-	0.000000176	0.00000354	0.000012	0.0000136
	Calcium	mg/L	-	-	0.114	2.3	7.77	8.85
	Chromium	mg/L	-	-	0.0000175	0.000351	0.00119	0.00135
	Cobalt	mg/L	-	-	0.00000343	0.0000689	0.000233	0.000265
	Copper	mg/L	0.2	0.1	0.0000176	0.000354	0.0012	0.00136
	Iron	mg/L	-	-	0.00106	0.0213	0.0721	0.0822
	Lead	mg/L	0.16	0.08	0.00000336	0.0000674	0.000228	0.00026
	Magnesium	mg/L	-	-	0.0222	0.445	1.5	1.72
	Manganese	mg/L	-	-	0.00045	0.00904	0.0306	0.0348
	Mercury	mg/L	-	-	0.000000175	0.00000351	0.0000119	0.0000135
	Molybdenum	mg/L	-	-	0.0000609	0.00122	0.00413	0.00471
	Nickel	mg/L	0.5	0.25	0.00000877	0.000176	0.000595	0.000678
	Potassium	mg/L	-	-	0.0116	0.233	0.788	0.898
	Selenium	mg/L	-	-	0.0000175	0.000352	0.00119	0.00136
	Silver	mg/L	-	-	0.00000175	0.0000351	0.000119	0.000135
	Sodium	mg/L	-	-	0.00918	0.184	0.623	0.71



Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase ^b (Mine Years 1 to 7)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum
Total metals and metalloids (cont'd)	Strontium	mg/L	-	-	0.000865	0.0174	0.0587	0.0669
	Thallium	mg/L	-	-	0.00000175	0.0000351	0.000119	0.000135
	Tin	mg/L	-	-	0.00000699	0.00014	0.000474	0.000541
	Uranium	mg/L	-	-	0.00000502	0.000101	0.000341	0.000388
	Vanadium	mg/L	-	-	0.0000175	0.000351	0.00119	0.00135
	Zinc	mg/L	0.8	0.4	0.0000703	0.00141	0.00477	0.00544
Dissolved metals and metalloids	Aluminum	mg/L	-	-	0.00223	0.0448	0.151	0.173
	Antimony	mg/L	-	-	0.0000845	0.0017	0.00573	0.00654
	Arsenic	mg/L	-	-	0.000208	0.00418	0.0141	0.0161
	Barium	mg/L	-	-	0.0000698	0.0014	0.00473	0.0054
	Beryllium	mg/L	-	-	0.00000175	0.0000351	0.000119	0.000135
	Bismuth	mg/L	-	-	0.0000175	0.000351	0.00119	0.00135
	Boron	mg/L	-	-	0.000298	0.00597	0.0202	0.023
	Cadmium	mg/L	-	-	0.000000176	0.00000354	0.000012	0.0000136
	Calcium	mg/L	-	-	0.114	2.3	7.77	8.85
	Chromium	mg/L	-	-	0.0000175	0.000351	0.00119	0.00135
	Cobalt	mg/L	-	-	0.00000343	0.0000689	0.000233	0.000265
	Copper	mg/L	-	-	0.0000176	0.000354	0.0012	0.00136
	Iron	mg/L	-	-	0.00106	0.0213	0.0721	0.0822
	Lead	mg/L	-	-	0.00000336	0.0000674	0.000228	0.00026
	Magnesium	mg/L	-	-	0.0222	0.445	1.5	1.72
	Manganese	mg/L	-	-	0.00045	0.00904	0.0306	0.0348
	Mercury	mg/L	-	-	0.000000175	0.00000351	0.0000119	0.0000135
	Molybdenum	mg/L	-	-	0.0000609	0.00122	0.00413	0.00471
	Nickel	mg/L	-	-	0.00000877	0.000176	0.000595	0.000678
	Potassium	mg/L	-	-	0.0116	0.233	0.788	0.898
	Selenium	mg/L	-	-	0.0000175	0.000352	0.00119	0.00136
	Silver	mg/L	-	-	0.00000175	0.0000351	0.000119	0.000135
	Sodium	mg/L	-	-	0.00918	0.184	0.623	0.71
	Strontium	mg/L	-	-	0.000865	0.0174	0.0587	0.0669
	Thallium	mg/L	-	-	0.00000175	0.0000351	0.000119	0.000135



Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase ^b (Mine Years 1 to 7)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum
Dissolved metals and metalloids (cont'd)	Tin	mg/L	-	-	0.00000699	0.00014	0.000474	0.000541
	Uranium	mg/L	-	-	0.00000502	0.000101	0.000341	0.000388
	Vanadium	mg/L	-	-	0.0000175	0.000351	0.00119	0.00135
	Zinc	mg/L	-	-	0.0000703	0.00141	0.00477	0.00544

Notes:

^a MDMER Schedule 4 Table 1. “Maximum” refers to the maximum concentration of any grab sample (mg/L), and “Monthly Mean” refers to the maximum monthly mean concentration (mg/L). Orange shading indicates values that are above the Maximum criteria and grey shading indicates values that are above the Monthly Mean criteria.

^b Pond OB-SP-01 is active from Mine Year 1 until the end of Mine Year 7.

mg/L = milligram(s) per litre; as N = expressed as nitrogen; "-" = no value

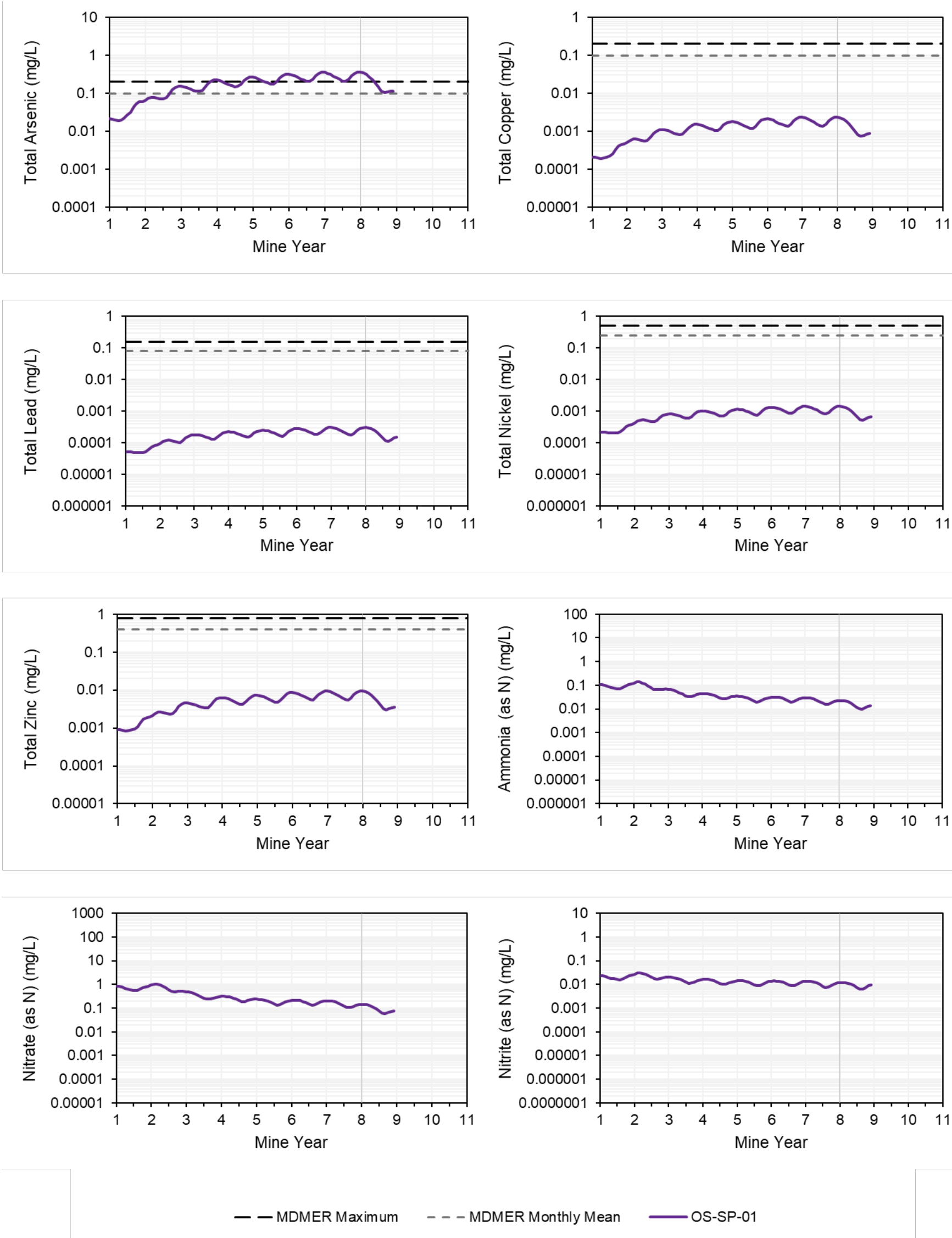


5.4.2.3 Ore Stockpiles Pond (OS-SP-01)

Pond OS-SP-01 will receive contact water from the mineralized material stockpiles and underlying RoM pad including surface runoff, toe seepage, and lateral groundwater flows including basal seepage, from the onset of the operation phase (Mine Year 1) until its decommissioning in active closure at the end of Mine Year 8. The water quality predictions for pond OS-SP-01 are presented in Figure 5.19 and Table 5.13, and are summarized as follows:

- Total arsenic concentrations are expected to increase during the first few years of the operation phase (median: 0.186 mg/L, range: 0.0191 to 0.359 mg/L) and exceed the MDMER Monthly Mean limit of 0.1 mg/L by the end of Mine Year 2, and exceed the MDMER Maximum of 0.2 mg/L starting in approximately Mine Year 4. Concentrations fluctuate seasonally through the operation phase but remain elevated relative to MDMER limits. Total arsenic concentrations during active closure (median 0.165 mg/L, range 0.104 to 0.360 mg/L) show a declining trend as the mineralized material stockpiles are removed but are expected to remain above the MDMER Monthly Mean limit until the pond is decommissioned at the end of Mine Year 8.
 - Pond water with concentrations exceeding MDMER limits will be treated prior to discharge to pond IT-TP-01.
- The concentrations of other metals with MDMER limits are expected to follow the same trend as arsenic but do not exceed the criteria at any point during the operation and active closure phases. Sulphate concentrations follow the same trend.
- Nitrogen species concentrations are highest at the onset of the operation phase and decline into the active closure phase.





Notes:
Vertical grey lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10). The OS-SP-01 pond is active from the onset of the operation phase until the end of Mine Year 8 in active closure.
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the MDMER Schedule 4 Table 1. The MDMER effluent quality limits are plotted as dashed lines.
mg/L = milligram(s) per litre; as N = expressed as nitrogen

Figure 5.19 Time-series Plots Showing Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, and Nitrogen Species Concentrations in Pond OS-SP-01: Normal – Expected Case Scenario



Table 5.13 Summary Statistics for OS-SP-01 Pond Water Quality: Normal – Expected Case Scenario

Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Major anions	Sulphate	mg/L	-	-	0.612	4.83	8.38	9.04	2.73	4.25	8.84	9.08
	Chloride	mg/L	-	-	0.47	1.44	2.06	2.17	0.93	1.36	2.12	2.15
	Fluoride	mg/L	-	-	0.015	0.0751	0.12	0.13	0.044	0.0654	0.128	0.131
Nutrients	Phosphorus	mg/L	-	-	0.0142	0.0471	0.0694	0.0737	0.03	0.0438	0.0723	0.0733
	Ammonia (as N)	mg/L	-	-	0.0156	0.034	0.111	0.136	0.00998	0.0142	0.0222	0.0224
	Nitrate (as N)	mg/L	-	-	0.104	0.237	0.852	1.05	0.0598	0.0846	0.143	0.144
	Nitrite (as N)	mg/L	-	-	0.00752	0.0139	0.0264	0.0312	0.00629	0.00931	0.0119	0.0119
Total metals and metalloids	Aluminum	mg/L	-	-	0.0118	0.0736	0.122	0.132	0.042	0.0639	0.129	0.132
	Antimony	mg/L	-	-	0.000523	0.00395	0.00681	0.00734	0.00224	0.00347	0.00718	0.00737
	Arsenic	mg/L	0.2	0.1	0.0191	0.186	0.333	0.359	0.104	0.165	0.35	0.36
	Barium	mg/L	-	-	0.000848	0.00537	0.00895	0.00964	0.00307	0.00467	0.00947	0.0097
	Beryllium	mg/L	-	-	0.000145	0.000406	0.000555	0.000579	0.000268	0.000393	0.000565	0.000569
	Bismuth	mg/L	-	-	0.000267	0.00143	0.00231	0.00249	0.000829	0.00124	0.00245	0.00251
	Boron	mg/L	-	-	0.00174	0.0141	0.0246	0.0265	0.00796	0.0124	0.0259	0.0266
	Cadmium	mg/L	-	-	0.00000744	0.0000243	0.0000356	0.0000378	0.0000155	0.0000226	0.000037	0.0000375
	Calcium	mg/L	-	-	0.959	7.41	12.8	13.8	4.19	6.51	13.5	13.9
	Chromium	mg/L	-	-	0.00019	0.00128	0.00215	0.00232	0.000727	0.00111	0.00228	0.00233
	Cobalt	mg/L	-	-	0.0000974	0.000371	0.000575	0.000619	0.000231	0.000336	0.000608	0.000619
	Copper	mg/L	0.2	0.1	0.000192	0.0013	0.00219	0.00236	0.000737	0.00113	0.00231	0.00237
	Iron	mg/L	-	-	0.0148	0.0485	0.0711	0.0754	0.0309	0.0451	0.0739	0.0749
	Lead	mg/L	0.16	0.08	0.0000483	0.000182	0.000283	0.000305	0.000114	0.000166	0.000299	0.000305
	Magnesium	mg/L	-	-	0.198	1.18	1.93	2.08	0.673	1.02	2.04	2.09
	Manganese	mg/L	-	-	0.00728	0.0322	0.051	0.0551	0.0194	0.0283	0.0542	0.0553
	Mercury	mg/L	-	-	0.00000314	0.0000151	0.0000242	0.0000261	0.00000894	0.0000132	0.0000257	0.0000263
	Molybdenum	mg/L	-	-	0.000317	0.00193	0.00319	0.00343	0.0011	0.00167	0.00337	0.00346
	Nickel	mg/L	0.5	0.25	0.000208	0.000851	0.00133	0.00144	0.00052	0.000757	0.00141	0.00144
	Potassium	mg/L	-	-	0.0781	0.471	0.776	0.836	0.269	0.408	0.822	0.842
	Selenium	mg/L	-	-	0.00019	0.00128	0.00215	0.00232	0.000727	0.00111	0.00228	0.00233
	Silver	mg/L	-	-	0.0000191	0.000128	0.000216	0.000233	0.000073	0.000112	0.000229	0.000234
	Sodium	mg/L	-	-	0.359	1.06	1.5	1.57	0.691	1.01	1.54	1.55



Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Total metals and metalloids (cont'd)	Strontium	mg/L	-	-	0.00967	0.082	0.144	0.155	0.0462	0.0724	0.152	0.156
	Thallium	mg/L	-	-	0.0000191	0.000128	0.000216	0.000233	0.000073	0.000112	0.000229	0.000234
	Tin	mg/L	-	-	0.000202	0.000797	0.00124	0.00134	0.00049	0.000714	0.00131	0.00134
	Uranium	mg/L	-	-	0.0000269	0.000145	0.000235	0.000253	0.000084	0.000126	0.000249	0.000254
	Vanadium	mg/L	-	-	0.000268	0.00144	0.00232	0.0025	0.000833	0.00125	0.00246	0.00252
	Zinc	mg/L	0.8	0.4	0.00084	0.00529	0.00881	0.0095	0.00302	0.00461	0.00932	0.00956
Dissolved metals and metalloids	Aluminum	mg/L	-	-	0.00848	0.0665	0.115	0.124	0.0376	0.0585	0.122	0.125
	Antimony	mg/L	-	-	0.000523	0.00395	0.00681	0.00734	0.00224	0.00347	0.00718	0.00737
	Arsenic	mg/L	-	-	0.0191	0.186	0.333	0.359	0.104	0.165	0.35	0.36
	Barium	mg/L	-	-	0.000848	0.00537	0.00895	0.00964	0.00307	0.00467	0.00947	0.0097
	Beryllium	mg/L	-	-	0.000145	0.000406	0.000555	0.000579	0.000268	0.000393	0.000565	0.000569
	Bismuth	mg/L	-	-	0.000267	0.00143	0.00231	0.00249	0.000829	0.00124	0.00245	0.00251
	Boron	mg/L	-	-	0.00174	0.0141	0.0246	0.0265	0.00796	0.0124	0.0259	0.0266
	Cadmium	mg/L	-	-	0.00000744	0.0000243	0.0000356	0.0000378	0.0000155	0.0000226	0.000037	0.0000375
	Calcium	mg/L	-	-	0.959	7.41	12.8	13.8	4.19	6.51	13.5	13.9
	Chromium	mg/L	-	-	0.00019	0.00128	0.00215	0.00232	0.000727	0.00111	0.00228	0.00233
	Cobalt	mg/L	-	-	0.0000974	0.000371	0.000575	0.000619	0.000231	0.000336	0.000608	0.000619
	Copper	mg/L	-	-	0.000269	0.00145	0.00235	0.00253	0.00084	0.00126	0.00249	0.00254
	Iron	mg/L	-	-	0.00755	0.0324	0.0512	0.0553	0.0196	0.0286	0.0544	0.0555
	Lead	mg/L	-	-	0.0000483	0.000182	0.000283	0.000305	0.000114	0.000166	0.000299	0.000305
	Magnesium	mg/L	-	-	0.198	1.18	1.93	2.08	0.673	1.02	2.04	2.09
	Manganese	mg/L	-	-	0.00646	0.0308	0.0492	0.0531	0.0182	0.0269	0.0522	0.0534
	Mercury	mg/L	-	-	0.00000314	0.0000151	0.0000242	0.0000261	0.00000894	0.0000132	0.0000257	0.0000263
	Molybdenum	mg/L	-	-	0.000317	0.00193	0.00319	0.00343	0.0011	0.00167	0.00337	0.00346
	Nickel	mg/L	-	-	0.000208	0.000851	0.00133	0.00144	0.00052	0.000757	0.00141	0.00144
	Potassium	mg/L	-	-	0.0781	0.471	0.776	0.836	0.269	0.408	0.822	0.842
	Selenium	mg/L	-	-	0.000121	0.00113	0.00201	0.00217	0.000635	0.001	0.00212	0.00217
	Silver	mg/L	-	-	0.0000191	0.000128	0.000216	0.000233	0.000073	0.000112	0.000229	0.000234
	Sodium	mg/L	-	-	0.359	1.06	1.5	1.57	0.691	1.01	1.54	1.55
	Strontium	mg/L	-	-	0.0111	0.0849	0.147	0.158	0.048	0.0746	0.155	0.159
	Thallium	mg/L	-	-	0.0000191	0.000128	0.000216	0.000233	0.000073	0.000112	0.000229	0.000234



Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Dissolved metals and metalloids (cont'd)	Tin	mg/L	-	-	0.000202	0.000797	0.00124	0.00134	0.00049	0.000714	0.00131	0.00134
	Uranium	mg/L	-	-	0.0000192	0.00013	0.000219	0.000236	0.0000737	0.000113	0.000231	0.000237
	Vanadium	mg/L	-	-	0.000268	0.00144	0.00232	0.0025	0.000833	0.00125	0.00246	0.00252
	Zinc	mg/L	-	-	0.00084	0.00529	0.00881	0.0095	0.00302	0.00461	0.00932	0.00956

Notes:

^a MDMER Schedule 4 Table 1. “Maximum” refers to the maximum concentration of any grab sample (mg/L), and “Monthly Mean” refers to the maximum monthly mean concentration (mg/L). Orange shading indicates values that are above the Maximum criteria and grey shading indicates values that are above the Monthly Mean criteria.

^b Pond OS-SP-01 is active from Mine Year 1 to the end of Mine Year 8.

mg/L = milligram(s) per litre; as N = expressed as nitrogen; "-" = no value



5.4.2.4 Industrial Complex Pond (IT-TP-01)

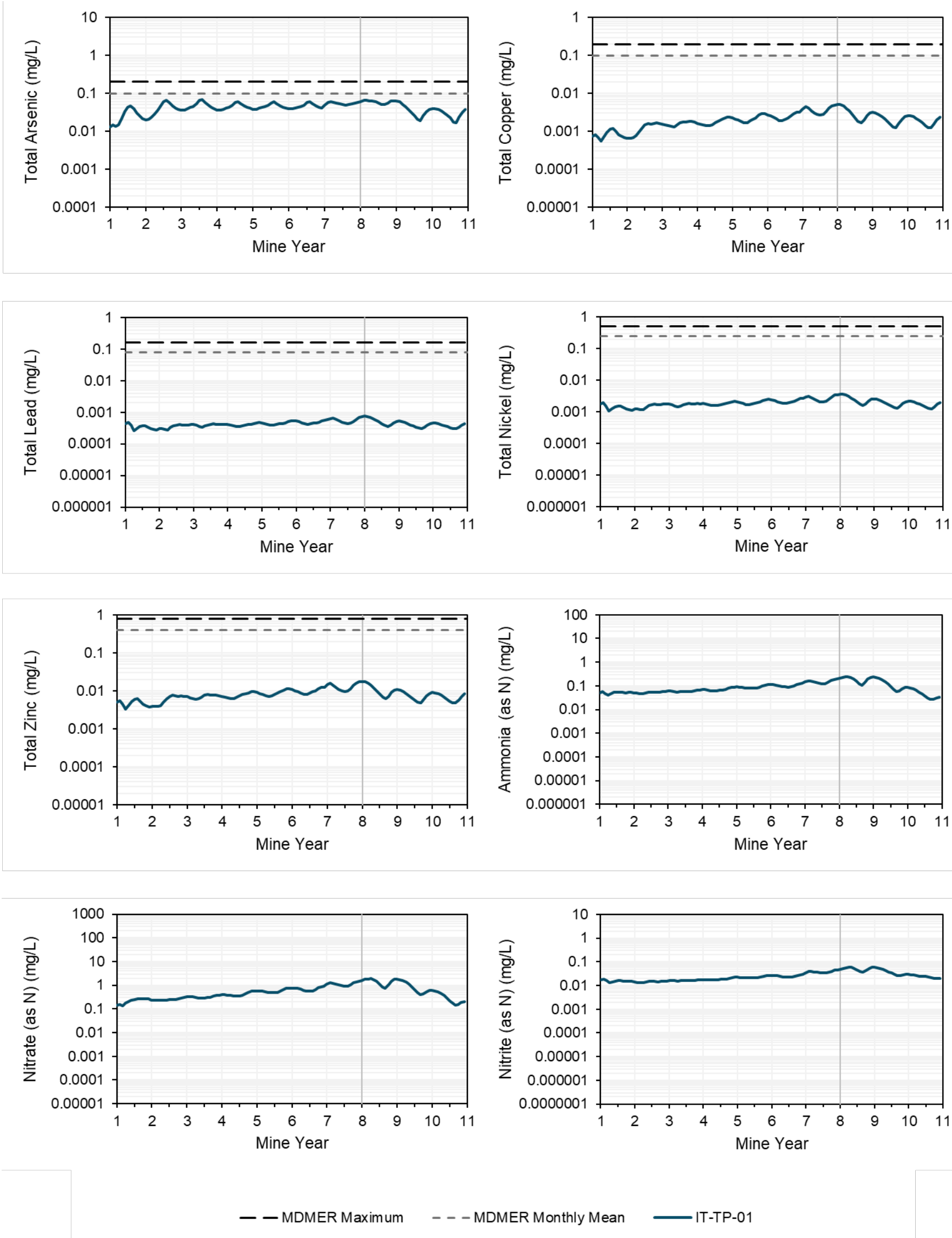
Pond IT-TP-01 will receive effluent from ponds WR-SP-01 and WR-SP-02, OB-SP-01, and OS-SP-01, as well as water from open pit dewatering and industrial complex runoff, which will then be discharged to the receiving environment. The pond will be active from the onset of the operation phase in Mine Year 1 through the end of the active closure phase at the end of Mine Year 10.

Total arsenic concentrations are predicted to exceed MDMER limits in ponds WR-SP-01, WR-SP-02, and OS-SP-01 from approximately Mine Year 3 until they are decommissioned in active closure at the end of Mine Year 8. Without treatment of outflows from these ponds, it is expected that total arsenic concentrations will also exceed MDMER limits in pond IT-TP-01.

Arsenic treatment was simulated by capping predicted arsenic concentrations in outflows from ponds WR-SP-01, WR-SP-02, and OS-SP-01 at the monthly mean MDMER limit of 0.1 mg/L. Water quality predictions for pond IT-TP-01 following simulated arsenic treatment are presented in Figure 5.20 and Table 5.14, and are summarized as follows:

- Total arsenic concentrations in the operation phase (median: 0.0431 mg/L, range: 0.0131 to 0.0674 mg/L) are expected to remain below applicable MDMER limits following simulated treatment and decline further in active closure (median: 0.0385 mg/L, range: 0.0166 to 0.0643) after decommissioning of the other ponds in Mine Year 8.
- Concentrations of other metals subject to MDMER limits are expected to show trends similar to arsenic but are not predicted to exceed their respective limits during the operation or active closure phases. The implementation of arsenic treatment would also be expected to further reduce the concentrations of these metals, depending on the treatment method used.
- Sulphate and nitrogen species concentrations also follow a generally increasing trend during the operation phase and decline in active closure.
- Figure 5.21 and Figure 5.22 show the relative contributions from different water sources to total mass loads in IT-TP-01 pond water during the operation and active closure phases, respectively. During the operation phase, total mass loads in the pond are primarily associated with dewatering from the Keats pit and effluent from ponds WR-SP-01, WR-SP-02, and OS-SP-01. During active closure, after Keats pit discharge has ceased, a greater proportion of total mass loads in the pond is attributable to pond effluent and runoff from the industrial complex.

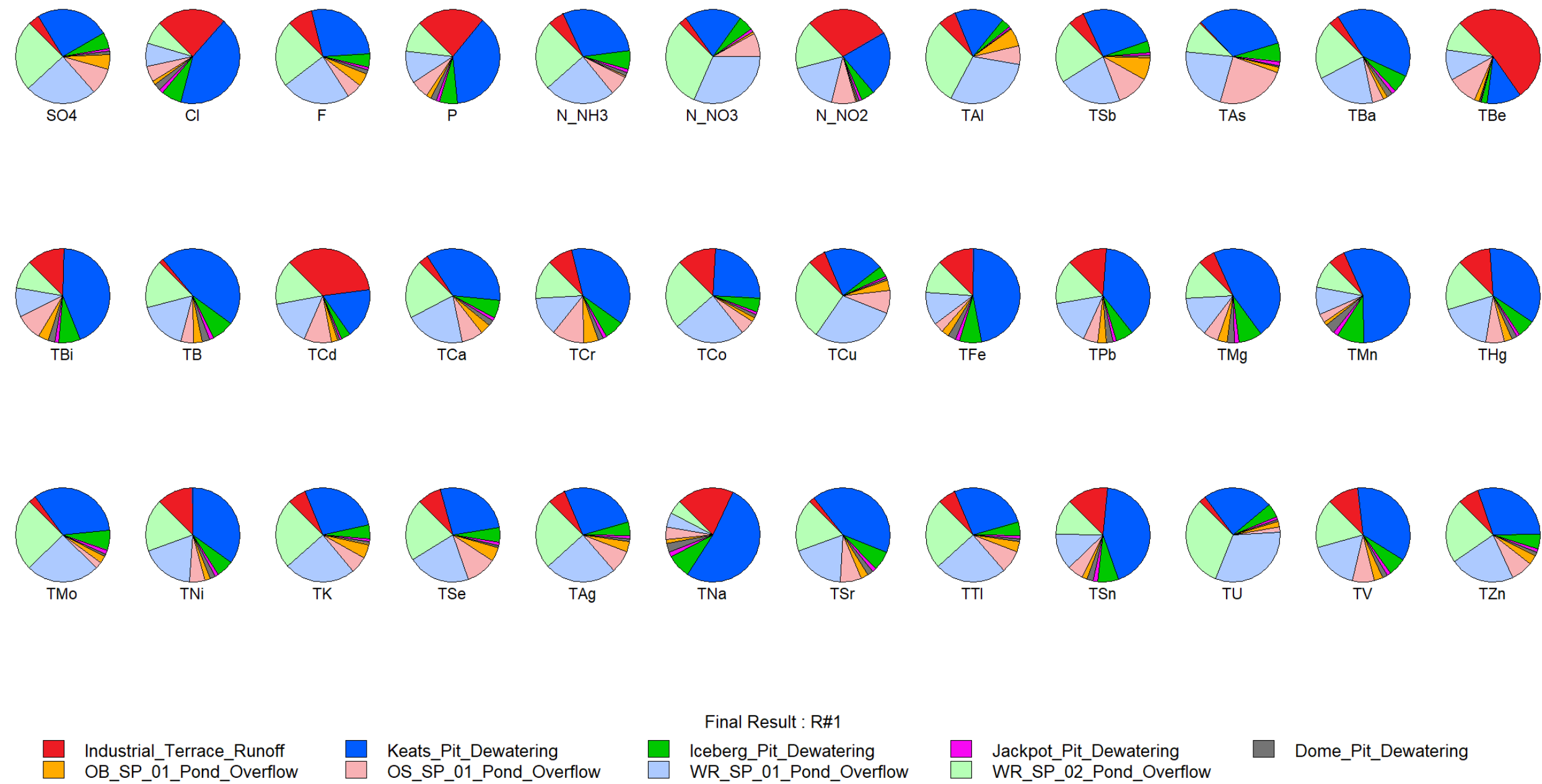




Notes:
Vertical grey lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10). The IT-TP-01 pond is active from the onset of the operation phase until the end of the active closure phase at the end of Mine Year 10.
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the MDMER Schedule 4 Table 1. The MDMER effluent quality limits are plotted as dashed lines.
mg/L = milligram(s) per litre; as N = expressed as nitrogen

Figure 5.20 Time-series Plots Showing Total Arsenic, Total Copper, Total Lead, Total Nickel, Total Zinc, and Nitrogen Species Concentrations in Pond IT-TP-01: Normal – Expected Case Scenario

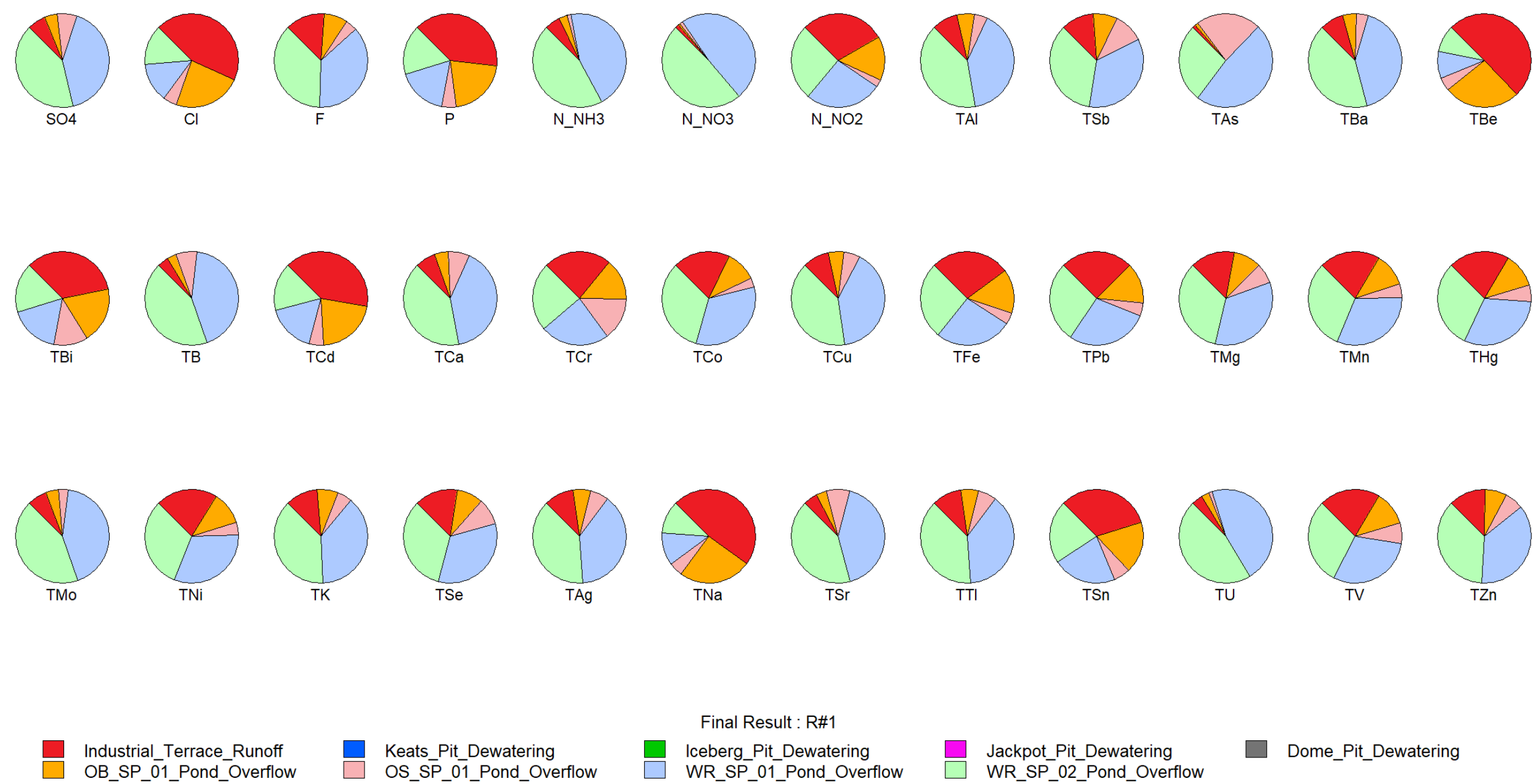




Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.

Figure 5.21 Relative Contribution of Each Water Source to Total Mass Loads in Pond IT-TP-01 During the Operation Phase: Normal – Expected Case Scenario





Notes:
Refer to Table 5.1 for description of parameter symbols. For metals and metalloids, T = total.

Figure 5.22 Relative Contribution of Each Water Source to Total Mass Loads in Pond IT-TP-01 During the Active Closure Phase: Normal – Expected Case Scenario



Table 5.14 Summary Statistics for IT-TP-01 Pond Water Quality: Normal – Expected Case Scenario

Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Major anions	Sulphate	mg/L	-	-	2.05	6.03	12.6	15.7	3.06	6.52	14.8	16.2
	Chloride	mg/L	-	-	2.33	2.91	3.36	4.34	2.57	2.87	3.62	3.72
	Fluoride	mg/L	-	-	0.0703	0.15	0.307	0.38	0.101	0.181	0.361	0.391
Nutrients	Phosphorus	mg/L	-	-	0.0617	0.0837	0.11	0.122	0.0776	0.0904	0.126	0.13
	Ammonia (as N)	mg/L	-	-	0.0402	0.068	0.159	0.195	0.027	0.0987	0.24	0.247
	Nitrate (as N)	mg/L	-	-	0.138	0.391	1.21	1.5	0.145	0.708	1.83	1.89
	Nitrite (as N)	mg/L	-	-	0.0135	0.0182	0.0388	0.0456	0.0202	0.0352	0.0583	0.0594
Total metals and metalloids	Aluminum	mg/L	-	-	0.0323	0.128	0.299	0.374	0.0912	0.163	0.349	0.385
	Antimony	mg/L	-	-	0.00135	0.00408	0.00781	0.00898	0.00212	0.00343	0.0082	0.00922
	Arsenic	mg/L	0.2	0.1	0.0131	0.0431	0.0591	0.0674	0.0166	0.0385	0.0639	0.0643
	Barium	mg/L	-	-	0.00812	0.0159	0.0238	0.0281	0.00605	0.0125	0.0268	0.029
	Beryllium	mg/L	-	-	0.000264	0.000426	0.000781	0.000875	0.000785	0.000852	0.000973	0.00099
	Bismuth	mg/L	-	-	0.00117	0.00183	0.00211	0.00219	0.00105	0.00116	0.00201	0.00213
	Boron	mg/L	-	-	0.0215	0.0372	0.051	0.0574	0.0167	0.0273	0.0535	0.0591
	Cadmium	mg/L	-	-	0.000016	0.000028	0.0000534	0.0000623	0.0000406	0.000047	0.0000646	0.0000663
	Calcium	mg/L	-	-	5.47	11.5	19.1	23.1	5.4	9.8	21.7	23.8
	Chromium	mg/L	-	-	0.000695	0.00134	0.00168	0.00194	0.000704	0.000829	0.00172	0.00189
	Cobalt	mg/L	-	-	0.000379	0.000829	0.00158	0.00195	0.000622	0.00106	0.00192	0.00203
	Copper	mg/L	0.2	0.1	0.000555	0.00179	0.00404	0.00498	0.00122	0.00224	0.00474	0.00514
	Iron	mg/L	-	-	0.122	0.162	0.208	0.238	0.105	0.137	0.218	0.229
	Lead	mg/L	0.16	0.08	0.000266	0.000413	0.000604	0.000722	0.000298	0.000414	0.000706	0.000746
	Magnesium	mg/L	-	-	1.6	2.56	3.31	3.57	1.16	1.71	3.38	3.68
	Manganese	mg/L	-	-	0.0718	0.128	0.146	0.2	0.0409	0.064	0.119	0.126
	Mercury	mg/L	-	-	0.0000147	0.0000261	0.0000398	0.0000476	0.0000172	0.0000252	0.0000465	0.0000492
	Molybdenum	mg/L	-	-	0.00316	0.00962	0.0135	0.0151	0.00297	0.00602	0.0137	0.0151
	Nickel	mg/L	0.5	0.25	0.00108	0.00181	0.00297	0.00354	0.00127	0.00196	0.00349	0.00368
	Potassium	mg/L	-	-	0.339	0.903	1.71	2.03	0.512	0.906	1.9	2.09
	Selenium	mg/L	-	-	0.000529	0.00141	0.00253	0.00297	0.000919	0.00133	0.00281	0.00306
	Silver	mg/L	-	-	0.0000709	0.000182	0.000361	0.000439	0.000113	0.000199	0.000418	0.000454
	Sodium	mg/L	-	-	1.96	2.79	3.16	4.76	1.91	2.1	2.52	2.59



Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Total metals and metalloids (cont'd)	Strontium	mg/L	-	-	0.067	0.126	0.19	0.225	0.0425	0.0901	0.213	0.233
	Thallium	mg/L	-	-	0.0000709	0.000182	0.000361	0.000439	0.000113	0.000199	0.000418	0.000454
	Tin	mg/L	-	-	0.00111	0.00167	0.00198	0.00207	0.000964	0.00127	0.00207	0.00216
	Uranium	mg/L	-	-	0.000266	0.000969	0.00196	0.00242	0.00042	0.00104	0.00229	0.00249
	Vanadium	mg/L	-	-	0.00119	0.00217	0.00323	0.00378	0.00137	0.00193	0.00366	0.0039
	Zinc	mg/L	0.8	0.4	0.00338	0.00775	0.0143	0.0171	0.00479	0.00799	0.0164	0.0177
Dissolved metals and metalloids	Aluminum	mg/L	-	-	0.0265	0.123	0.289	0.364	0.0752	0.148	0.336	0.374
	Antimony	mg/L	-	-	0.00135	0.00408	0.00781	0.00898	0.00212	0.00343	0.0082	0.00922
	Arsenic	mg/L	-	-	0.0131	0.0431	0.0591	0.0674	0.0166	0.0385	0.0639	0.0643
	Barium	mg/L	-	-	0.00812	0.0159	0.0238	0.0281	0.00605	0.0125	0.0268	0.029
	Beryllium	mg/L	-	-	0.000264	0.000426	0.000781	0.000875	0.000785	0.000852	0.000973	0.00099
	Bismuth	mg/L	-	-	0.00117	0.00183	0.00211	0.00219	0.00105	0.00116	0.00201	0.00213
	Boron	mg/L	-	-	0.0215	0.0372	0.051	0.0574	0.0167	0.0273	0.0535	0.0591
	Cadmium	mg/L	-	-	0.000016	0.000028	0.0000534	0.0000623	0.0000406	0.000047	0.0000646	0.0000663
	Calcium	mg/L	-	-	5.47	11.5	19.1	23.1	5.4	9.8	21.7	23.8
	Chromium	mg/L	-	-	0.000695	0.00134	0.00168	0.00194	0.000704	0.000829	0.00172	0.00189
	Cobalt	mg/L	-	-	0.000379	0.000829	0.00158	0.00195	0.000622	0.00106	0.00192	0.00203
	Copper	mg/L	-	-	0.000688	0.0019	0.00425	0.0052	0.00159	0.0026	0.00503	0.00538
	Iron	mg/L	-	-	0.107	0.149	0.189	0.218	0.0644	0.0969	0.186	0.202
	Lead	mg/L	-	-	0.000266	0.000413	0.000604	0.000722	0.000298	0.000414	0.000706	0.000746
	Magnesium	mg/L	-	-	1.6	2.56	3.31	3.57	1.16	1.71	3.38	3.68
	Manganese	mg/L	-	-	0.0689	0.127	0.145	0.198	0.0369	0.0603	0.115	0.123
	Mercury	mg/L	-	-	0.0000147	0.0000261	0.0000398	0.0000476	0.0000172	0.0000252	0.0000465	0.0000492
	Molybdenum	mg/L	-	-	0.00316	0.00962	0.0135	0.0151	0.00297	0.00602	0.0137	0.0151
	Nickel	mg/L	-	-	0.00108	0.00181	0.00297	0.00354	0.00127	0.00196	0.00349	0.00368
	Potassium	mg/L	-	-	0.339	0.903	1.71	2.03	0.512	0.906	1.9	2.09
	Selenium	mg/L	-	-	0.000409	0.0013	0.00237	0.00276	0.000574	0.00104	0.00255	0.00285
	Silver	mg/L	-	-	0.0000709	0.000182	0.000361	0.000439	0.000113	0.000199	0.000418	0.000454
	Sodium	mg/L	-	-	1.96	2.79	3.16	4.76	1.91	2.1	2.52	2.59
	Strontium	mg/L	-	-	0.0694	0.129	0.194	0.23	0.0491	0.0959	0.218	0.237
	Thallium	mg/L	-	-	0.0000709	0.000182	0.000361	0.000439	0.000113	0.000199	0.000418	0.000454



Group	Parameter	Unit	MDMER Criteria ^a		Operation Phase (Mine Years 1 to 7)				Active Closure Phase ^b (Mine Years 8 to 10)			
			Maximum	Monthly Mean	Minimum	50 th Percentile	95 th Percentile	Maximum	Minimum	50 th Percentile	95 th Percentile	Maximum
Dissolved metals and metalloids (cont'd)	Tin	mg/L	-	-	0.00111	0.00167	0.00198	0.00207	0.000964	0.00127	0.00207	0.00216
	Uranium	mg/L	-	-	0.000253	0.000957	0.00194	0.00239	0.000383	0.00101	0.00226	0.00247
	Vanadium	mg/L	-	-	0.00119	0.00217	0.00323	0.00378	0.00137	0.00193	0.00366	0.0039
	Zinc	mg/L	-	-	0.00338	0.00775	0.0143	0.0171	0.00479	0.00799	0.0164	0.0177

Notes:

^a MDMER Schedule 4 Table 1. “Maximum” refers to the maximum concentration of any grab sample (mg/L), and “Monthly Mean” refers to the maximum monthly mean concentration (mg/L). Orange shading indicates values that are above the Maximum criteria and grey shading indicates values that are above the Monthly Mean criteria.

^b Pond IT-TP-01 is active from Mine Year 1 to the end of active closure in Mine Year 10.

mg/L = milligram(s) per litre; as N = expressed as nitrogen; "-" = no value



6 Model Uncertainties

This section summarizes the key sources of uncertainty associated with the integrated WBWQM developed for the Project. Uncertainties are inherent in predictive modelling due to reliance on conceptual representations of physical and geochemical processes, the quality and representativeness of available data, and assumptions regarding future conditions. The model has been developed using industry standard methods and with conservative assumptions where appropriate, and results should be interpreted in the context of the uncertainties described below.

Model uncertainties broadly relate to climate and hydrology inputs, water balance conceptualization, geochemical source term development, the use of scaling factors, and simplifications within the WQM, which are summarized as follows:

- **Climate and hydrology:** Climate inputs to the WBM are based on the 1991 to 2020 Climate Normals and a single dry climate scenario representing a 20-year return period low precipitation year. These scenarios provide a reasonable range for assessing expected and conservative flow conditions; however, they do not explicitly capture interannual variability, sequences of multiple dry or wet years, or potential long-term climate change effects. As a result, actual future precipitation and temperature conditions may differ from those represented in the model.
 - Hydrological parameters, including runoff coefficients, evapotranspiration estimates, and groundwater infiltration rates, are based on regional studies, baseline investigations, and professional judgment where site-specific calibration data are limited. Uncertainty remains regarding spatial and temporal variability in runoff response, groundwater inflows to open pits, and changes in infiltration following reclamation and cover placement.
- **Water balance conceptualization:** The WBM represents Project facilities using simplified geometries and assumes that catchment areas reflect their ultimate footprints at the start of each relevant Project phase. Operational changes, revisions to the mine plan, or unanticipated construction sequencing could alter drainage areas, storage volumes, and flow routing relative to the model assumptions.
 - Post-closure pit filling and overflow predictions are sensitive to assumptions regarding pit geometry, groundwater infiltration rates, and the timing and placement of backfilled materials. While these assumptions are considered reasonable based on available information, deviations from predicted filling rates or overflow timing may occur under actual site conditions.



- **Geochemical source term development:** Water quality predictions are strongly influenced by the development of geochemical source terms. Source terms are derived from groundwater and surface water quality monitoring data, laboratory HCTs, and material-specific grouping of lithological units. Natural heterogeneity within waste rock, overburden, and mineralized material, as well as limited spatial and temporal coverage of available datasets, introduce uncertainty in the representativeness of these inputs.
 - Expected Case and Upper Case source term scenarios were developed using a percentile-based approach to bracket typical and conservative conditions. While this approach provides a means of addressing uncertainty, actual field-scale leaching behaviour may fall outside the ranges represented by the selected percentiles.
 - Nitrogen species loadings associated with blasting activities were estimated using production schedules and literature-based nitrogen loss fractions. The magnitude and timing of nitrogen release are sensitive to operational practices, explosive performance, material handling, and water contact. Uncertainty remains regarding the rate at which residual nitrogen is released and flushed from different Project components.
- **Use of scaling factors:** Leaching rates derived from the HCTs were adjusted using scaling factors to account for differences between laboratory and field conditions, including temperature, particle size, and water-rock contact, and to simulate the effectiveness of cover placement in the reduction of chemical mass loading. These scaling factors are based on literature values, site-specific information where available, and professional judgment.
 - Actual field conditions may differ from the assumed scaling relationships due to variations in material placement, compaction, and hydrological connectivity. As a result, scaled leaching rates may either overestimate or underestimate long-term solute release under field conditions.
- **Model simplifications:** The WQM assumes complete and instantaneous mixing within each modelled cell and does not explicitly simulate geochemical reactions, sediment partitioning, or ice formation during the winter months. These simplifications are appropriate for a mass balance-based assessment but may not capture all physical and chemical processes influencing water quality at the Project.

Despite the uncertainties described above, the WBWQM provides a reasonable and defensible framework for predicting water quantity and quality at the Project. Conservative assumptions have been applied where appropriate, and multiple scenarios have been modelled to evaluate sensitivity to key inputs. As additional monitoring data, geochemical test results, and refined Project information become available, the model can be updated to reduce uncertainty and improve the confidence of predictions as the Project moves through permitting and detailed design.



7 Summary and Conclusions

An integrated WBWQM was developed for the Project to support the environmental assessment by predicting water quantity and water quality conditions over the construction, operation, active closure, and post-closure phases of the Project. The WBWQM was developed using GoldSim.

The WBM incorporates climate and hydrological inputs, facility geometries, and operational water management controls to estimate inflows, outflows, storage volumes, and discharge rates throughout the life of mine. Key model inputs include precipitation, evapotranspiration, runoff coefficients for different land uses, groundwater seepage rates, and catchment areas. The model was run dynamically using a monthly time step with monthly averaged outputs for evaluation of Project conditions.

The WQM is directly linked to the WBM and was developed to estimate water quality in the open pits and water management ponds by integrating geochemical source terms with modelled water flows. Source terms were developed using both concentration-based and leaching rate-based approaches. Concentration-based source terms were derived from site monitoring data (groundwater and surface water), while leaching rate-based source terms were developed using HCT results for representative material types, including waste rock, overburden, and mineralized materials. Leaching rates derived from the HCTs were scaled to field conditions using scaling factors to account for differences in temperature, grain size, and water-rock contact between laboratory and site conditions. Two WQM scenarios were evaluated under Climate Normal conditions: the Normal – Expected Case scenario, which was largely based on median (50th percentile) inputs, and the Normal – Upper Case scenario, which largely incorporated 90th percentile inputs to represent conservative conditions.

Overall, the WBWQM results indicate that the Project can be developed, operated, and closed in a manner that effectively manages water quantity and water quality. Arsenic concentrations exceeding effluent quality limits from Schedule 4 Table 1 of the MDMER are predicted under certain conditions but can be managed through treatment and adaptive management. Ongoing monitoring and model refinement are recommended to confirm predictions and support adaptive management throughout the life of mine.

The following sections summarize the key water quantity and water quality predictions from the WBWQM developed for the Project.



7.1 Water Quantity

The WBM developed for the Project estimated water management pond discharge rates, open pit dewatering rates, and pit filling times. Key predictions from the WBM are as follows:

- The main treatment pond (IT-TP-01) and the overburden storage facility pond (OB-SP-01) will fill up and discharge via the low flow outlet during the first month of operation. The water management ponds associated with the WRSF (WR-SP-01, WR-SP-02) and ore stockpiles pond (OS-SP-01) will take approximately two months to begin discharging to IT-TP-01.
- The monthly average dewatering rates for the four pits during operation are predicted to be 16,141 m³/mon (Dome), 10,155 m³/mon (Jackpot), 42,706 m³/mon (Iceberg), and 109,260 m³/mon (Keats).
- The Dome and Jackpot pits are not predicted to overflow following pit filling due to their topographic position; instead, these two pits will act as groundwater recharge features with no spillway discharge and the water level in each pit will be naturally maintained at a stable elevation below the spillway crest elevation.
- The Iceberg pit is predicted to fill in Q2 of Mine Year 31, and the Keats pit is predicted to fill in Q4 of Mine Year 25, which corresponds to 24 and 18 years after the end of operation.

7.2 Water Quality

The WQM was used to predict water quality in the open pits during the pit dewatering, pit filling, and pit overflow or maintenance phases, as well as in the water management ponds during the operation and active closure phases of the Project. The following sub-sections summarize the Normal – Expected Case scenario water quality model results for the open pits and water management ponds for metals with MDMER limits (i.e., arsenic, copper, lead, nickel, and zinc).

7.2.1 Open Pits

- Generally, concentrations of metals subject to MDMER limits are expected to fluctuate during pit dewatering in the operation phase, increase during the initial pit filling phase when there are no surface discharges, and then gradually decrease or stabilize as pit filling continues and water volumes increase before reaching a stable maximum elevation or overflowing once the water level reaches the spillway.
- In Keats pit and Iceberg pit, which are expected to overflow, total arsenic concentrations are predicted to exceed the MDMER Monthly Mean limit (0.1 mg/L) during the summer months in the dewatering phase (Iceberg), and during initial pit filling in active closure (both pits). Concentrations are then expected to decline to below the MDMER limit by the time each pit begins to overflow in post-closure.



- In Jackpot pit, which is not expected to overflow, total arsenic concentrations are predicted to exceed the MDMER Monthly Mean limit during select months in Mine Years 1 and 2 of the pit dewatering phase, and for most of the pit filling phase, which occurs during the operation and active closure phases. Once water levels stabilize at a steady elevation during post-closure, concentrations are expected to decline below the MDMER limit. In Dome pit, which is also not expected to overflow, total arsenic concentrations are not predicted to exceed the MDMER Monthly Mean limit during any phase of pit development.
- Total concentrations of copper, lead, nickel, and zinc are not predicted to exceed their respective MDMER Monthly Mean limits in any open pit at any stage of pit development.

7.2.2 Water Management Ponds

- Total arsenic concentrations are predicted to exceed MDMER limits in the WRSF ponds (WR-SP-01 and WR-SP-02) and the ore stockpiles pond (OS-SP-01) from approximately Mine Year 3 through their decommissioning during the active closure phase at the end of Mine Year 8. Without treatment of outflows from these ponds, exceedances of total arsenic are also predicted in the main contact water pond (IT-TP-01).
- To simulate arsenic treatment, predicted arsenic concentrations in outflows from ponds WR-SP-01, WR-SP-02, and OS-SP-01 were capped at the MDMER Monthly Mean limit of 0.1 mg/L. With arsenic treatment, total arsenic concentrations in pond IT-TP-01 are predicted to remain below the MDMER Monthly Mean limit throughout the operation phase and to decrease further following decommissioning of the other ponds and ceasing in active closure at the end of Mine Year 8.
- Total arsenic concentrations are not predicted to exceed the MDMER Monthly Mean limit in the overburden storage facility pond (OB-SP-01) when it operates.
- Total copper, lead, nickel, and zinc concentrations are not predicted to exceed MDMER Monthly Mean limits in any pond during any stage of mine development.



8 References

- Bailey, B.L., L.J. Smith, D.W. Blowes, C.J. Ptacek, L. Smith and D.C. Sego. 2013. The Diavik Waste Rock Project: Persistence of contaminants from blasting agents in waste rock effluent. *Applied Geochemistry*, 36, 256-270.
- Canadian Council of the Ministers of the Environment (CCME). 2026. Canadian environmental quality guidelines. Available at: <https://ccme.ca/en/current-activities/canadian-environmental-quality-guidelines>. Last Accessed: February 2026.
- El Adlouni, S. and B. Bobée. 2015. Hydrological Frequency Analysis Using HYFRAN-PLUS Software.
- Ferguson, K.D. and S.M. Leask. 1988. The Export of Nutrients from Surface Coal Mines. Environment Canada Regional Program Report 87-12, dated March 1988, p. 127.
- Golder (Golder Associates Ltd.). 2007. Water Quality Predictions. Meadowbank Gold Project. Nunavut. Prepared for Agnico Eagle Mines Ltd. August 2007.
- Golder. 2008. Blasting practices at Ekati mine and sources of nitrate available for dissolution of mine drainage water. Prepared for Ekati Diamond Mine, BHP Billiton Diamond Mines Ltd. December 2008.
- Kamei, G. and H. Ohmoto. 1999. Mechanisms of pyrite oxidation revealed from in-situ measurements of DO, Eh, and pH of solutions in a closed system. Abstract in 9th Annual V.M. Goldschmidt Conference.
- Kempton, H., W.A. Price, C. Hogan and G. Tremblay. 2012, May. A review of scale factors for estimating waste rock weathering from laboratory tests. In 9th International Conference on Acid Rock Drainage (ICARD).
- Lopez, D.L., L. Smith and R. Beckie. 1997. Modeling water flow in waste rock piles using kinematic wave theory. In 4th International Conference on Acid Rock Drainage (ICARD).
- McCabe, G.J. and S.L. Markstrom. 2007. A Monthly Water Balance Model Driven by a Graphical User Interface: U.S. Geological Survey Open File report 2007-1088.
- MEND. 2009. Prediction manual for drainage chemistry from sulphidic geologic materials (MEND Report 1.20.1). CANMET Mining and Mineral Sciences Laboratories. Available online: https://mend-nedem.org/wp-content/uploads/1.20.1_PredictionManual.pdf
- Neuner, M., M. Gupton, L. Smith, N. Pham, L. Smith, D. Blowes and D. Sego. 2009. Diavik waste rock project: Unsaturated water flow. In 8th International Conference on Acid Rock Drainage (ICARD).
- New Found Gold (New Found Gold Corporation). 2026. Queensway Gold Project. Environmental Registration. Prepared for New Found Gold Corp. April 2026.



Stantec (Stantec Consulting Ltd.). 2026. Queensway Gold Water Management Plan. Prepared for New Found Gold Corp. April 2026.

Steinepreis, M. 2017. Investigation of Gas Transport Rates Through a Covered Waste Rock Pile and Synchrotron Studies on the Sulfide Oxidation Reaction. MS thesis. Department of Earth and Environmental Sciences, University of Waterloo, Ontario, Canada.

Thornthwaite, W. and J.R. Mather. 1957. The Water Balance, Publications in Climatology, Vol X, No. 3, Drexel Institute of Technology, Centerton, NJ.



Appendices



Appendix A Water Balance Model Inputs: Open Pit Dimensions



Appendix A - Open Pit Dimensions

Table A.1 - Keats Pit Dimensions

Keats Pit		
ELEVATION (m asl)	VOLUME (m ³)	2D AREA (m ²)
-145	0	539
-125	11,202	3,813
-105	60,923	11,919
-85	169,758	22,645
-65	356,180	38,433
-45	650,091	55,774
-25	3,521,196	75,612
-5	5,297,999	97,170
15	7,534,066	122,331
35	10,329,317	150,414
55	13,706,020	179,649
75	17,677,746	209,790
77.0	18,089,468	210,830
95		226,046
96		226,058

Note: Spillway Elevation

Table A.3 - Dome Pit Dimensions

Dome Pit		
ELEVATION (m asl)	VOLUME (m ³)	2D AREA (m ²)
50	0	447
60	9,260	1,813
70	40,747	4,815
76.1	77,669	9,462
80		10,607
90		12,235
94		12,317

Note: Spillway Elevation

Table A.2 - Iceberg Pit Dimensions

Iceberg Pit		
ELEVATION (m asl)	VOLUME (m ³)	2D AREA (m ²)
-20	0	2,970
-10	43,537	6,774
0	140,016	13,058
10	344,115	27,618
20	644,629	32,544
30	1,047,569	48,581
40	1,560,983	54,190
50	2,194,262	72,864
60	2,952,738	78,983
70	3,841,800	98,927
76.3	4,478,734	102,818
80		104,852
90		118,281
98		119,521

Note: Spillway Elevation

Table A.4 - Jackpot Pit Dimensions

Jackpot Pit		
ELEVATION (m asl)	VOLUME (m ³)	2D AREA (m ²)
0	1,152	0
10	2,765	17,306
20	7,783	69,005
30	10,288	159,205
40	17,553	297,199
50	20,702	488,386
58.9	29,444	709,238
60		740,796
70		1,035,846

Note: Spillway Elevation

Appendix B Water Balance Model Results: Water Management Ponds



Appendix B - Water Balance Model Results

Table B.1 - Climate Normal Average Monthly Water Management Pond and Final Discharge Point Outflows

Pond	Period	Average Outflow (m ³ /mon)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
OB-SP-01	Construction/ Operations - Year 1	0	0	42,366	46,757	31,054	28,844	33,123	32,317	39,325	41,455	39,059	37,541	30,987
	Operations - Year 2	27,842	27,842	42,366	46,757	31,054	28,844	33,123	32,317	39,325	41,455	39,059	37,541	35,627
	Operations - Year 4	27,842	32,663	42,366	46,757	31,054	28,844	33,123	32,317	39,325	41,455	39,059	37,541	36,029
	Operations - Years 5-7	27,842	27,842	42,366	46,757	31,054	28,844	33,123	32,317	39,325	41,455	39,059	37,541	35,627
	Active Closure - Years 8-10	14,514	14,514	22,235	24,866	15,527	14,422	16,620	16,333	20,617	21,991	20,258	19,271	18,431
WR-SP-01	Construction/ Operations - Year 1	0	0	0	41,196	20,884	15,881	17,958	18,090	24,431	27,027	28,460	30,544	18,706
	Operations - Year 2	24,918	27,353	43,509	45,179	23,547	17,757	19,750	20,241	28,413	31,634	32,637	34,277	29,101
	Operations - Year 4	27,353	32,581	43,509	45,179	23,547	17,757	19,750	20,241	28,413	31,634	32,637	34,277	29,740
	Operations - Years 5-7	27,353	27,353	43,509	45,179	23,547	17,757	19,750	20,241	28,413	31,634	32,637	34,277	29,304
	Active Closure - Years 8-10	28,247	28,247	42,688	46,472	25,706	22,406	25,779	25,250	35,624	41,311	39,831	38,675	33,353
WR-SP-02	Construction/ Operations - Year 1	0	0	0	19,462	9,349	7,109	8,069	8,189	11,434	13,001	13,571	14,464	8,721
	Operations - Year 2	11,750	12,840	20,389	21,245	10,541	7,949	8,872	9,152	13,217	15,064	15,441	16,135	13,550
	Operations - Year 4	12,840	15,284	20,389	21,245	10,541	7,949	8,872	9,152	13,217	15,064	15,441	16,135	13,844
	Operations - Years 5-7	12,840	12,840	20,389	21,245	10,541	7,949	8,872	9,152	13,217	15,064	15,441	16,135	13,640
	Active Closure - Years 8-10	13,241	15,532	20,022	21,824	11,507	10,030	11,571	11,394	16,444	19,395	18,662	18,104	15,644
OS-SP-01	Construction/ Operations - Year 1	0	0	0	37,367	22,349	20,655	23,759	23,537	30,890	33,845	31,104	29,401	21,076
	Operations - Year 2	21,877	23,180	35,235	39,377	23,215	21,117	24,200	24,066	32,162	35,560	32,907	31,233	28,677
	Operations - Year 4	23,180	27,155	35,235	39,377	23,215	21,117	24,200	24,066	32,162	35,560	32,907	31,233	29,117
	Operations - Years 5-7	23,516	23,540	35,789	39,990	23,654	21,522	24,672	24,513	32,690	36,089	33,401	31,708	29,257
	Active Closure - Years 8-10	26,562	27,934	40,512	45,249	27,711	25,537	29,388	28,937	37,338	40,453	37,410	35,572	33,550
IT-TP-01	Construction/ Operations - Year 1	0	129,098	190,003	300,865	223,190	211,414	230,276	230,765	267,910	282,208	277,144	276,555	218,286
	Operations - Year 2	267,740	281,243	362,889	384,156	289,581	271,863	291,757	289,517	331,198	343,724	333,756	329,182	314,717
	Operations - Year 4	259,110	286,156	341,485	363,263	226,395	209,679	228,639	227,034	267,531	280,518	271,680	267,867	269,113
	Operations - Years 5-7	222,476	187,122	260,794	279,337	191,443	175,079	192,426	190,808	229,132	241,861	233,693	230,144	219,526
	Active Closure - Years 8-10	107,355	113,390	163,191	180,074	107,143	97,188	111,873	109,826	144,543	160,086	150,935	145,033	132,553
FDP-01	Construction/ Operations - Year 1	0	60,676	89,302	141,407	104,899	99,364	108,230	108,460	125,918	132,638	130,257	129,981	102,594
	Operations - Year 2	125,838	132,184	170,558	180,553	136,103	127,775	137,126	136,073	155,663	161,550	156,866	154,716	147,917
	Operations - Year 4	121,782	134,493	160,498	170,734	106,406	98,549	107,460	106,706	125,740	131,844	127,690	125,897	126,483
	Operations - Years 5-7	104,564	87,947	122,573	131,288	89,978	82,287	90,440	89,680	107,692	113,675	109,836	108,168	103,177
	Active Closure - Years 8-10	50,457	53,293	76,700	84,635	50,357	45,679	52,581	51,618	67,935	75,240	70,940	68,165	62,300
FDP-02	Construction/ Operations - Year 1	0	68,422	100,702	159,459	118,291	112,049	122,046	122,305	141,993	149,570	146,886	146,574	115,691
	Operations - Year 2	141,902	149,059	192,331	203,603	153,478	144,087	154,631	153,444	175,535	182,174	176,891	174,467	166,800
	Operations - Year 4	137,328	151,662	180,987	192,529	119,989	111,130	121,179	120,328	141,792	148,675	143,990	141,969	142,630
	Operations - Years 5-7	117,912	99,175	138,221	148,049	101,465	92,792	101,986	101,128	121,440	128,186	123,857	121,976	116,349
	Active Closure - Years 8-10	56,898	60,097	86,491	95,439	56,786	51,510	59,293	58,208	76,608	84,845	79,995	76,867	70,253

Appendix B - Water Balance Model Results

Table B.2 - Dry Scenario (Mine Year 4) Average Monthly Water Management Pond and Final Discharge Point Outflows

Pond	Period	Average Outflow (m³/mon)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
OB-SP-01	Construction/ Operations - Year 1	0	0	42,366	46,757	31,054	28,844	33,123	32,317	39,325	41,455	39,059	37,541	30,987
	Operations - Year 2	27,842	27,842	42,366	46,757	31,054	28,844	33,123	32,317	39,325	41,455	39,059	37,541	35,627
	Operations - Year 4	22,829	26,785	34,973	39,111	26,509	24,623	28,176	27,289	33,338	34,589	31,863	30,312	30,033
	Operations - Years 5-7	27,842	27,842	42,366	46,757	31,054	28,844	33,123	32,317	39,325	41,455	39,059	37,541	35,627
	Active Closure - Years 8-10	14,514	14,514	22,235	24,866	15,527	14,422	16,620	16,333	20,617	21,991	20,258	19,271	18,431
WR-SP-01	Construction/ Operations - Year 1	0	0	0	41,196	20,884	15,881	17,958	18,090	24,431	27,027	28,460	30,544	18,706
	Operations - Year 2	24,918	27,353	43,509	45,179	23,547	17,757	19,750	20,241	28,413	31,634	32,637	34,277	29,101
	Operations - Year 4	19,192	23,041	33,035	34,734	18,373	14,366	17,143	15,466	20,761	22,280	21,683	23,770	21,987
	Operations - Years 5-7	27,353	27,353	43,509	45,179	23,547	17,757	19,750	20,241	28,413	31,634	32,637	34,277	29,304
	Active Closure - Years 8-10	28,247	28,247	42,688	46,472	25,706	22,406	25,779	25,250	35,624	41,311	39,831	38,675	33,353
WR-SP-02	Construction/ Operations - Year 1	0	0	0	19,462	9,349	7,109	8,069	8,189	11,434	13,001	13,571	14,464	8,721
	Operations - Year 2	11,750	12,840	20,389	21,245	10,541	7,949	8,872	9,152	13,217	15,064	15,441	16,135	13,550
	Operations - Year 4	9,100	10,911	15,567	16,420	8,224	6,431	7,674	6,923	9,658	10,744	10,416	11,316	10,282
	Operations - Years 5-7	12,840	12,840	20,389	21,245	10,541	7,949	8,872	9,152	13,217	15,064	15,441	16,135	13,640
	Active Closure - Years 8-10	13,241	15,532	20,022	21,824	11,507	10,030	11,571	11,394	16,444	19,395	18,662	18,104	15,644
OS-SP-01	Construction/ Operations - Year 1	0	0	0	37,367	22,349	20,655	23,759	23,537	30,890	33,845	31,104	29,401	21,076
	Operations - Year 2	21,877	23,180	35,235	39,377	23,215	21,117	24,200	24,066	32,162	35,560	32,907	31,233	28,677
	Operations - Year 4	17,564	20,565	27,385	31,100	19,032	17,832	20,577	19,650	25,749	28,201	25,246	23,751	23,054
	Operations - Years 5-7	23,516	23,540	35,789	39,990	23,654	21,522	24,672	24,513	32,690	36,089	33,401	31,708	29,257
	Active Closure - Years 8-10	26,562	27,934	40,512	45,249	27,711	25,537	29,388	28,937	37,338	40,453	37,410	35,572	33,550
IT-TP-01	Construction/ Operations - Year 1	0	129,098	190,003	300,865	223,190	211,414	230,276	230,765	267,910	282,208	277,144	276,555	218,286
	Operations - Year 2	267,740	281,243	362,889	384,156	289,581	271,863	291,757	289,517	331,198	343,724	333,756	329,182	314,717
	Operations - Year 4	227,091	248,601	296,544	316,432	201,277	188,953	206,559	200,847	232,336	240,287	228,682	225,880	234,457
	Operations - Years 5-7	222,476	187,122	260,794	279,337	191,443	175,079	192,426	190,808	229,132	241,861	233,693	230,144	219,526
	Active Closure - Years 8-10	107,355	113,390	163,191	180,074	107,143	97,188	111,873	109,826	144,543	160,086	150,935	145,033	132,553
FDP-01	Construction/ Operations - Year 1	0	60,676	89,302	141,407	104,899	99,364	108,230	108,460	125,918	132,638	130,257	129,981	102,594
	Operations - Year 2	125,838	132,184	170,558	180,553	136,103	127,775	137,126	136,073	155,663	161,550	156,866	154,716	147,917
	Operations - Year 4	106,733	116,842	139,376	148,723	94,600	88,808	97,083	94,398	109,198	112,935	107,481	106,164	110,195
	Operations - Years 5-7	104,564	87,947	122,573	131,288	89,978	82,287	90,440	89,680	107,692	113,675	109,836	108,168	103,177
	Active Closure - Years 8-10	50,457	53,293	76,700	84,635	50,357	45,679	52,581	51,618	67,935	75,240	70,940	68,165	62,300
FDP-02	Construction/ Operations - Year 1	0	68,422	100,702	159,459	118,291	112,049	122,046	122,305	141,993	149,570	146,886	146,574	115,691
	Operations - Year 2	141,902	149,059	192,331	203,603	153,478	144,087	154,631	153,444	175,535	182,174	176,891	174,467	166,800
	Operations - Year 4	120,358	131,758	157,168	167,709	106,677	100,145	109,476	106,449	123,138	127,352	121,201	119,716	124,262
	Operations - Years 5-7	117,912	99,175	138,221	148,049	101,465	92,792	101,986	101,128	121,440	128,186	123,857	121,976	116,349
	Active Closure - Years 8-10	56,898	60,097	86,491	95,439	56,786	51,510	59,293	58,208	76,608	84,845	79,995	76,867	70,253

Appendix B - Water Balance Model Results

Table B.3 - Post-Closure Average Monthly Pit Outflows

Pit	Period	Average Outflow (m3/mon)												
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Keats Pit	Post-Closure (Year 25)	0		0	0	0	0	0	0	0	0	66,827	64,760	11,962
	Post-Closure (Year 26+)	54,784	54,784	70,974	76,490	41,755	38,105	44,514	45,543	59,723	70,462	66,827	64,760	57,393
Iceberg Pit	Post-Closure (Year 31)	0	0	0	13726	0	0	0	0	0	0	10826	10206	2,897
	Post-Closure (Year 32+)	7213	8796	12071	13726	0	0	0	0	0	0	10826	10206	5,237

Appendix C Water Quality Model Inputs: Geochemical Source Terms



Table C.1 Groundwater Source Terms: Expected Case and Upper Case Scenarios

Group	Parameter	Model Symbol	Units	Groundwater: Expected Case	Groundwater: Upper Case
				50 th Percentile	90 th Percentile
Major anions	Sulphate	SO ₄	mg/L	3.65	12.5
	Chloride	Cl	mg/L	4.2	5.81
	Fluoride	F	mg/L	0.12	0.185
Nutrients	Phosphorus	P	mg/L	0.1	1.8
	Ammonia (as N)	NH ₃	mg/L	0.05	0.149
	Nitrate (as N)	NO ₃	mg/L	0.05	0.0699
	Nitrite (as N)	NO ₂	mg/L	0.01	0.05
Dissolved metals and metalloids	Aluminum	D-Al	mg/L	0.0089	0.155
	Antimony	D-Sb	mg/L	0.001	0.0059
	Arsenic	D-As	mg/L	0.002	0.0275
	Barium	D-Ba	mg/L	0.016	0.12
	Beryllium	D-Be	mg/L	0.0001	0.002
	Bismuth	D-Bi	mg/L	0.002	0.002
	Boron	D-B	mg/L	0.05	0.05
	Cadmium	D-Cd	mg/L	0.00001	0.0001
	Calcium	D-Ca	mg/L	11	29
	Chromium	D-Cr	mg/L	0.001	0.001
	Cobalt	D-Co	mg/L	0.000465	0.00443
	Copper	D-Cu	mg/L	0.000525	0.00672
	Iron	D-Fe	mg/L	0.27	1.44
	Lead	D-Pb	mg/L	0.0005	0.0009
	Magnesium	D-Mg	mg/L	3.6	13
	Manganese	D-Mn	mg/L	0.246	1.35
	Mercury	D-Hg	mg/L	0.000026	0.000026
	Molybdenum	D-Mo	mg/L	0.002	0.00958
	Nickel	D-Ni	mg/L	0.002	0.003
	Potassium	D-K	mg/L	0.4	3.25
	Selenium	D-Se	mg/L	0.0005	0.001
	Silver	D-Ag	mg/L	0.0001	0.0004
	Sodium	D-Na	mg/L	5.15	25
	Strontium	D-Sr	mg/L	0.146	0.4
	Thallium	D-Tl	mg/L	0.0001	0.0002
	Tin	D-Sn	mg/L	0.002	0.002



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Group	Parameter	Model Symbol	Units	Groundwater: Expected Case	Groundwater: Upper Case
				50 th Percentile	90 th Percentile
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/L	0.000235	0.000945
	Vanadium	D-V	mg/L	0.002	0.002
	Zinc	D-Zn	mg/L	0.005	0.012
Total metals and metalloids	Aluminum	T-Al	mg/L	0.0089	0.155
	Antimony	T-Sb	mg/L	0.001	0.0059
	Arsenic	T-As	mg/L	0.002	0.0275
	Barium	T-Ba	mg/L	0.016	0.12
	Beryllium	T-Be	mg/L	0.0001	0.002
	Bismuth	T-Bi	mg/L	0.002	0.002
	Boron	T-B	mg/L	0.05	0.05
	Cadmium	T-Cd	mg/L	0.00001	0.0001
	Calcium	T-Ca	mg/L	11	29
	Chromium	T-Cr	mg/L	0.001	0.001
	Cobalt	T-Co	mg/L	0.000465	0.00443
	Copper	T-Cu	mg/L	0.000525	0.00672
	Iron	T-Fe	mg/L	0.27	1.44
	Lead	T-Pb	mg/L	0.0005	0.0009
	Magnesium	T-Mg	mg/L	3.6	13
	Manganese	T-Mn	mg/L	0.246	1.35
	Mercury	T-Hg	mg/L	0.000026	0.000026
	Molybdenum	T-Mo	mg/L	0.002	0.00958
	Nickel	T-Ni	mg/L	0.002	0.003
	Potassium	T-K	mg/L	0.4	3.25
	Selenium	T-Se	mg/L	0.0005	0.001
	Silver	T-Ag	mg/L	0.0001	0.0004
	Sodium	T-Na	mg/L	5.15	25
	Strontium	T-Sr	mg/L	0.146	0.4
	Thallium	T-Tl	mg/L	0.0001	0.0002
	Tin	T-Sn	mg/L	0.002	0.002
	Uranium	T-U	mg/L	0.000235	0.000945
	Vanadium	T-V	mg/L	0.002	0.002
	Zinc	T-Zn	mg/L	0.005	0.012

Notes:

mg/L = milligram(s) per litre; as N = expressed as nitrogen



Table C.2 Constructed Pad Source Terms: Expected Case and Upper Case Scenarios

Group	Parameter	Model Symbol	Units	Constructed Pad: Expected Case	Constructed Pad: Upper Case
				50 th Percentile	90 th Percentile
Major anions	Sulphate	SO ₄	mg/L	2	4
	Chloride	Cl	mg/L	6	30
	Fluoride	F	mg/L	0.12	0.12
Nutrients	Phosphorus	P	mg/L	0.17	1
	Ammonia (as N)	NH ₃	mg/L	0.03	0.182
	Nitrate (as N)	NO ₃	mg/L	0.05	0.266
	Nitrite (as N)	NO ₂	mg/L	0.05	0.05
Dissolved metals and metalloids	Aluminum	D-Al	mg/L	0.0285	0.0774
	Antimony	D-Sb	mg/L	0.002	0.002
	Arsenic	D-As	mg/L	0.002	0.004
	Barium	D-Ba	mg/L	0.005	0.005
	Beryllium	D-Be	mg/L	0.002	0.002
	Bismuth	D-Bi	mg/L	0.002	0.002
	Boron	D-B	mg/L	0.005	0.005
	Cadmium	D-Cd	mg/L	0.00009	0.00009
	Calcium	D-Ca	mg/L	3.4	7.78
	Chromium	D-Cr	mg/L	0.001	0.001
	Cobalt	D-Co	mg/L	0.001	0.001
	Copper	D-Cu	mg/L	0.002	0.002
	Iron	D-Fe	mg/L	0.069	0.19
	Lead	D-Pb	mg/L	0.0005	0.0005
	Magnesium	D-Mg	mg/L	1.3	2.2
	Manganese	D-Mn	mg/L	0.054	0.303
	Mercury	D-Hg	mg/L	0.000026	0.000026
	Molybdenum	D-Mo	mg/L	0.002	0.002
	Nickel	D-Ni	mg/L	0.002	0.002
	Potassium	D-K	mg/L	0.5	0.9
	Selenium	D-Se	mg/L	0.0001	0.0002
	Silver	D-Ag	mg/L	0.0001	0.0001
	Sodium	D-Na	mg/L	4.7	21.5
	Strontium	D-Sr	mg/L	0.04	0.062
	Thallium	D-Tl	mg/L	0.0001	0.0001
	Tin	D-Sn	mg/L	0.002	0.002



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Group	Parameter	Model Symbol	Units	Constructed Pad: Expected Case	Constructed Pad: Upper Case
				50 th Percentile	90 th Percentile
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/L	0.0001	0.0001
	Vanadium	D-V	mg/L	0.002	0.002
	Zinc	D-Zn	mg/L	0.005	0.0081
Total metals and metalloids	Aluminum	T-Al	mg/L	0.072	0.295
	Antimony	T-Sb	mg/L	0.002	0.003
	Arsenic	T-As	mg/L	0.002	0.005
	Barium	T-Ba	mg/L	0.005	0.005
	Beryllium	T-Be	mg/L	0.002	0.002
	Bismuth	T-Bi	mg/L	0.002	0.002
	Boron	T-B	mg/L	0.005	0.01
	Cadmium	T-Cd	mg/L	0.00009	0.0001
	Calcium	T-Ca	mg/L	3.4	7.78
	Chromium	T-Cr	mg/L	0.001	0.003
	Cobalt	T-Co	mg/L	0.001	0.001
	Copper	T-Cu	mg/L	0.001	0.002
	Iron	T-Fe	mg/L	0.179	0.599
	Lead	T-Pb	mg/L	0.0005	0.001
	Magnesium	T-Mg	mg/L	1.3	2.2
	Manganese	T-Mn	mg/L	0.065	0.483
	Mercury	T-Hg	mg/L	0.000026	0.000026
	Molybdenum	T-Mo	mg/L	0.002	0.002
	Nickel	T-Ni	mg/L	0.002	0.003
	Potassium	T-K	mg/L	0.5	0.9
	Selenium	T-Se	mg/L	0.001	0.001
	Silver	T-Ag	mg/L	0.0001	0.0001
	Sodium	T-Na	mg/L	4.7	21.5
	Strontium	T-Sr	mg/L	0.022	0.0529
	Thallium	T-Tl	mg/L	0.0001	0.0003
	Tin	T-Sn	mg/L	0.002	0.002
	Uranium	T-U	mg/L	0.0002	0.0005
	Vanadium	T-V	mg/L	0.002	0.002
	Zinc	T-Zn	mg/L	0.005	0.0096

Notes:

mg/L = milligram(s) per litre; as N = expressed as nitrogen



Table C.3 Pit Walls, Pit Rubble, and Waste Rock Storage Facility Runoff/Seepage Source Terms: Expected Case Scenario

Group	Parameter	Model Symbol	Units	BSIL Expected Case: Full Test Duration	BSIL Expected Case: Last Six Weeks	BSGI Expected Case: Full Test Duration	BSGI Expected Case: Last Six Weeks	SDG Expected Case: Full Test Duration	SDG Expected Case: Last Six Weeks	SIL Expected Case: Full Test Duration	SIL Expected Case: Last Six Weeks
Major anions	Sulphate	SO ₄	mg/kg/week	29.5	17.5	38.9	22.6	0.451	0.446	0.93	0.93
	Chloride	Cl	mg/kg/week	0.216	0.216	0.409	0.205	0.217	0.217	0.226	0.219
	Fluoride	F	mg/kg/week	0.0531	0.0531	0.0507	0.0507	0.0224	0.0223	0.023	0.023
Nutrients	Phosphorus	P	mg/kg/week	0.00856	0.00831	0.00836	0.00822	0.00857	0.00857	0.00891	0.00876
	Ammonia (as N) ^a	NH ₃	mg/kg/week	0.00235	0.00229	0.0023	0.00226	0.00235	0.00245	0.00245	0.00241
	Nitrate (as N) ^a	NO ₃	mg/kg/week	0.0186	0.0181	0.0182	0.0179	0.0186	0.0194	0.0194	0.0191
	Nitrite (as N) ^a	NO ₂	mg/kg/week	0.000428	0.000416	0.000418	0.000411	0.000427	0.000446	0.000446	0.000438
Dissolved metals and metalloids	Aluminum	D-Al	mg/kg/week	0.00582	0.00582	0.00442	0.00442	0.0418	0.0214	0.0372	0.0372
	Antimony	D-Sb	mg/kg/week	0.000184	0.000121	0.0000841	0.0000656	0.00395	0.00183	0.00113	0.000526
	Arsenic	D-As	mg/kg/week	0.00043	0.000166	0.000418	0.000247	0.0221	0.0174	0.0251	0.012
	Barium	D-Ba	mg/kg/week	0.00499	0.00283	0.00661	0.00472	0.013	0.00848	0.00279	0.00224
	Beryllium	D-Be	mg/kg/week	0.0000428	0.0000416	0.0000418	0.0000411	0.0000427	0.0000427	0.0000446	0.0000438
	Bismuth	D-Bi	mg/kg/week	0.000428	0.0000416	0.000416	0.0000411	0.000427	0.000427	0.000446	0.0000438
	Boron	D-B	mg/kg/week	0.00513	0.00229	0.00579	0.000411	0.00634	0.00634	0.00725	0.00458
	Cadmium	D-Cd	mg/kg/week	0.00000454	0.00000416	0.00000423	0.00000411	0.00000434	0.00000434	0.00000446	0.00000438
	Calcium	D-Ca	mg/kg/week	1.78	1.11	2.88	1.49	2.22	2.22	2.33	2.25
	Chromium	D-Cr	mg/kg/week	0.000428	0.0000416	0.000416	0.0000411	0.000427	0.000427	0.000446	0.0000438
	Cobalt	D-Co	mg/kg/week	0.0000831	0.000054	0.000177	0.0000577	0.0000453	0.0000453	0.000182	0.000182
	Copper	D-Cu	mg/kg/week	0.000442	0.000442	0.000428	0.000428	0.000455	0.000446	0.000458	0.000458
	Iron	D-Fe	mg/kg/week	0.00856	0.00831	0.00836	0.00822	0.00857	0.00857	0.00925	0.00925
	Lead	D-Pb	mg/kg/week	0.0000428	0.0000416	0.0000423	0.0000411	0.0000847	0.0000666	0.0000455	0.0000455
	Magnesium	D-Mg	mg/kg/week	9.23	7.34	9.81	7.08	0.308	0.241	0.368	0.333
	Manganese	D-Mn	mg/kg/week	0.00367	0.00166	0.00972	0.00206	0.0097	0.0097	0.012	0.0118
	Mercury	D-Hg	mg/kg/week	0.00000428	0.00000416	0.00000418	0.00000411	0.00000427	0.00000427	0.00000446	0.00000438
	Molybdenum	D-Mo	mg/kg/week	0.00471	0.00233	0.000744	0.000656	0.00232	0.00138	0.00506	0.00145
	Nickel	D-Ni	mg/kg/week	0.000228	0.000208	0.000442	0.000205	0.000214	0.000214	0.000225	0.000225
	Potassium	D-K	mg/kg/week	0.339	0.266	0.53	0.387	0.403	0.227	0.25	0.193
	Selenium	D-Se	mg/kg/week	0.000918	0.000499	0.000505	0.000451	0.000428	0.000428	0.000446	0.000219
	Silver	D-Ag	mg/kg/week	0.0000428	0.0000416	0.0000418	0.0000411	0.0000427	0.0000427	0.0000446	0.0000438
	Sodium	D-Na	mg/kg/week	0.283	0.237	0.304	0.235	0.261	0.164	0.123	0.123
	Strontium	D-Sr	mg/kg/week	0.0367	0.0173	0.0415	0.0189	0.0733	0.0482	0.0205	0.0184
	Thallium	D-Tl	mg/kg/week	0.0000428	0.0000416	0.0000418	0.0000411	0.0000427	0.0000427	0.0000446	0.0000438
	Tin	D-Sn	mg/kg/week	0.000336	0.000145	0.00025	0.000209	0.000326	0.000178	0.000324	0.000153



Group	Parameter	Model Symbol	Units	BSIL Expected Case: Full Test Duration	BSIL Expected Case: Last Six Weeks	BSGI Expected Case: Full Test Duration	BSGI Expected Case: Last Six Weeks	SDG Expected Case: Full Test Duration	SDG Expected Case: Last Six Weeks	SIL Expected Case: Full Test Duration	SIL Expected Case: Last Six Weeks
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/kg/week	0.0000885	0.0000416	0.0000418	0.0000411	0.00017	0.000135	0.000345	0.000306
	Vanadium	D-V	mg/kg/week	0.000428	0.0000416	0.000416	0.0000411	0.000428	0.000428	0.000463	0.000307
	Zinc	D-Zn	mg/kg/week	0.00177	0.00145	0.00252	0.0017	0.00262	0.00262	0.00184	0.00145
Total metals and metalloids	Aluminum	T-Al	mg/kg/week	0.00582	0.00582	0.00442	0.00442	0.0418	0.0214	0.0372	0.0372
	Antimony	T-Sb	mg/kg/week	0.000184	0.000121	0.0000841	0.0000656	0.00395	0.00183	0.00113	0.000526
	Arsenic	T-As	mg/kg/week	0.00043	0.000166	0.000418	0.000247	0.0221	0.0174	0.0251	0.012
	Barium	T-Ba	mg/kg/week	0.00499	0.00283	0.00661	0.00472	0.013	0.00848	0.00279	0.00224
	Beryllium	T-Be	mg/kg/week	0.0000428	0.0000416	0.0000418	0.0000411	0.0000427	0.0000427	0.0000446	0.0000438
	Bismuth	T-Bi	mg/kg/week	0.000428	0.0000416	0.000416	0.0000411	0.000427	0.000427	0.000446	0.0000438
	Boron	T-B	mg/kg/week	0.00513	0.00229	0.00579	0.000411	0.00634	0.00634	0.00725	0.00458
	Cadmium	T-Cd	mg/kg/week	0.00000454	0.00000416	0.00000423	0.00000411	0.00000434	0.00000434	0.00000446	0.00000438
	Calcium	T-Ca	mg/kg/week	1.78	1.11	2.88	1.49	2.22	2.22	2.33	2.25
	Chromium	T-Cr	mg/kg/week	0.000428	0.0000416	0.000416	0.0000411	0.000427	0.000427	0.000446	0.0000438
	Cobalt	T-Co	mg/kg/week	0.0000831	0.000054	0.000177	0.0000577	0.0000453	0.0000453	0.000182	0.000182
	Copper	T-Cu	mg/kg/week	0.000442	0.000442	0.000428	0.000428	0.000455	0.000446	0.000458	0.000458
	Iron	T-Fe	mg/kg/week	0.00856	0.00831	0.00836	0.00822	0.00857	0.00857	0.00925	0.00925
	Lead	T-Pb	mg/kg/week	0.0000428	0.0000416	0.0000423	0.0000411	0.0000847	0.0000666	0.0000455	0.0000455
	Magnesium	T-Mg	mg/kg/week	9.23	7.34	9.81	7.08	0.308	0.241	0.368	0.333
	Manganese	T-Mn	mg/kg/week	0.00367	0.00166	0.00972	0.00206	0.0097	0.0097	0.012	0.0118
	Mercury	T-Hg	mg/kg/week	0.00000428	0.00000416	0.00000418	0.00000411	0.00000427	0.00000427	0.00000446	0.00000438
	Molybdenum	T-Mo	mg/kg/week	0.00471	0.00233	0.000744	0.000656	0.00232	0.00138	0.00506	0.00145
	Nickel	T-Ni	mg/kg/week	0.000228	0.000208	0.000442	0.000205	0.000214	0.000214	0.000225	0.000225
	Potassium	T-K	mg/kg/week	0.339	0.266	0.53	0.387	0.403	0.227	0.25	0.193
	Selenium	T-Se	mg/kg/week	0.000918	0.000499	0.000505	0.000451	0.000428	0.000428	0.000446	0.000219
	Silver	T-Ag	mg/kg/week	0.0000428	0.0000416	0.0000418	0.0000411	0.0000427	0.0000427	0.0000446	0.0000438
	Sodium	T-Na	mg/kg/week	0.283	0.237	0.304	0.235	0.261	0.164	0.123	0.123
	Strontium	T-Sr	mg/kg/week	0.0367	0.0173	0.0415	0.0189	0.0733	0.0482	0.0205	0.0184
	Thallium	T-Tl	mg/kg/week	0.0000428	0.0000416	0.0000418	0.0000411	0.0000427	0.0000427	0.0000446	0.0000438
	Tin	T-Sn	mg/kg/week	0.000336	0.000145	0.00025	0.000209	0.000326	0.000178	0.000324	0.000153
	Uranium	T-U	mg/kg/week	0.0000885	0.0000416	0.0000418	0.0000411	0.00017	0.000135	0.000345	0.000306
	Vanadium	T-V	mg/kg/week	0.000428	0.0000416	0.000416	0.0000411	0.000428	0.000428	0.000463	0.000307
	Zinc	T-Zn	mg/kg/week	0.00177	0.00145	0.00252	0.0017	0.00262	0.00262	0.00184	0.00145

Notes:

^a Nitrogen species concentrations in the Project humidity cells are reported as total nitrogen. Leaching rates for ammonia, nitrate, and nitrite were derived from total nitrogen using the proportions recommended by Ferguson and Leask (1988): 11% as ammonia, 87% as nitrate, and 2% as nitrite.

BSIL = black siltstone; BSGI = interbedded black siltstone and greywacke; SDG = greywacke; SIL = siltstone; mg/kg/week = milligram(s) per kilogram per week; as N = expressed as nitrogen



Table C.4 Pit Walls, Pit Rubble, and Waste Rock Storage Facility Runoff/Seepage Source Terms: Upper Case Scenario

Group	Parameter	Model Symbol	Units	BSIL Upper Case: Full Test Duration	BSIL Upper Case: Last Six Weeks	BSGI Upper Case: Full Test Duration	BSGI Upper Case: Last Six Weeks	SDG Upper Case: Full Test Duration	SDG Upper Case: Last Six Weeks	SIL Upper Case: Full Test Duration	SIL Upper Case: Last Six Weeks
Major anions	Sulphate	SO ₄	mg/kg/week	255	100	81.2	44.7	7.49	0.881	4.55	1.76
	Chloride	Cl	mg/kg/week	0.213	0.204	0.215	0.215	0.468	0.468	0.637	0.22
	Fluoride	F	mg/kg/week	0.202	0.202	0.104	0.0635	0.0526	0.022	0.0824	0.0571
Nutrients	Phosphorus	P	mg/kg/week	0.00882	0.00817	0.00859	0.00859	0.00907	0.00881	0.0093	0.0088
	Ammonia (as N) ^a	NH ₃	mg/kg/week	0.0177	0.00229	0.00236	0.00236	0.00252	0.00242	0.00256	0.00242
	Nitrate (as N) ^a	NO ₃	mg/kg/week	0.14	0.0181	0.0187	0.0187	0.0199	0.0192	0.0202	0.0191
	Nitrite (as N) ^a	NO ₂	mg/kg/week	0.00322	0.000416	0.00043	0.00043	0.000459	0.000441	0.000465	0.00044
Dissolved metals and metalloids	Aluminum	D-Al	mg/kg/week	4.62	2.61	0.0928	0.0928	0.0497	0.0227	0.0532	0.044
	Antimony	D-Sb	mg/kg/week	0.00209	0.00134	0.0000459	0.0000369	0.00597	0.000678	0.00583	0.000535
	Arsenic	D-As	mg/kg/week	0.00253	0.0018	0.000449	0.000449	0.251	0.0522	0.0989	0.0123
	Barium	D-Ba	mg/kg/week	0.00178	0.00127	0.00501	0.00369	0.00734	0.0015	0.00732	0.00235
	Beryllium	D-Be	mg/kg/week	0.000455	0.000245	0.000363	0.000302	0.0000454	0.0000441	0.0000465	0.000044
	Bismuth	D-Bi	mg/kg/week	0.000441	0.0000408	0.00043	0.000043	0.000454	0.0000441	0.000465	0.000044
	Boron	D-B	mg/kg/week	0.00494	0.00345	0.00718	0.00568	0.00971	0.00243	0.0103	0.00789
	Cadmium	D-Cd	mg/kg/week	0.00754	0.00184	0.000413	0.000267	0.00000459	0.00000441	0.00000901	0.0000044
	Calcium	D-Ca	mg/kg/week	37.2	4.03	18.8	10.5	4.51	2.23	3.63	2.27
	Chromium	D-Cr	mg/kg/week	0.00455	0.00241	0.00043	0.000043	0.000454	0.0000441	0.000465	0.000044
	Cobalt	D-Co	mg/kg/week	0.0361	0.0125	0.0536	0.023	0.00018	0.000112	0.000281	0.000256
	Copper	D-Cu	mg/kg/week	0.147	0.0602	0.0109	0.00685	0.000902	0.000441	0.000617	0.000599
	Iron	D-Fe	mg/kg/week	52.4	21.9	0.193	0.185	0.00917	0.00881	0.0264	0.0255
	Lead	D-Pb	mg/kg/week	0.000356	0.000246	0.000747	0.000647	0.0000468	0.0000441	0.000183	0.0000837
	Magnesium	D-Mg	mg/kg/week	5.1	2.72	6.54	3.64	1.2	0.294	0.683	0.342
	Manganese	D-Mn	mg/kg/week	1.36	0.242	2.37	1.11	0.0248	0.00705	0.0266	0.0129
	Mercury	D-Hg	mg/kg/week	0.00000419	0.00000408	0.0000043	0.0000043	0.00000454	0.00000441	0.00000465	0.0000044
	Molybdenum	D-Mo	mg/kg/week	0.00111	0.000654	0.0000454	0.000043	0.00587	0.000506	0.0198	0.00149
	Nickel	D-Ni	mg/kg/week	0.158	0.0631	0.0608	0.03	0.000234	0.000234	0.000906	0.000498
	Potassium	D-K	mg/kg/week	0.0652	0.0652	0.314	0.236	0.706	0.121	1.04	0.215
	Selenium	D-Se	mg/kg/week	0.00546	0.00311	0.00275	0.00181	0.000454	0.00022	0.000468	0.00022
	Silver	D-Ag	mg/kg/week	0.0000441	0.0000408	0.000043	0.000043	0.0000459	0.0000441	0.0000465	0.000044
	Sodium	D-Na	mg/kg/week	0.148	0.148	0.165	0.146	0.923	0.185	0.61	0.138
	Strontium	D-Sr	mg/kg/week	0.145	0.0131	0.16	0.0826	0.159	0.0183	0.0337	0.0186
	Thallium	D-Tl	mg/kg/week	0.0000443	0.0000408	0.000043	0.000043	0.0000454	0.0000441	0.0000465	0.000044
	Tin	D-Sn	mg/kg/week	0.000332	0.000143	0.000176	0.000142	0.000807	0.000128	0.000802	0.000158



Group	Parameter	Model Symbol	Units	BSIL Upper Case: Full Test Duration	BSIL Upper Case: Last Six Weeks	BSGI Upper Case: Full Test Duration	BSGI Upper Case: Last Six Weeks	SDG Upper Case: Full Test Duration	SDG Upper Case: Last Six Weeks	SIL Upper Case: Full Test Duration	SIL Upper Case: Last Six Weeks
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/kg/week	0.00892	0.00327	0.00149	0.00125	0.000265	0.0000441	0.000549	0.00034
	Vanadium	D-V	mg/kg/week	0.00356	0.00123	0.00043	0.000043	0.000882	0.000176	0.00183	0.000343
	Zinc	D-Zn	mg/kg/week	0.507	0.129	0.0399	0.0255	0.0055	0.00148	0.00549	0.0017
Total metals and metalloids	Aluminum	T-Al	mg/kg/week	4.62	2.61	0.0928	0.0928	0.0497	0.0227	0.0532	0.044
	Antimony	T-Sb	mg/kg/week	0.00209	0.00134	0.0000459	0.0000369	0.00597	0.000678	0.00583	0.000535
	Arsenic	T-As	mg/kg/week	0.00253	0.0018	0.000449	0.000449	0.251	0.0522	0.0989	0.0123
	Barium	T-Ba	mg/kg/week	0.00178	0.00127	0.00501	0.00369	0.00734	0.0015	0.00732	0.00235
	Beryllium	T-Be	mg/kg/week	0.000455	0.000245	0.000363	0.000302	0.0000454	0.0000441	0.0000465	0.000044
	Bismuth	T-Bi	mg/kg/week	0.000441	0.0000408	0.00043	0.000043	0.000454	0.0000441	0.000465	0.000044
	Boron	T-B	mg/kg/week	0.00494	0.00345	0.00718	0.00568	0.00971	0.00243	0.0103	0.00789
	Cadmium	T-Cd	mg/kg/week	0.00754	0.00184	0.000413	0.000267	0.00000459	0.00000441	0.00000901	0.0000044
	Calcium	T-Ca	mg/kg/week	37.2	4.03	18.8	10.5	4.51	2.23	3.63	2.27
	Chromium	T-Cr	mg/kg/week	0.00455	0.00241	0.00043	0.000043	0.000454	0.0000441	0.000465	0.000044
	Cobalt	T-Co	mg/kg/week	0.0361	0.0125	0.0536	0.023	0.00018	0.000112	0.000281	0.000256
	Copper	T-Cu	mg/kg/week	0.147	0.0602	0.0109	0.00685	0.000902	0.000441	0.000617	0.000599
	Iron	T-Fe	mg/kg/week	52.4	21.9	0.193	0.185	0.00917	0.00881	0.0264	0.0255
	Lead	T-Pb	mg/kg/week	0.000356	0.000246	0.000747	0.000647	0.0000468	0.0000441	0.000183	0.0000837
	Magnesium	T-Mg	mg/kg/week	5.1	2.72	6.54	3.64	1.2	0.294	0.683	0.342
	Manganese	T-Mn	mg/kg/week	1.36	0.242	2.37	1.11	0.0248	0.00705	0.0266	0.0129
	Mercury	T-Hg	mg/kg/week	0.00000419	0.00000408	0.0000043	0.0000043	0.00000454	0.00000441	0.00000465	0.0000044
	Molybdenum	T-Mo	mg/kg/week	0.00111	0.000654	0.0000454	0.000043	0.00587	0.000506	0.0198	0.00149
	Nickel	T-Ni	mg/kg/week	0.158	0.0631	0.0608	0.03	0.000234	0.000234	0.000906	0.000498
	Potassium	T-K	mg/kg/week	0.0652	0.0652	0.314	0.236	0.706	0.121	1.04	0.215
	Selenium	T-Se	mg/kg/week	0.00546	0.00311	0.00275	0.00181	0.000454	0.00022	0.000468	0.00022
	Silver	T-Ag	mg/kg/week	0.0000441	0.0000408	0.000043	0.000043	0.0000459	0.0000441	0.0000465	0.000044
	Sodium	T-Na	mg/kg/week	0.148	0.148	0.165	0.146	0.923	0.185	0.61	0.138
	Strontium	T-Sr	mg/kg/week	0.145	0.0131	0.16	0.0826	0.159	0.0183	0.0337	0.0186
	Thallium	T-Tl	mg/kg/week	0.0000443	0.0000408	0.000043	0.000043	0.0000454	0.0000441	0.0000465	0.000044
	Tin	T-Sn	mg/kg/week	0.000332	0.000143	0.000176	0.000142	0.000807	0.000128	0.000802	0.000158
	Uranium	T-U	mg/kg/week	0.00892	0.00327	0.00149	0.00125	0.000265	0.0000441	0.000549	0.00034
	Vanadium	T-V	mg/kg/week	0.00356	0.00123	0.00043	0.000043	0.000882	0.000176	0.00183	0.000343
	Zinc	T-Zn	mg/kg/week	0.507	0.129	0.0399	0.0255	0.0055	0.00148	0.00549	0.0017

Notes:

^a Nitrogen species concentrations in the Project humidity cells are reported as total nitrogen. Leaching rates for ammonia, nitrate, and nitrite were derived from total nitrogen using the proportions recommended by Ferguson and Leask (1988): 11% as ammonia, 87% as nitrate, and 2% as nitrite.

BSIL = black siltstone; BSGI = interbedded black siltstone and greywacke; SDG = greywacke; SIL = siltstone; mg/kg/week = milligram(s) per kilogram per week; as N = expressed as nitrogen



Table C.5 Ore Stockpiles Runoff/Seepage Source Terms: Expected Case Scenario

Group	Parameter	Model Symbol	Units	Ore Stockpiles Expected Case: Full Test Duration
Major anions	Sulphate	SO ₄	mg/kg/week	1.78
	Chloride	Cl	mg/kg/week	0.223
	Fluoride	F	mg/kg/week	0.0224
Nutrients	Phosphorus	P	mg/kg/week	0.00887
	Ammonia (as N)	NH ₃	mg/kg/week	-
	Nitrate (as N)	NO ₃	mg/kg/week	-
	Nitrite (as N)	NO ₂	mg/kg/week	-
Dissolved metals and metalloids	Aluminum	D-Al	mg/kg/week	0.0245
	Antimony	D-Sb	mg/kg/week	0.00144
	Arsenic	D-As	mg/kg/week	0.0736
	Barium	D-Ba	mg/kg/week	0.0018
	Beryllium	D-Be	mg/kg/week	0.0000444
	Bismuth	D-Bi	mg/kg/week	0.000441
	Boron	D-B	mg/kg/week	0.00526
	Cadmium	D-Cd	mg/kg/week	0.00000444
	Calcium	D-Ca	mg/kg/week	2.72
	Chromium	D-Cr	mg/kg/week	0.000441
	Cobalt	D-Co	mg/kg/week	0.0000907
	Copper	D-Cu	mg/kg/week	0.000449
	Iron	D-Fe	mg/kg/week	0.00887
	Lead	D-Pb	mg/kg/week	0.0000444
	Magnesium	D-Mg	mg/kg/week	0.382
	Manganese	D-Mn	mg/kg/week	0.00897
	Mercury	D-Hg	mg/kg/week	0.00000444
	Molybdenum	D-Mo	mg/kg/week	0.000635
	Nickel	D-Ni	mg/kg/week	0.000223
	Potassium	D-K	mg/kg/week	0.154
	Selenium	D-Se	mg/kg/week	0.000441
	Silver	D-Ag	mg/kg/week	0.0000444
	Sodium	D-Na	mg/kg/week	0.148
	Strontium	D-Sr	mg/kg/week	0.0311
	Thallium	D-Tl	mg/kg/week	0.0000444
	Tin	D-Sn	mg/kg/week	0.000202



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Group	Parameter	Model Symbol	Units	Ore Stockpiles Expected Case: Full Test Duration
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/kg/week	0.0000449
	Vanadium	D-V	mg/kg/week	0.000444
	Zinc	D-Zn	mg/kg/week	0.00177
Total metals and metalloids	Aluminum	T-Al	mg/kg/week	0.0245
	Antimony	T-Sb	mg/kg/week	0.00144
	Arsenic	T-As	mg/kg/week	0.0736
	Barium	T-Ba	mg/kg/week	0.0018
	Beryllium	T-Be	mg/kg/week	0.0000444
	Bismuth	T-Bi	mg/kg/week	0.000441
	Boron	T-B	mg/kg/week	0.00526
	Cadmium	T-Cd	mg/kg/week	0.00000444
	Calcium	T-Ca	mg/kg/week	2.72
	Chromium	T-Cr	mg/kg/week	0.000441
	Cobalt	T-Co	mg/kg/week	0.0000907
	Copper	T-Cu	mg/kg/week	0.000449
	Iron	T-Fe	mg/kg/week	0.00887
	Lead	T-Pb	mg/kg/week	0.0000444
	Magnesium	T-Mg	mg/kg/week	0.382
	Manganese	T-Mn	mg/kg/week	0.00897
	Mercury	T-Hg	mg/kg/week	0.00000444
	Molybdenum	T-Mo	mg/kg/week	0.000635
	Nickel	T-Ni	mg/kg/week	0.000223
	Potassium	T-K	mg/kg/week	0.154
	Selenium	T-Se	mg/kg/week	0.000441
	Silver	T-Ag	mg/kg/week	0.0000444
	Sodium	T-Na	mg/kg/week	0.148
	Strontium	T-Sr	mg/kg/week	0.0311
	Thallium	T-Tl	mg/kg/week	0.0000444
	Tin	T-Sn	mg/kg/week	0.000202
	Uranium	T-U	mg/kg/week	0.0000449
	Vanadium	T-V	mg/kg/week	0.000444
	Zinc	T-Zn	mg/kg/week	0.00177

Notes:

"-" indicates that nitrogen species mass loadings were calculated exclusively from explosive residuals (Section 5.2.1.3).

mg/kg/week = milligram(s) per kilogram per week; as N = expressed as nitrogen



Table C.6 Ore Stockpiles Runoff/Seepage Source Terms: Upper Case Scenario

Group	Parameter	Model Symbol	Units	Ore Stockpiles Upper Case: Full Test Duration
Major anions	Sulphate	SO ₄	mg/kg/week	7.49
	Chloride	Cl	mg/kg/week	0.468
	Fluoride	F	mg/kg/week	0.0526
Nutrients	Phosphorus	P	mg/kg/week	0.00907
	Ammonia (as N)	NH ₃	mg/kg/week	-
	Nitrate (as N)	NO ₃	mg/kg/week	-
	Nitrite (as N)	NO ₂	mg/kg/week	-
Dissolved metals and metalloids	Aluminum	D-Al	mg/kg/week	0.0497
	Antimony	D-Sb	mg/kg/week	0.00597
	Arsenic	D-As	mg/kg/week	0.251
	Barium	D-Ba	mg/kg/week	0.00734
	Beryllium	D-Be	mg/kg/week	0.0000454
	Bismuth	D-Bi	mg/kg/week	0.000454
	Boron	D-B	mg/kg/week	0.00971
	Cadmium	D-Cd	mg/kg/week	0.00000459
	Calcium	D-Ca	mg/kg/week	4.51
	Chromium	D-Cr	mg/kg/week	0.000454
	Cobalt	D-Co	mg/kg/week	0.00018
	Copper	D-Cu	mg/kg/week	0.000902
	Iron	D-Fe	mg/kg/week	0.00917
	Lead	D-Pb	mg/kg/week	0.0000468
	Magnesium	D-Mg	mg/kg/week	1.2
	Manganese	D-Mn	mg/kg/week	0.0248
	Mercury	D-Hg	mg/kg/week	0.00000454
	Molybdenum	D-Mo	mg/kg/week	0.00587
	Nickel	D-Ni	mg/kg/week	0.000234
	Potassium	D-K	mg/kg/week	0.706
	Selenium	D-Se	mg/kg/week	0.000454
	Silver	D-Ag	mg/kg/week	0.0000459
	Sodium	D-Na	mg/kg/week	0.923
	Strontium	D-Sr	mg/kg/week	0.159
	Thallium	D-Tl	mg/kg/week	0.0000454
	Tin	D-Sn	mg/kg/week	0.000807



Group	Parameter	Model Symbol	Units	Ore Stockpiles Upper Case: Full Test Duration
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/kg/week	0.000265
	Vanadium	D-V	mg/kg/week	0.000882
	Zinc	D-Zn	mg/kg/week	0.0055
Total metals and metalloids	Aluminum	T-Al	mg/kg/week	0.0497
	Antimony	T-Sb	mg/kg/week	0.00597
	Arsenic	T-As	mg/kg/week	0.251
	Barium	T-Ba	mg/kg/week	0.00734
	Beryllium	T-Be	mg/kg/week	0.0000454
	Bismuth	T-Bi	mg/kg/week	0.000454
	Boron	T-B	mg/kg/week	0.00971
	Cadmium	T-Cd	mg/kg/week	0.00000459
	Calcium	T-Ca	mg/kg/week	4.51
	Chromium	T-Cr	mg/kg/week	0.000454
	Cobalt	T-Co	mg/kg/week	0.00018
	Copper	T-Cu	mg/kg/week	0.000902
	Iron	T-Fe	mg/kg/week	0.00917
	Lead	T-Pb	mg/kg/week	0.0000468
	Magnesium	T-Mg	mg/kg/week	1.2
	Manganese	T-Mn	mg/kg/week	0.0248
	Mercury	T-Hg	mg/kg/week	0.00000454
	Molybdenum	T-Mo	mg/kg/week	0.00587
	Nickel	T-Ni	mg/kg/week	0.000234
	Potassium	T-K	mg/kg/week	0.706
	Selenium	T-Se	mg/kg/week	0.000454
	Silver	T-Ag	mg/kg/week	0.0000459
	Sodium	T-Na	mg/kg/week	0.923
	Strontium	T-Sr	mg/kg/week	0.159
	Thallium	T-Tl	mg/kg/week	0.0000454
	Tin	T-Sn	mg/kg/week	0.000807
	Uranium	T-U	mg/kg/week	0.000265
	Vanadium	T-V	mg/kg/week	0.000882
	Zinc	T-Zn	mg/kg/week	0.0055

Notes:

"-" indicates that nitrogen species mass loadings were calculated exclusively from explosive residuals (Section 5.2.1.3).

mg/kg/week = milligram(s) per kilogram per week; as N = expressed as nitrogen



Table C.7 Overburden Storage Facility and Cover Runoff/Seepage Source Terms: Expected Case Scenario

Group	Parameter	Model Symbol	Units	OVB SF Expected Case: Full Test Duration	OVB Cover Expected Case: Last Six Weeks
Major anions	Sulphate	SO ₄	mg/kg/week	2.13	0.914
	Chloride	Cl	mg/kg/week	0.228	0.228
	Fluoride	F	mg/kg/week	0.0484	0.0228
Nutrients	Phosphorus	P	mg/kg/week	0.00892	0.00892
	Ammonia (as N) ^a	NH ₃	mg/kg/week	0.00245	0.00245
	Nitrate (as N) ^a	NO ₃	mg/kg/week	0.0221	0.0221
	Nitrite (as N) ^a	NO ₂	mg/kg/week	0.000223	0.000223
Dissolved metals and metalloids	Aluminum	D-Al	mg/kg/week	0.0569	0.037
	Antimony	D-Sb	mg/kg/week	0.00216	0.00101
	Arsenic	D-As	mg/kg/week	0.00531	0.00274
	Barium	D-Ba	mg/kg/week	0.00178	0.00137
	Beryllium	D-Be	mg/kg/week	0.0000446	0.0000446
	Bismuth	D-Bi	mg/kg/week	0.000446	0.000446
	Boron	D-B	mg/kg/week	0.00759	0.00759
	Cadmium	D-Cd	mg/kg/week	0.0000045	0.0000045
	Calcium	D-Ca	mg/kg/week	2.92	2.7
	Chromium	D-Cr	mg/kg/week	0.000446	0.000446
	Cobalt	D-Co	mg/kg/week	0.0000875	0.0000457
	Copper	D-Cu	mg/kg/week	0.00045	0.00045
	Iron	D-Fe	mg/kg/week	0.0271	0.0271
	Lead	D-Pb	mg/kg/week	0.0000856	0.0000683
	Magnesium	D-Mg	mg/kg/week	0.566	0.544
	Manganese	D-Mn	mg/kg/week	0.0115	0.00685
	Mercury	D-Hg	mg/kg/week	0.00000446	0.00000446
	Molybdenum	D-Mo	mg/kg/week	0.00155	0.00101
	Nickel	D-Ni	mg/kg/week	0.000224	0.000224
	Potassium	D-K	mg/kg/week	0.296	0.178
	Selenium	D-Se	mg/kg/week	0.000447	0.000447
	Silver	D-Ag	mg/kg/week	0.0000446	0.0000446
	Sodium	D-Na	mg/kg/week	0.234	0.137
	Strontium	D-Sr	mg/kg/week	0.0221	0.016
	Thallium	D-Tl	mg/kg/week	0.0000446	0.0000446
	Tin	D-Sn	mg/kg/week	0.000178	0.0000914



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Group	Parameter	Model Symbol	Units	OVB SF Expected Case: Full Test Duration	OVB Cover Expected Case: Last Six Weeks
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/kg/week	0.000128	0.0000457
	Vanadium	D-V	mg/kg/week	0.000446	0.000446
	Zinc	D-Zn	mg/kg/week	0.00179	0.00179
Total metals and metalloids	Aluminum	T-Al	mg/kg/week	0.0569	0.037
	Antimony	T-Sb	mg/kg/week	0.00216	0.00101
	Arsenic	T-As	mg/kg/week	0.00531	0.00274
	Barium	T-Ba	mg/kg/week	0.00178	0.00137
	Beryllium	T-Be	mg/kg/week	0.0000446	0.0000446
	Bismuth	T-Bi	mg/kg/week	0.000446	0.000446
	Boron	T-B	mg/kg/week	0.00759	0.00759
	Cadmium	T-Cd	mg/kg/week	0.0000045	0.0000045
	Calcium	T-Ca	mg/kg/week	2.92	2.7
	Chromium	T-Cr	mg/kg/week	0.000446	0.000446
	Cobalt	T-Co	mg/kg/week	0.0000875	0.0000457
	Copper	T-Cu	mg/kg/week	0.00045	0.00045
	Iron	T-Fe	mg/kg/week	0.0271	0.0271
	Lead	T-Pb	mg/kg/week	0.0000856	0.0000683
	Magnesium	T-Mg	mg/kg/week	0.566	0.544
	Manganese	T-Mn	mg/kg/week	0.0115	0.00685
	Mercury	T-Hg	mg/kg/week	0.00000446	0.00000446
	Molybdenum	T-Mo	mg/kg/week	0.00155	0.00101
	Nickel	T-Ni	mg/kg/week	0.000224	0.000224
	Potassium	T-K	mg/kg/week	0.296	0.178
	Selenium	T-Se	mg/kg/week	0.000447	0.000447
	Silver	T-Ag	mg/kg/week	0.0000446	0.0000446
	Sodium	T-Na	mg/kg/week	0.234	0.137
	Strontium	T-Sr	mg/kg/week	0.0221	0.016
	Thallium	T-Tl	mg/kg/week	0.0000446	0.0000446
	Tin	T-Sn	mg/kg/week	0.000178	0.0000914
	Uranium	T-U	mg/kg/week	0.000128	0.0000457
	Vanadium	T-V	mg/kg/week	0.000446	0.000446
	Zinc	T-Zn	mg/kg/week	0.00179	0.00179

Notes:

^a Nitrogen species concentrations in the Project humidity cells are reported as total nitrogen. Leaching rates for ammonia, nitrate, and nitrite were derived from total nitrogen using the proportions recommended by Ferguson and Leask (1988): 11% as ammonia, 87% as nitrate, and 2% as nitrite.

OVB = overburden; SF = storage facility; mg/kg/week = milligram(s) per kilogram per week;
as N = expressed as nitrogen



Table C.8 Overburden Storage Facility and Cover Runoff/Seepage Source Terms: Upper Case Scenario

Group	Parameter	Model Symbol	Units	OVB SF Upper Case: Full Test Duration	OVB Cover Upper Case: Last Six Weeks
Major anions	Sulphate	SO ₄	mg/kg/week	16.2	0.919
	Chloride	Cl	mg/kg/week	10.6	0.23
	Fluoride	F	mg/kg/week	0.117	0.023
Nutrients	Phosphorus	P	mg/kg/week	0.00924	0.00919
	Ammonia (as N) ^a	NH ₃	mg/kg/week	0.00254	0.00253
	Nitrate (as N) ^a	NO ₃	mg/kg/week	0.0201	0.02
	Nitrite (as N) ^a	NO ₂	mg/kg/week	0.000462	0.00046
Dissolved metals and metalloids	Aluminum	D-Al	mg/kg/week	0.0871	0.0406
	Antimony	D-Sb	mg/kg/week	0.00512	0.00109
	Arsenic	D-As	mg/kg/week	0.00807	0.00276
	Barium	D-Ba	mg/kg/week	0.00453	0.00175
	Beryllium	D-Be	mg/kg/week	0.0000462	0.000046
	Bismuth	D-Bi	mg/kg/week	0.000462	0.00046
	Boron	D-B	mg/kg/week	0.0107	0.0107
	Cadmium	D-Cd	mg/kg/week	0.0000114	0.0000046
	Calcium	D-Ca	mg/kg/week	6.85	2.72
	Chromium	D-Cr	mg/kg/week	0.000462	0.00046
	Cobalt	D-Co	mg/kg/week	0.000177	0.000046
	Copper	D-Cu	mg/kg/week	0.000897	0.00046
	Iron	D-Fe	mg/kg/week	0.0559	0.0276
	Lead	D-Pb	mg/kg/week	0.000174	0.0000862
	Magnesium	D-Mg	mg/kg/week	1.22	0.551
	Manganese	D-Mn	mg/kg/week	0.0296	0.00717
	Mercury	D-Hg	mg/kg/week	0.00000462	0.0000046
	Molybdenum	D-Mo	mg/kg/week	0.00443	0.00109
	Nickel	D-Ni	mg/kg/week	0.000234	0.00023
	Potassium	D-K	mg/kg/week	1.22	0.188
	Selenium	D-Se	mg/kg/week	0.000469	0.00046
	Silver	D-Ag	mg/kg/week	0.0000462	0.000046
	Sodium	D-Na	mg/kg/week	7.84	0.158
	Strontium	D-Sr	mg/kg/week	0.0721	0.0165
	Thallium	D-Tl	mg/kg/week	0.0000462	0.000046
	Tin	D-Sn	mg/kg/week	0.000366	0.0000919



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Group	Parameter	Model Symbol	Units	OVB SF Upper Case: Full Test Duration	OVB Cover Upper Case: Last Six Weeks
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/kg/week	0.000281	0.000046
	Vanadium	D-V	mg/kg/week	0.000462	0.00046
	Zinc	D-Zn	mg/kg/week	0.0059	0.00184
Total metals and metalloids	Aluminum	T-Al	mg/kg/week	0.0871	0.0406
	Antimony	T-Sb	mg/kg/week	0.00512	0.00109
	Arsenic	T-As	mg/kg/week	0.00807	0.00276
	Barium	T-Ba	mg/kg/week	0.00453	0.00175
	Beryllium	T-Be	mg/kg/week	0.0000462	0.000046
	Bismuth	T-Bi	mg/kg/week	0.000462	0.00046
	Boron	T-B	mg/kg/week	0.0107	0.0107
	Cadmium	T-Cd	mg/kg/week	0.0000114	0.0000046
	Calcium	T-Ca	mg/kg/week	6.85	2.72
	Chromium	T-Cr	mg/kg/week	0.000462	0.00046
	Cobalt	T-Co	mg/kg/week	0.000177	0.000046
	Copper	T-Cu	mg/kg/week	0.000897	0.00046
	Iron	T-Fe	mg/kg/week	0.0559	0.0276
	Lead	T-Pb	mg/kg/week	0.000174	0.0000862
	Magnesium	T-Mg	mg/kg/week	1.22	0.551
	Manganese	T-Mn	mg/kg/week	0.0296	0.00717
	Mercury	T-Hg	mg/kg/week	0.00000462	0.0000046
	Molybdenum	T-Mo	mg/kg/week	0.00443	0.00109
	Nickel	T-Ni	mg/kg/week	0.000234	0.00023
	Potassium	T-K	mg/kg/week	1.22	0.188
	Selenium	T-Se	mg/kg/week	0.000469	0.00046
	Silver	T-Ag	mg/kg/week	0.0000462	0.000046
	Sodium	T-Na	mg/kg/week	7.84	0.158
	Strontium	T-Sr	mg/kg/week	0.0721	0.0165
	Thallium	T-Tl	mg/kg/week	0.0000462	0.000046
	Tin	T-Sn	mg/kg/week	0.000366	0.0000919
	Uranium	T-U	mg/kg/week	0.000281	0.000046
	Vanadium	T-V	mg/kg/week	0.000462	0.00046
	Zinc	T-Zn	mg/kg/week	0.0059	0.00184

Notes:

^a Nitrogen species concentrations in the Project humidity cells are reported as total nitrogen. Leaching rates for ammonia, nitrate, and nitrite were derived from total nitrogen using the proportions recommended by Ferguson and Leask (1988): 11% as ammonia, 87% as nitrate, and 2% as nitrite.

OVB = overburden; SF = storage facility; mg/kg/week = milligram(s) per kilogram per week; as N = expressed as nitrogen



Table C.9 PAG Waste Rock and Mineralized Material Below Cut-Off Grade Backfill Source Terms: Expected Case Scenario

Group	Parameter	Model Symbol	Units	BSIL Backfill Expected Case: First Six Weeks	BSGI Backfill Expected Case: First Six Weeks	MMBCG Backfill Expected Case: First Six Weeks
Major anions	Sulphate	SO ₄	mg/kg/week	169	262	7.87
	Chloride	Cl	mg/kg/week	0.597	1.33	0.349
	Fluoride	F	mg/kg/week	0.167	0.16	0.0349
Nutrients	Phosphorus	P	mg/kg/week	0.00882	0.00869	0.009
	Ammonia (as N)	NH ₃	mg/kg/week	-	-	-
	Nitrate (as N)	NO ₃	mg/kg/week	-	-	-
	Nitrite (as N)	NO ₂	mg/kg/week	-	-	-
Dissolved metals and metalloids	Aluminum	D-Al	mg/kg/week	0.00628	0.00383	0.049
	Antimony	D-Sb	mg/kg/week	0.00216	0.000489	0.00673
	Arsenic	D-As	mg/kg/week	0.00173	0.00356	0.256
	Barium	D-Ba	mg/kg/week	0.0274	0.032	0.00742
	Beryllium	D-Be	mg/kg/week	0.0000448	0.0000444	0.000045
	Bismuth	D-Bi	mg/kg/week	0.000441	0.000435	0.00045
	Boron	D-B	mg/kg/week	0.00306	0.00225	0.00226
	Cadmium	D-Cd	mg/kg/week	0.0000396	0.0000889	0.0000045
	Calcium	D-Ca	mg/kg/week	20	33.9	4.53
	Chromium	D-Cr	mg/kg/week	0.000441	0.000435	0.00045
	Cobalt	D-Co	mg/kg/week	0.00563	0.0494	0.000172
	Copper	D-Cu	mg/kg/week	0.000448	0.000444	0.000459
	Iron	D-Fe	mg/kg/week	0.00897	0.00888	0.009
	Lead	D-Pb	mg/kg/week	0.0000441	0.0000639	0.000045
	Magnesium	D-Mg	mg/kg/week	25.5	42	1.21
	Manganese	D-Mn	mg/kg/week	0.232	3.54	0.0255
	Mercury	D-Hg	mg/kg/week	0.00000441	0.00000435	0.0000045
	Molybdenum	D-Mo	mg/kg/week	0.0275	0.000563	0.00659
	Nickel	D-Ni	mg/kg/week	0.00705	0.0365	0.000229
	Potassium	D-K	mg/kg/week	1.67	2.17	0.779
	Selenium	D-Se	mg/kg/week	0.00549	0.00342	0.00045
	Silver	D-Ag	mg/kg/week	0.0000441	0.0000435	0.000045
	Sodium	D-Na	mg/kg/week	7	4.47	0.929
	Strontium	D-Sr	mg/kg/week	0.571	0.737	0.161
	Thallium	D-Tl	mg/kg/week	0.0000448	0.0000435	0.000045
	Tin	D-Sn	mg/kg/week	0.000865	0.000305	0.000314



Group	Parameter	Model Symbol	Units	BSIL Backfill Expected Case: First Six Weeks	BSGI Backfill Expected Case: First Six Weeks	MMBCG Backfill Expected Case: First Six Weeks
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/kg/week	0.000224	0.0000444	0.000226
	Vanadium	D-V	mg/kg/week	0.000441	0.000435	0.0009
	Zinc	D-Zn	mg/kg/week	0.00672	0.0148	0.00388
Total metals and metalloids	Aluminum	T-Al	mg/kg/week	0.00628	0.00383	0.049
	Antimony	T-Sb	mg/kg/week	0.00216	0.000489	0.00673
	Arsenic	T-As	mg/kg/week	0.00173	0.00356	0.256
	Barium	T-Ba	mg/kg/week	0.0274	0.032	0.00742
	Beryllium	T-Be	mg/kg/week	0.0000448	0.0000444	0.000045
	Bismuth	T-Bi	mg/kg/week	0.000441	0.000435	0.00045
	Boron	T-B	mg/kg/week	0.00306	0.00225	0.00226
	Cadmium	T-Cd	mg/kg/week	0.0000396	0.0000889	0.0000045
	Calcium	T-Ca	mg/kg/week	20	33.9	4.53
	Chromium	T-Cr	mg/kg/week	0.000441	0.000435	0.00045
	Cobalt	T-Co	mg/kg/week	0.00563	0.0494	0.000172
	Copper	T-Cu	mg/kg/week	0.000448	0.000444	0.000459
	Iron	T-Fe	mg/kg/week	0.00897	0.00888	0.009
	Lead	T-Pb	mg/kg/week	0.0000441	0.0000639	0.000045
	Magnesium	T-Mg	mg/kg/week	25.5	42	1.21
	Manganese	T-Mn	mg/kg/week	0.232	3.54	0.0255
	Mercury	T-Hg	mg/kg/week	0.00000441	0.00000435	0.0000045
	Molybdenum	T-Mo	mg/kg/week	0.0275	0.000563	0.00659
	Nickel	T-Ni	mg/kg/week	0.00705	0.0365	0.000229
	Potassium	T-K	mg/kg/week	1.67	2.17	0.779
	Selenium	T-Se	mg/kg/week	0.00549	0.00342	0.00045
	Silver	T-Ag	mg/kg/week	0.0000441	0.0000435	0.000045
	Sodium	T-Na	mg/kg/week	7	4.47	0.929
	Strontium	T-Sr	mg/kg/week	0.571	0.737	0.161
	Thallium	T-Tl	mg/kg/week	0.0000448	0.0000435	0.000045
	Tin	T-Sn	mg/kg/week	0.000865	0.000305	0.000314
	Uranium	T-U	mg/kg/week	0.000224	0.0000444	0.000226
	Vanadium	T-V	mg/kg/week	0.000441	0.000435	0.0009
	Zinc	T-Zn	mg/kg/week	0.00672	0.0148	0.00388

Notes:
“-” indicates that nitrogen species mass loadings were calculated exclusively from explosive residuals (Section 5.2.1.3).
BSIL = black siltstone; BSGI = interbedded black siltstone and greywacke; MMBCG = mineralized material below cut-off grade; mg/kg/week = milligram(s) per kilogram per week; as N = expressed as nitrogen



Table C.10 PAG Waste Rock and Mineralized Material Below Cut-Off Grade Backfill Source Terms: Upper Case Scenario

Group	Parameter	Model Symbol	Units	BSIL Backfill Upper Case: First Six Weeks	BSGI Backfill Upper Case: First Six Weeks	MMBCG Backfill Upper Case: First Six Weeks
Major anions	Sulphate	SO ₄	mg/kg/week	923	297	13.5
	Chloride	Cl	mg/kg/week	0.693	1.33	1.07
	Fluoride	F	mg/kg/week	0.367	0.16	0.107
Nutrients	Phosphorus	P	mg/kg/week	0.0173	0.00874	0.00927
	Ammonia (as N)	NH ₃	mg/kg/week	-	-	-
	Nitrate (as N)	NO ₃	mg/kg/week	-	-	-
	Nitrite (as N)	NO ₂	mg/kg/week	-	-	-
Dissolved metals and metalloids	Aluminum	D-Al	mg/kg/week	22.6	0.0109	0.0507
	Antimony	D-Sb	mg/kg/week	0.00481	0.000925	0.00793
	Arsenic	D-As	mg/kg/week	0.00428	0.00356	0.296
	Barium	D-Ba	mg/kg/week	0.0274	0.032	0.0112
	Beryllium	D-Be	mg/kg/week	0.0107	0.000306	0.0000463
	Bismuth	D-Bi	mg/kg/week	0.000884	0.000437	0.000463
	Boron	D-B	mg/kg/week	0.00306	0.00315	0.00517
	Cadmium	D-Cd	mg/kg/week	0.0453	0.000398	0.00000463
	Calcium	D-Ca	mg/kg/week	138	67.1	5.52
	Chromium	D-Cr	mg/kg/week	0.0317	0.000437	0.000463
	Cobalt	D-Co	mg/kg/week	0.691	0.203	0.000185
	Copper	D-Cu	mg/kg/week	0.692	0.00919	0.000675
	Iron	D-Fe	mg/kg/week	207	0.0742	0.00927
	Lead	D-Pb	mg/kg/week	0.0018	0.000645	0.0000463
	Magnesium	D-Mg	mg/kg/week	25.5	42	1.47
	Manganese	D-Mn	mg/kg/week	17.4	8.01	0.0304
	Mercury	D-Hg	mg/kg/week	0.00000441	0.00000437	0.00000463
	Molybdenum	D-Mo	mg/kg/week	0.0275	0.000563	0.01
	Nickel	D-Ni	mg/kg/week	3.42	0.215	0.000558
	Potassium	D-K	mg/kg/week	1.67	2.17	1.28
	Selenium	D-Se	mg/kg/week	0.0182	0.00655	0.000463
	Silver	D-Ag	mg/kg/week	0.0000884	0.0000437	0.0000463
	Sodium	D-Na	mg/kg/week	7	4.47	2
	Strontium	D-Sr	mg/kg/week	1.6	0.874	0.218
	Thallium	D-Tl	mg/kg/week	0.0000884	0.0000927	0.0000463
	Tin	D-Sn	mg/kg/week	0.000865	0.000305	0.000371



Group	Parameter	Model Symbol	Units	BSIL Backfill Upper Case: First Six Weeks	BSGI Backfill Upper Case: First Six Weeks	MMBCG Backfill Upper Case: First Six Weeks
Dissolved metals and metalloids (cont'd)	Uranium	D-U	mg/kg/week	0.302	0.0007	0.000275
	Vanadium	D-V	mg/kg/week	0.0199	0.000437	0.000927
	Zinc	D-Zn	mg/kg/week	2.99	0.0389	0.0055
Total metals and metalloids	Aluminum	T-Al	mg/kg/week	22.6	0.0109	0.0507
	Antimony	T-Sb	mg/kg/week	0.00481	0.000925	0.00793
	Arsenic	T-As	mg/kg/week	0.00428	0.00356	0.296
	Barium	T-Ba	mg/kg/week	0.0274	0.032	0.0112
	Beryllium	T-Be	mg/kg/week	0.0107	0.000306	0.0000463
	Bismuth	T-Bi	mg/kg/week	0.000884	0.000437	0.000463
	Boron	T-B	mg/kg/week	0.00306	0.00315	0.00517
	Cadmium	T-Cd	mg/kg/week	0.0453	0.000398	0.00000463
	Calcium	T-Ca	mg/kg/week	138	67.1	5.52
	Chromium	T-Cr	mg/kg/week	0.0317	0.000437	0.000463
	Cobalt	T-Co	mg/kg/week	0.691	0.203	0.000185
	Copper	T-Cu	mg/kg/week	0.692	0.00919	0.000675
	Iron	T-Fe	mg/kg/week	207	0.0742	0.00927
	Lead	T-Pb	mg/kg/week	0.0018	0.000645	0.0000463
	Magnesium	T-Mg	mg/kg/week	25.5	42	1.47
	Manganese	T-Mn	mg/kg/week	17.4	8.01	0.0304
	Mercury	T-Hg	mg/kg/week	0.00000441	0.00000437	0.00000463
	Molybdenum	T-Mo	mg/kg/week	0.0275	0.000563	0.01
	Nickel	T-Ni	mg/kg/week	3.42	0.215	0.000558
	Potassium	T-K	mg/kg/week	1.67	2.17	1.28
	Selenium	T-Se	mg/kg/week	0.0182	0.00655	0.000463
	Silver	T-Ag	mg/kg/week	0.0000884	0.0000437	0.0000463
	Sodium	T-Na	mg/kg/week	7	4.47	2
	Strontium	T-Sr	mg/kg/week	1.6	0.874	0.218
	Thallium	T-Tl	mg/kg/week	0.0000884	0.0000927	0.0000463
	Tin	T-Sn	mg/kg/week	0.000865	0.000305	0.000371
	Uranium	T-U	mg/kg/week	0.302	0.0007	0.000275
	Vanadium	T-V	mg/kg/week	0.0199	0.000437	0.000927
	Zinc	T-Zn	mg/kg/week	2.99	0.0389	0.0055

Notes:
“-” indicates that nitrogen species mass loadings were calculated exclusively from explosive residuals (Section 5.2.1.3).
BSIL = black siltstone; BSGI = interbedded black siltstone and greywacke; MMBCG = mineralized material below cut-off grade; mg/kg/week = milligram(s) per kilogram per week; as N = expressed as nitrogen



Appendix D Water Quality Model Inputs: Material Balances, Pit Metrics, and Production Schedules



Table D.1 Mine Year 1 Construction Requirements for Pads

Constructed Pad	Tonnage
Industrial Complex	554,464
RoM Pad	5,934,519
<i>Total</i>	<i>6,488,983</i>

Notes:

RoM = run-of-mine

Table D.2 Cumulative Material Balance for the Waste Rock Storage Facility

Mine Year	1	2	3	4	5	6	7
BSGI (t)	-	-	-	-	-	-	-
BSIL (t)	-	-	-	-	-	-	-
SDG (t)	-	467,308	1,179,237	2,979,493	5,185,516	6,462,212	6,528,189
SIL (t)	1,565,271	11,038,751	19,397,055	28,785,094	37,957,447	44,124,209	45,505,608
<i>Total</i>	<i>1,565,271</i>	<i>11,506,059</i>	<i>20,576,291</i>	<i>31,764,587</i>	<i>43,142,963</i>	<i>50,586,420</i>	<i>52,033,797</i>

Notes:

BSGI = interbedded black siltstone and greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone;
t = tonne(s); "-" = zero tonnes

Table D.3 Cumulative Material Balance for the Overburden Storage Facility

Mine Year	1	2	3	4	5	6	7
OVB (t)	1,084,945	1,996,814	4,109,053	4,446,992	4,446,992	4,446,992	4,446,992

Notes:

OVB = overburden; t = tonne(s)

Table D.4 Overburden Cover Metrics and Material Requirements

Site Feature	Area (ha)	Area (m ²)	Overburden Cover Volume (m ³)	Overburden Cover Tonnage
WRSF	80.89	808,927	242,678	322,762
Industrial Complex	36.3	363,000	108,900	144,837
RoM Pad	25.49	254,887	76,466	101,700

Notes:

ha = hectare(s); m² = square metre(s); m³ = cubic metre(s); WRSF = waste rock storage facility; RoM = run-of-mine



Table D.5 Cumulative Material Balance for the Ore Stockpiles

Mine Year	1	2	3	4	5	6	7
MMBCG (t)	1,058,564	1,719,092	2,399,392	3,063,502	3,976,165	4,574,827	4,889,332
MGO (t)	126,121	274,929	463,290	514,888	391,706	162,578	-
MGO sorter rejects (t)	-	-	-	-	92,080	250,403	349,538
HGO sorter rejects (t)	52,137	142,488	336,606	122,770	-	-	-
RoM (t)	14,219	14,219	14,219	14,219	14,219	14,219	14,219

Notes:

MMBCG = mineralized material below cut-off grade; MGO = mid-grade ore; HGO = high-grade ore;
RoM = run-of-mine; t = tonne(s); "-" = zero tonnes

Table D.6 Cumulative Material Balance for Iceberg Pit Backfill

Mine Year	1	2	3	4	5	6	7	8
BSGI (t)	-	-	-	-	47,117	47,117	47,117	47,117
BSIL (t)	-	-	-	216,048	277,878	277,878	277,878	277,878
MMBCG (t)	-	-	-	-	-	-	-	488,933
Total	-	-	-	216,048	324,995	324,995	324,995	813,928

Notes:

BSGI = interbedded black siltstone and greywacke; BSIL = black siltstone;
MMBCG = mineralized material below cut-off grade; t = tonne(s); "-" = zero tonnes

Table D.7 Cumulative Material Balance for the Keats Pit Backfill

Mine Year	1	2	3	4	5	6	7	8
BSGI(t)	-	-	-	-	-	-	-	-
BSIL (t)	-	-	-	-	-	-	-	-
MMBCG (t)	-	-	-	-	-	-	-	4,400,399
Total	-	-	-	-	-	-	-	4,400,399

Notes:

BSGI = interbedded black siltstone and greywacke; BSIL = black siltstone;
MMBCG = mineralized material below cut-off grade; t = tonne(s); "-" = zero tonnes



Table D.8 Exposed Surface Area by Lithology: Keats Pit

Mine Year	Quarter	Total Surface Area (m ²)	BSIL	BSGI	SDG	SIL	Total
1	Q1	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
1	Q2	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
1	Q3	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
1	Q4	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
2	Q1	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
2	Q2	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
2	Q3	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
2	Q4	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
3	Q1	314,227	0.0%	0.0%	14.1%	85.9%	100.0%
3	Q2	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
3	Q3	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
3	Q4	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
4	Q1	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
4	Q2	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
4	Q3	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
4	Q4	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
5	Q1	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
5	Q2	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
5	Q3	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
5	Q4	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
6	Q1	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
6	Q2	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
6	Q3	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
6	Q4	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
7	Q1	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
7	Q2	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
7	Q3	398,379	1.7%	0.0%	12.4%	85.9%	100.0%
7	Q4	398,379	1.7%	0.0%	12.4%	85.9%	100.0%

Notes:

BSGI = interbedded black siltstone and greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone;
m² = square metre(s); % = percent



Table D.9 Exposed Surface Area by Lithology: Iceberg Pit

Mine Year	Total Surface Area (m ²)	BSIL	BSGI	SDG	SIL	Total
1	-	-	-	-	-	-
2	209,083	0.0%	0.0%	1.2%	98.8%	100.0%
3	209,083	0.0%	0.0%	1.2%	98.8%	100.0%
4	209,083	0.0%	0.0%	1.2%	98.8%	100.0%
5	209,083	0.0%	0.0%	1.2%	98.8%	100.0%
6	209,083	0.0%	0.0%	1.2%	98.8%	100.0%
7	209,083	0.0%	0.0%	1.2%	98.8%	100.0%

Notes:

BSGI = interbedded black siltstone and greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone;
m² = square metre(s); % = percent

Table D.10 Exposed Surface Area by Lithology: Jackpot Pit

Mine Year	Total Surface Area (m ²)	BSIL	BSGI	SDG	SIL	Total
1	50,640	0.0%	0.0%	1.2%	98.8%	100.0%
2	50,640	0.0%	0.0%	1.2%	98.8%	100.0%
3	50,640	0.0%	0.0%	1.2%	98.8%	100.0%
4	50,640	0.0%	0.0%	1.2%	98.8%	100.0%
5	50,640	0.0%	0.0%	1.2%	98.8%	100.0%
6	50,640	0.0%	0.0%	1.2%	98.8%	100.0%
7	50,640	0.0%	0.0%	1.2%	98.8%	100.0%

Notes:

BSGI = interbedded black siltstone and greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone;
m² = square metre(s); % = percent



Table D.11 Exposed Surface Area by Lithology: Dome Pit

Year	Total Surface Area (m ²)	BSIL	BSGI	SDG	SIL	Total
1	18,891	0.0%	0.0%	15.7%	84.3%	100.0%
2	18,891	0.0%	0.0%	15.7%	84.3%	100.0%
3	18,891	0.0%	0.0%	15.7%	84.3%	100.0%
4	18,891	0.0%	0.0%	15.7%	84.3%	100.0%
5	18,891	0.0%	0.0%	15.7%	84.3%	100.0%
6	18,891	0.0%	0.0%	15.7%	84.3%	100.0%
7	18,891	0.0%	0.0%	15.7%	84.3%	100.0%

Notes:

BSGI = interbedded black siltstone and greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; m² = square metre(s); % = percent



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Appendix D Water Quality Model Inputs: Material Balances, Pit Metrics, and Production Schedules
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Table D.12 Ore and Waste Rock Production Schedule

Mine Year	1	2	3	4	5	6	7
Ore							
MMBCG (t)	1,058,564	660,528	680,301	664,110	912,663	598,662	314,505
MGO (t)	126,121	148,808	188,361	51,597	60,978	87,519	35,691
HGO (t)	179,887	345,851	449,619	41,663	40,650	97,177	52,184
<i>Total</i>	<i>1,364,571</i>	<i>1,155,187</i>	<i>1,318,280</i>	<i>757,371</i>	<i>1,014,291</i>	<i>783,358</i>	<i>402,380</i>
Waste Rock							
BSGI (t)	-	-	-	-	47,117	-	-
BSIL (t)	-	-	-	216,048	61,830	-	-
SDG (t)	756,400	467,308	711,929	1,800,256	2,206,023	1,276,695	65,978
SIL (t)	7,297,854	9,473,480	8,358,304	9,388,040	9,172,352	6,166,762	1,381,399
<i>Total</i>	<i>8,054,254</i>	<i>9,940,789</i>	<i>9,070,232</i>	<i>11,404,344</i>	<i>11,487,322</i>	<i>7,443,458</i>	<i>1,447,377</i>

Notes:

MMBCG = mineralized material below cut-off grade; MGO = mid-grade ore; HGO = high-grade ore; BSGI = interbedded black siltstone and greywacke; BSIL = black siltstone; SDG = greywacke; SIL = siltstone; t = tonne(s); "-" = zero tonnes



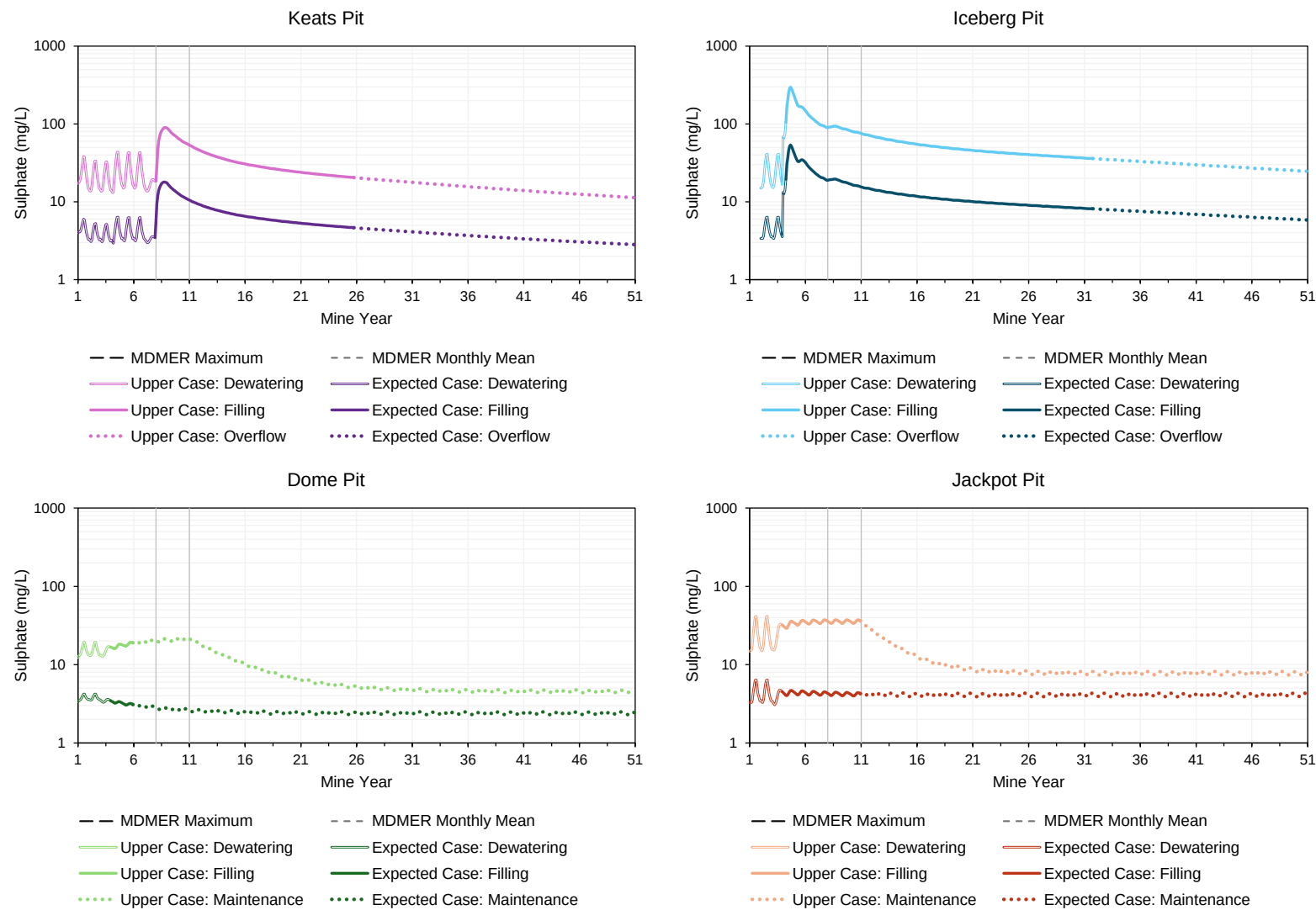
Appendix E Water Quality Model Results: Tables

Submitted as a separate file



Appendix F Water Quality Model Results: Open Pit Time-Series Plots

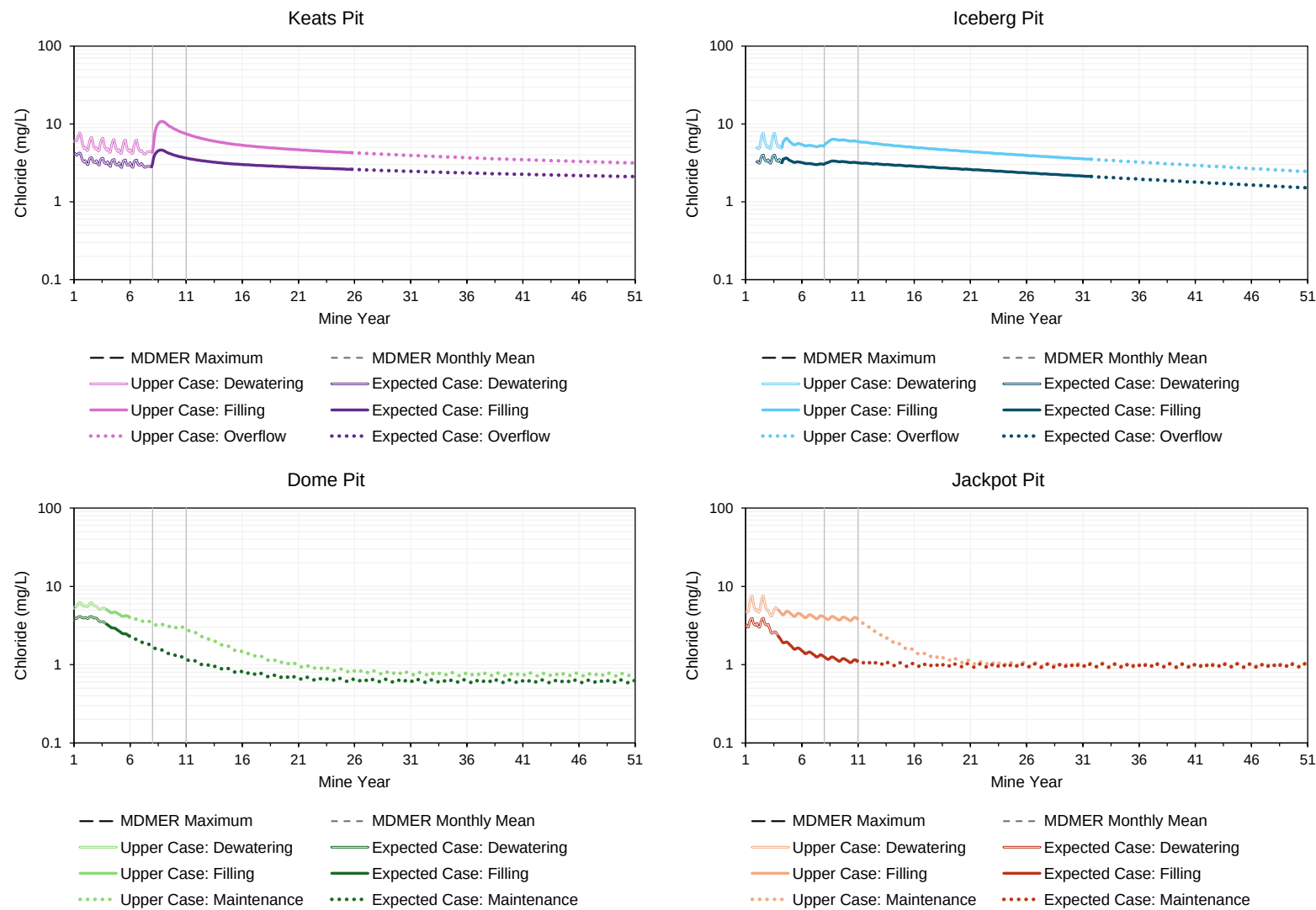




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.1 Open Pit Water Quality Time-Series Plots for Sulphate (mg/L) Under Climate Normal Conditions

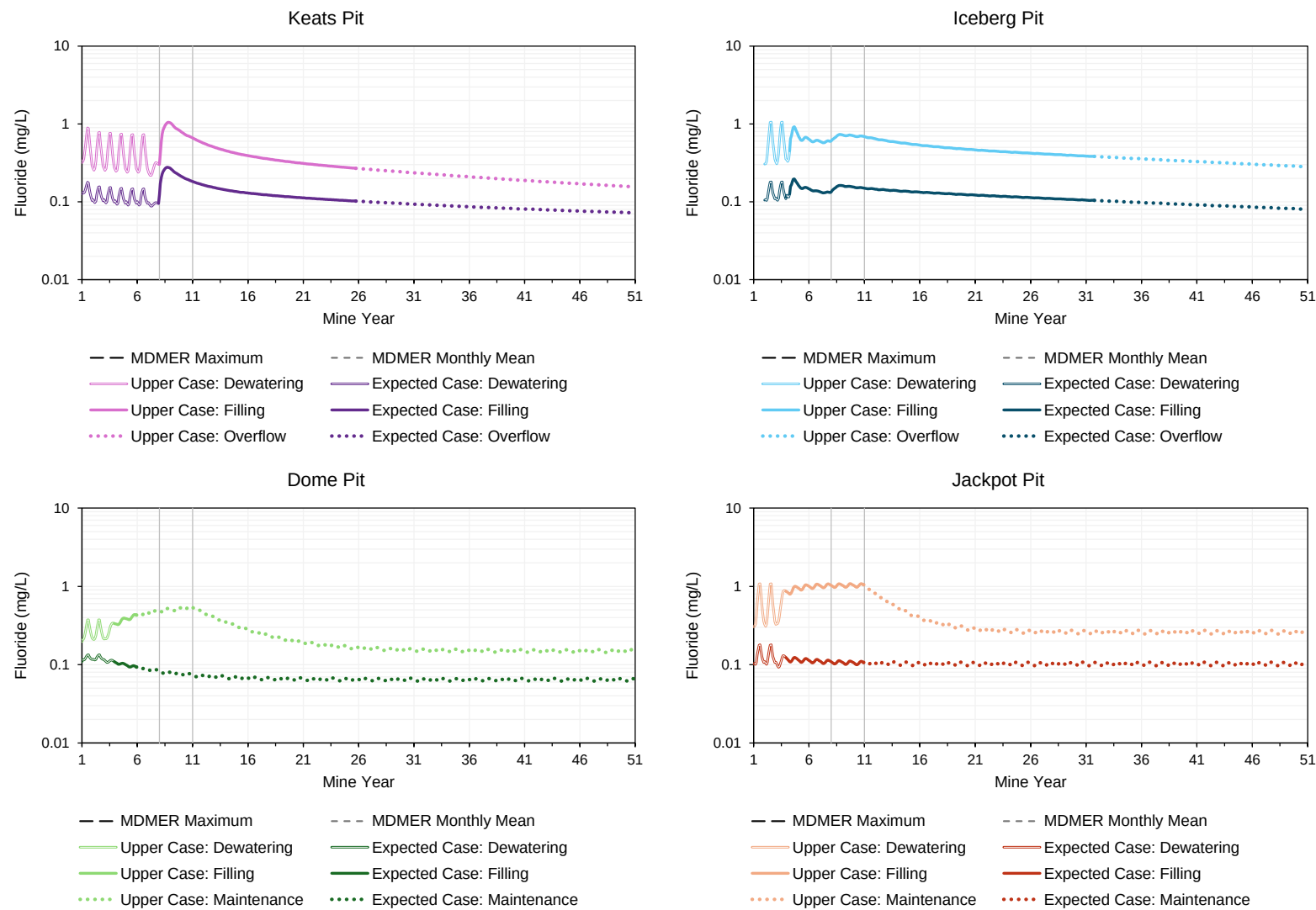




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.2 Open Pit Water Quality Time-Series Plots for Chloride (mg/L) Under Climate Normal Conditions

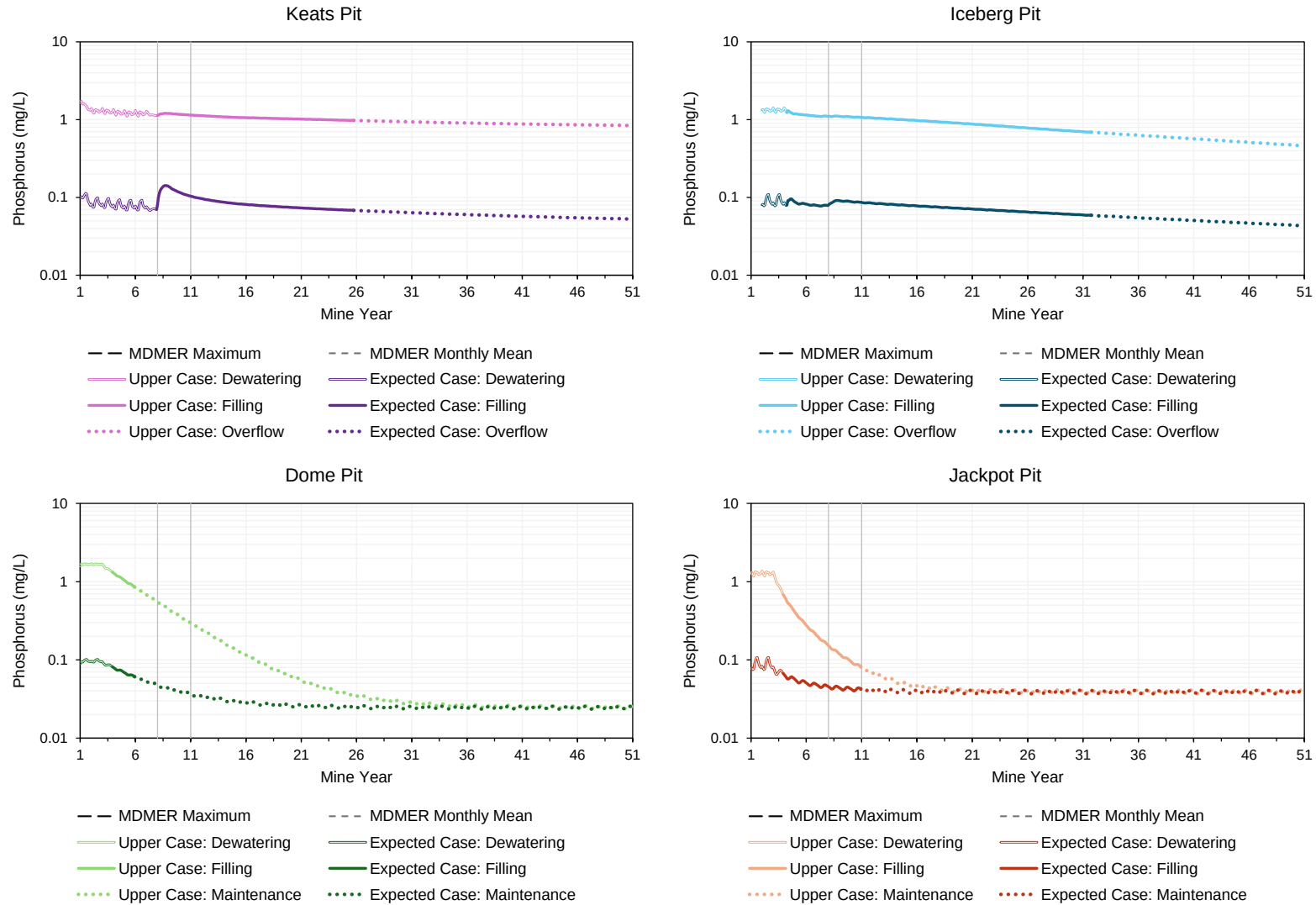




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.3 Open Pit Water Quality Time-Series Plots for Fluoride (mg/L) Under Climate Normal Conditions



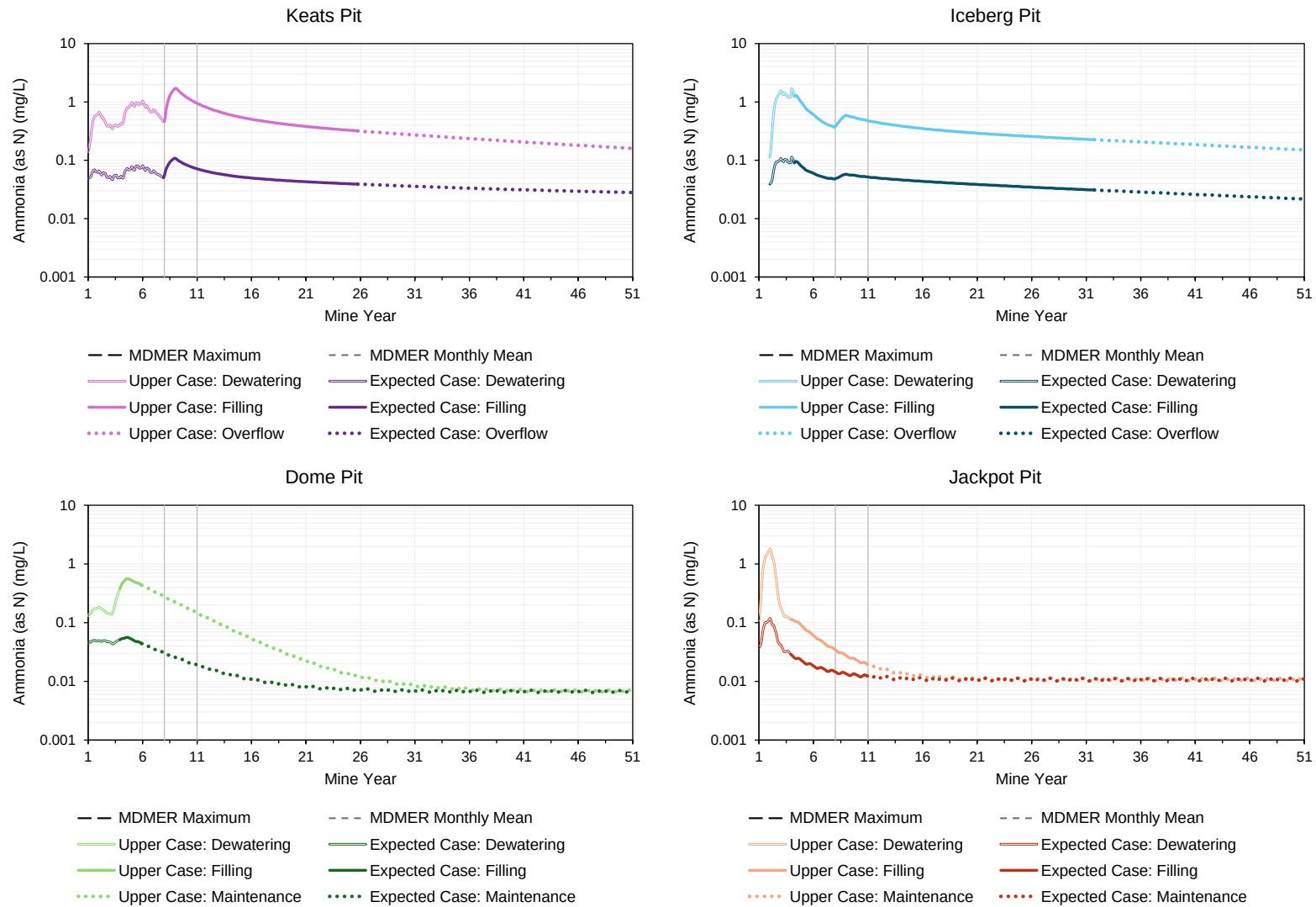


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.4 Open Pit Water Quality Time-Series Plots for Phosphorus (mg/L) Under Climate Normal Conditions

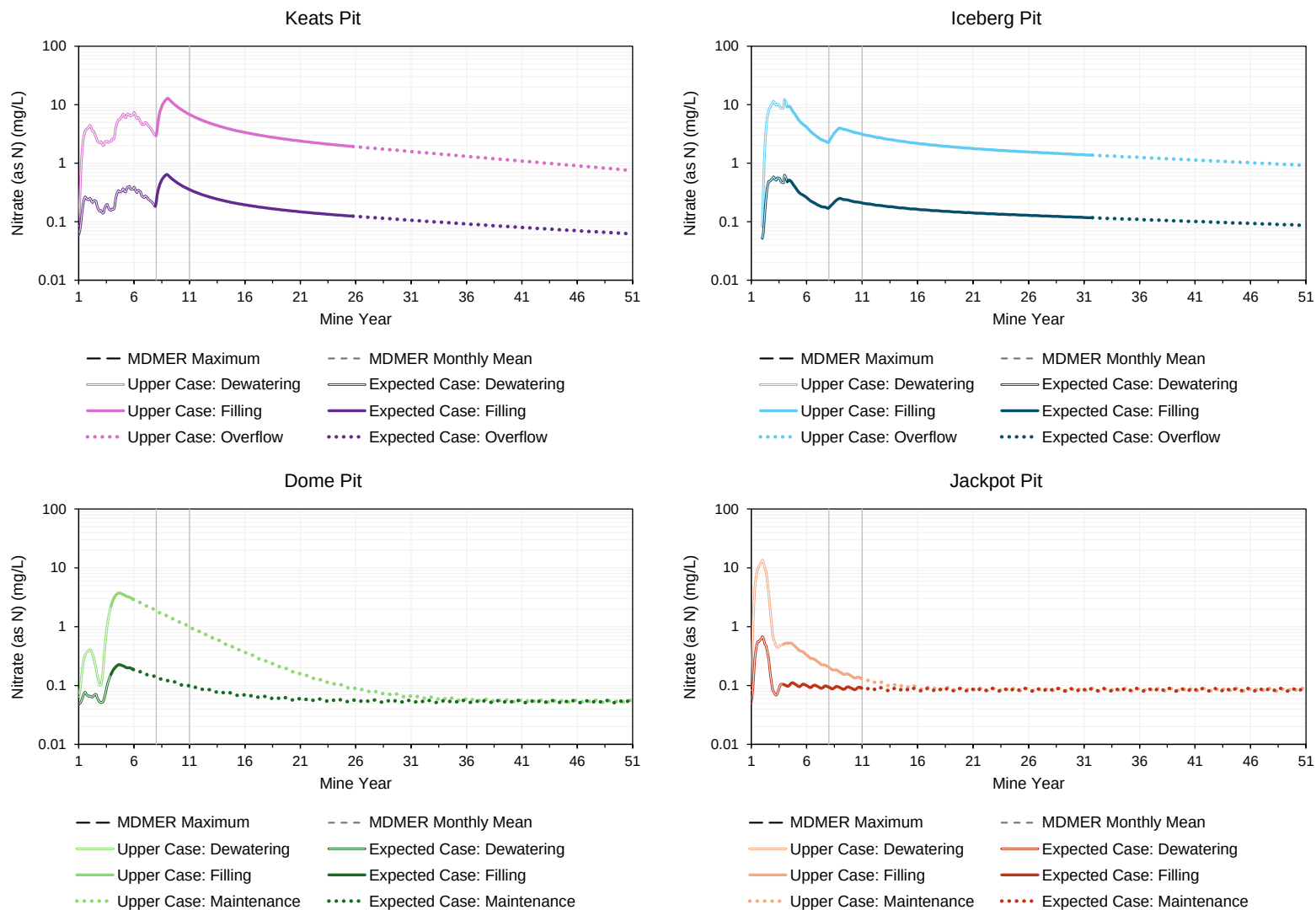




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

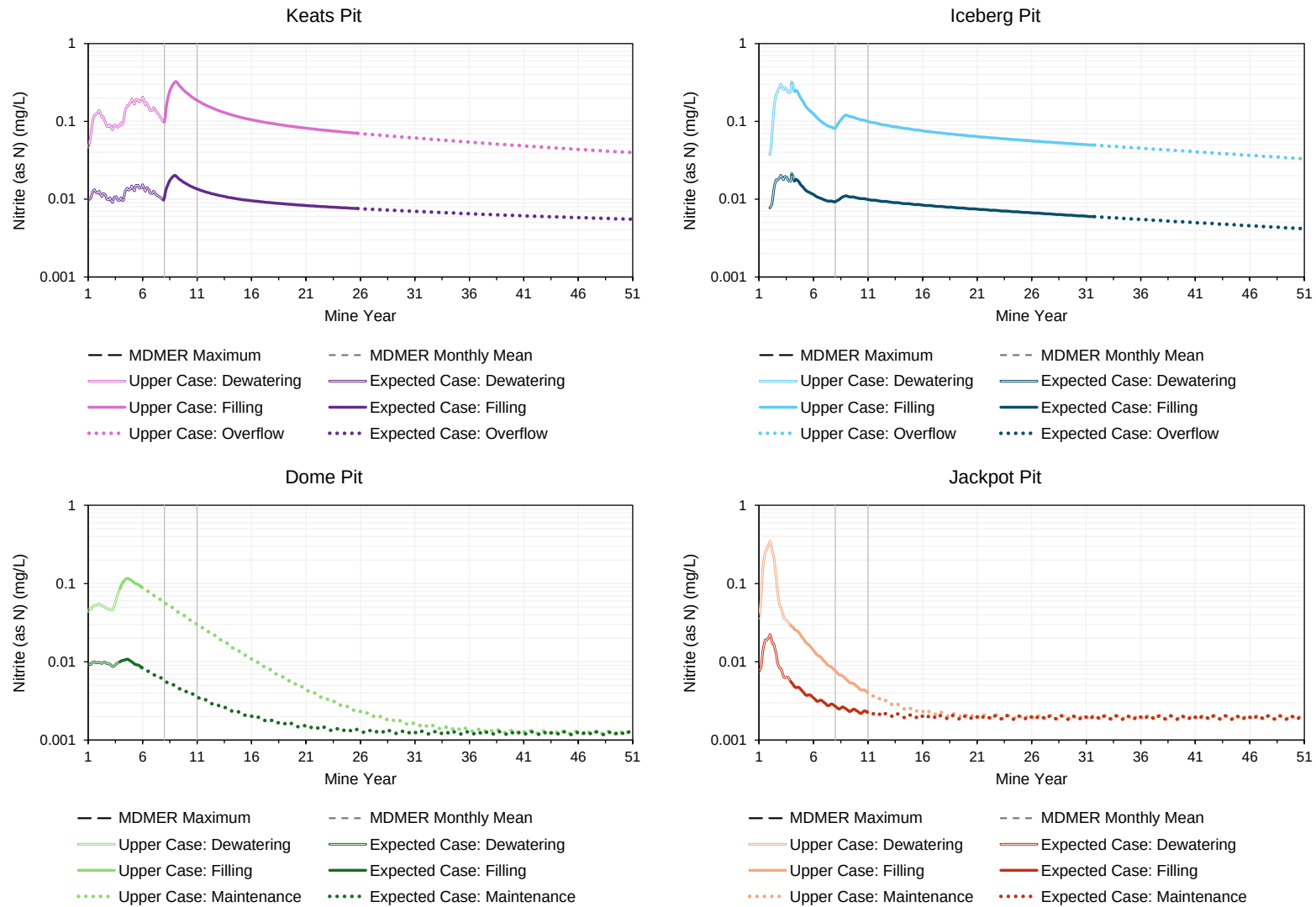
Figure F.5 Open Pit Water Quality Time-Series Plots for Ammonia (as N) (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.6 Open Pit Water Quality Time-Series Plots for Nitrate (as N) (mg/L) Under Climate Normal Conditions

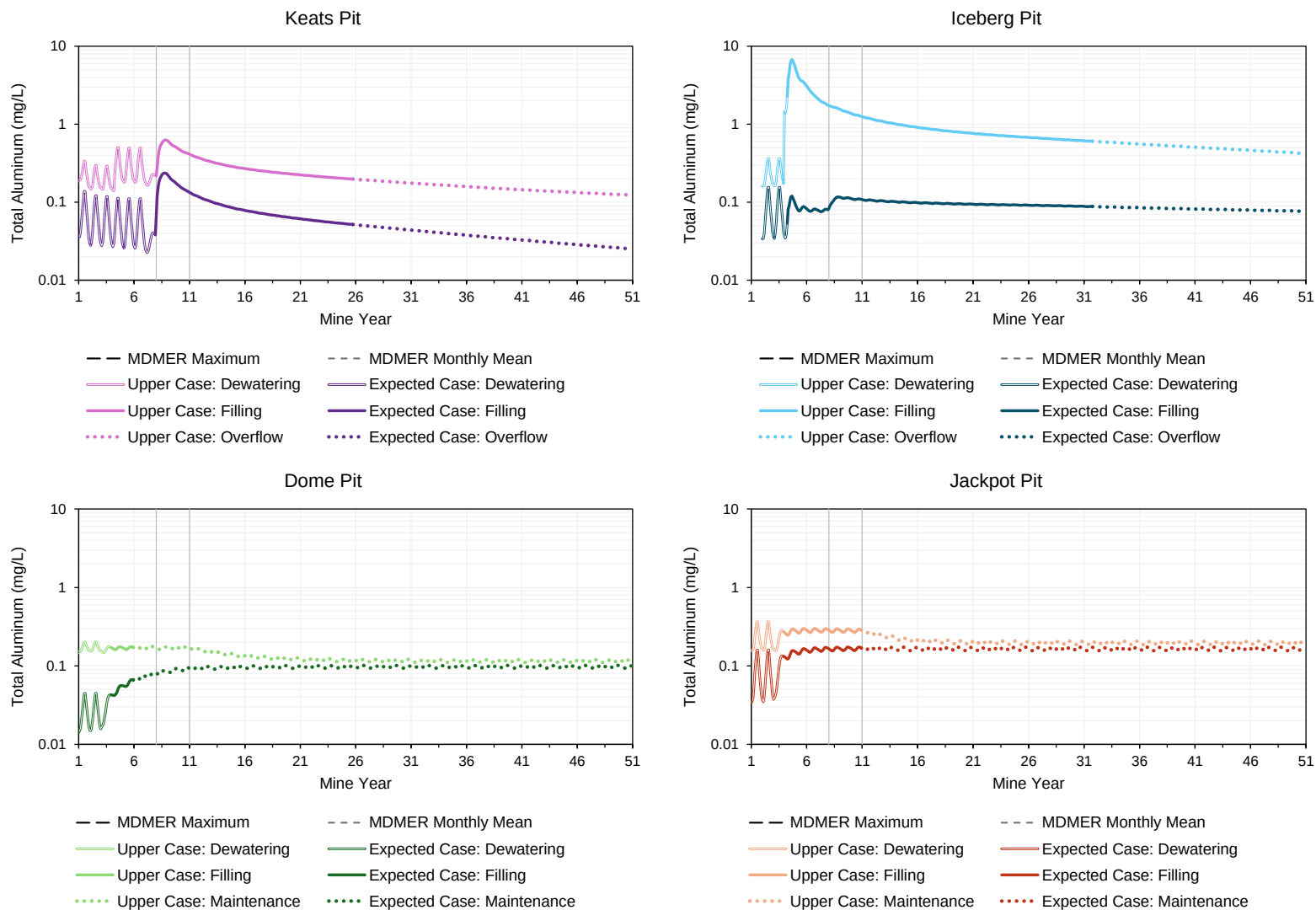


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.7 Open Pit Water Quality Time-Series Plots for Nitrite (as N) (mg/L) Under Climate Normal Conditions

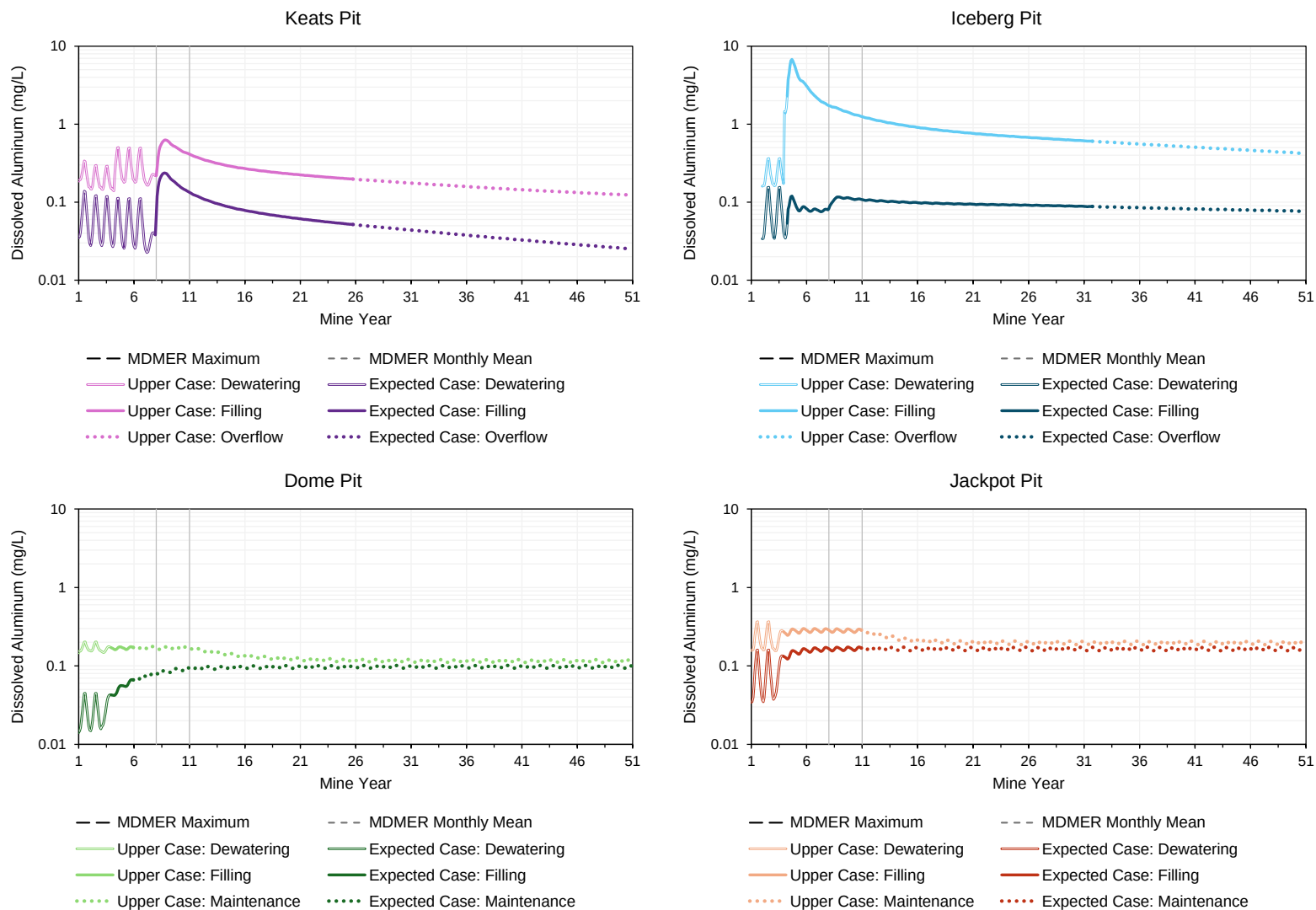




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.8 Open Pit Water Quality Time-Series Plots for Total Aluminum (mg/L) Under Climate Normal Conditions

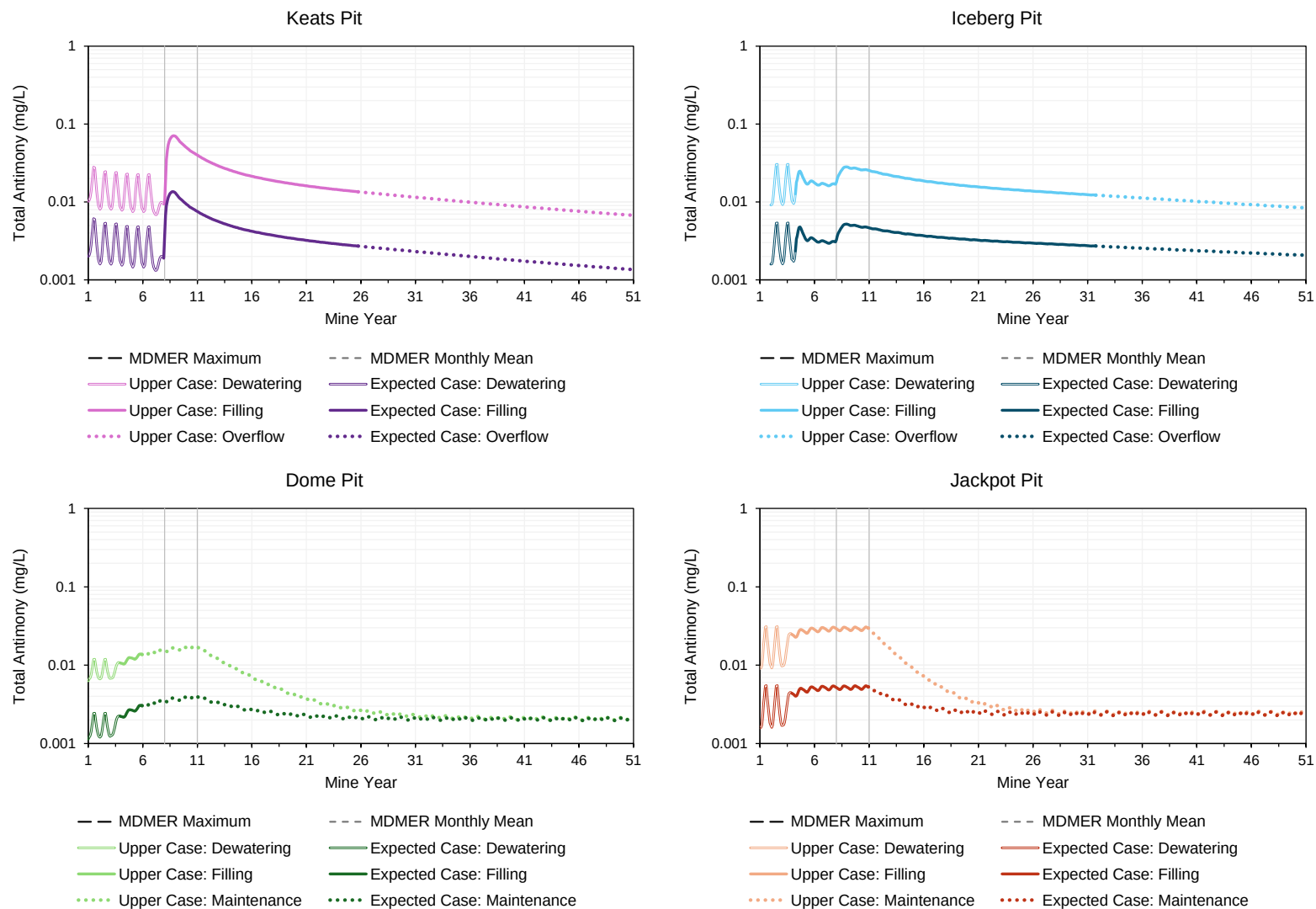


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.9 Open Pit Water Quality Time-Series Plots for Dissolved Aluminum (mg/L) Under Climate Normal Conditions

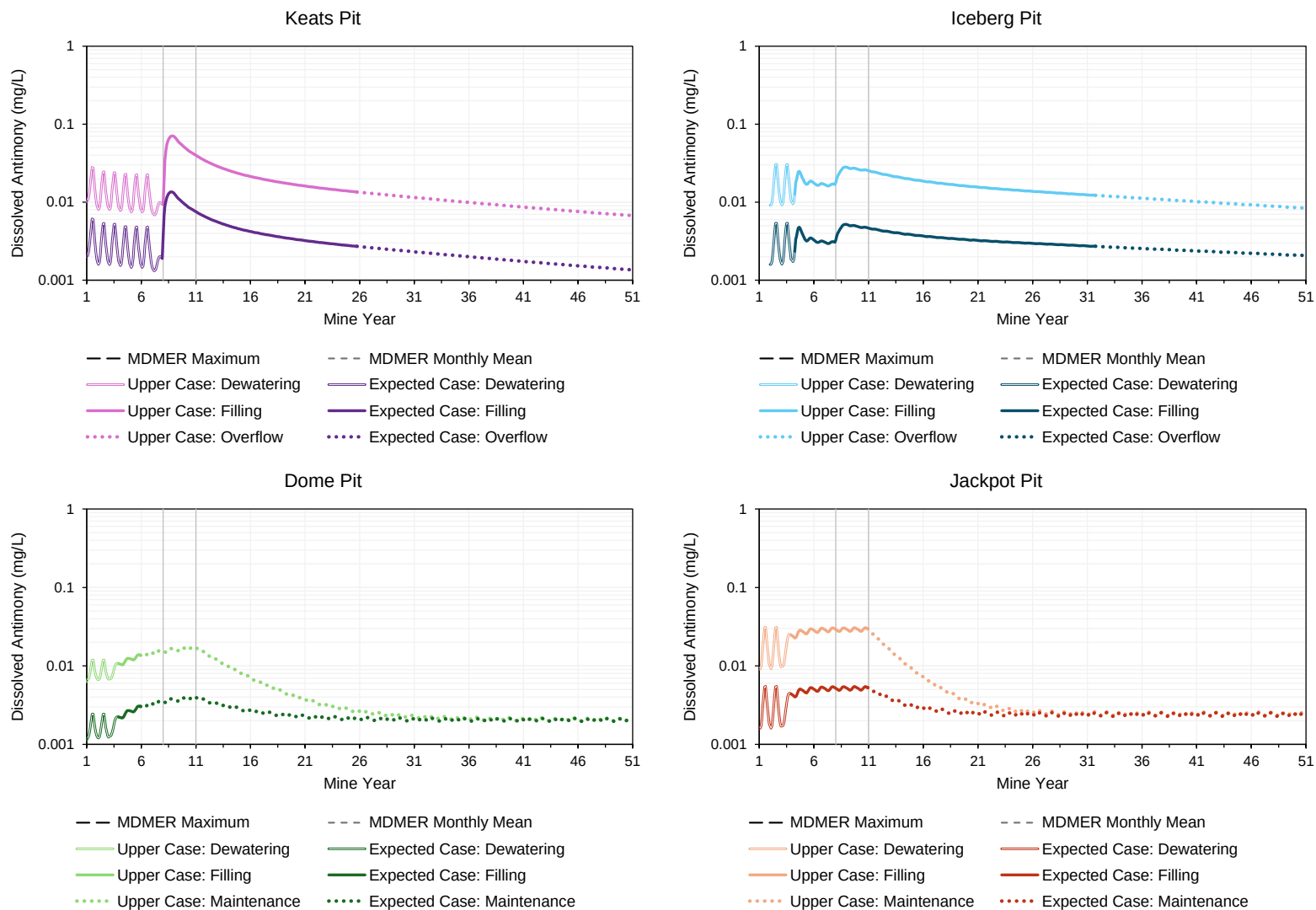




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

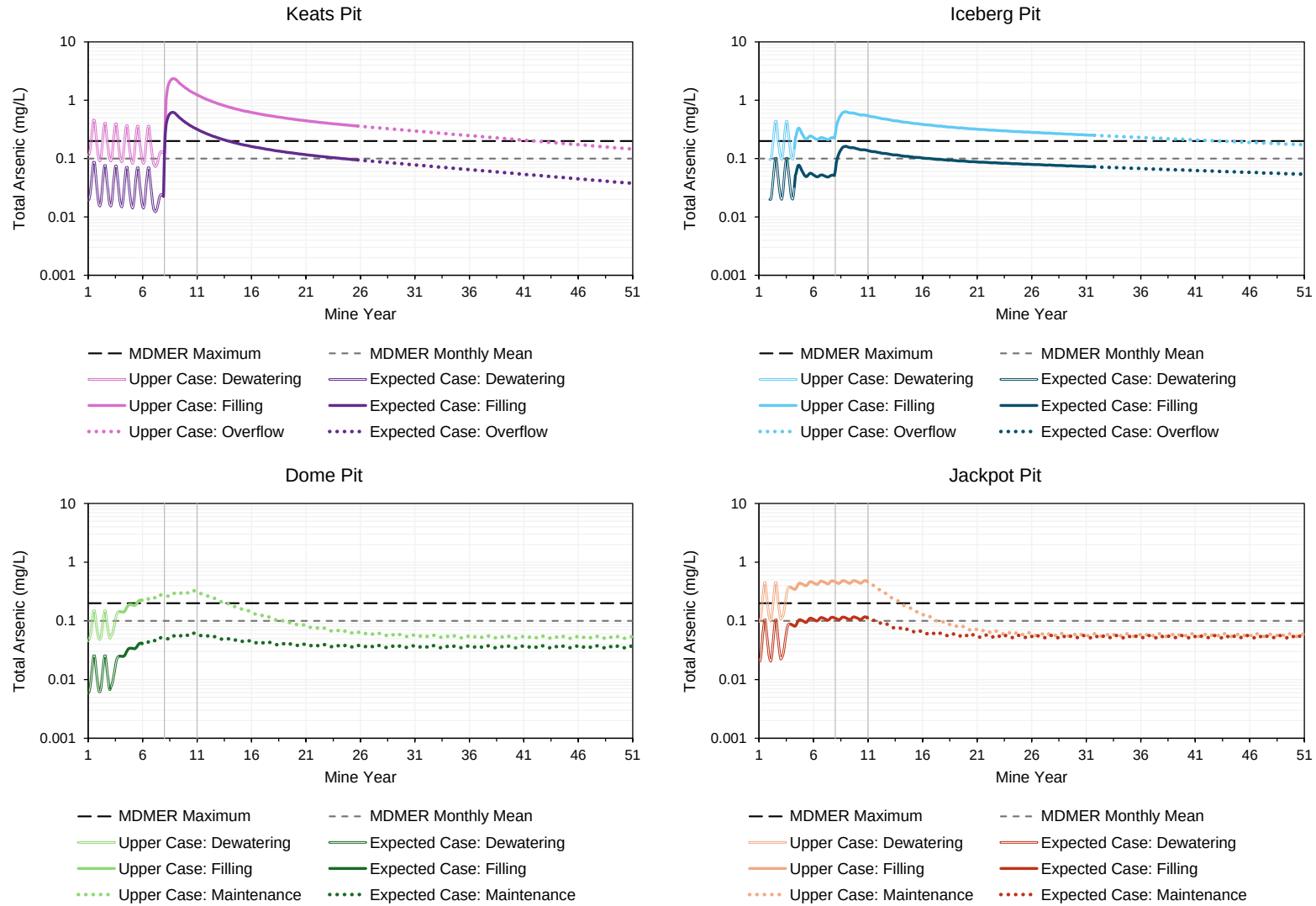
Figure F.10 Open Pit Water Quality Time-Series Plots for Total Antimony (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

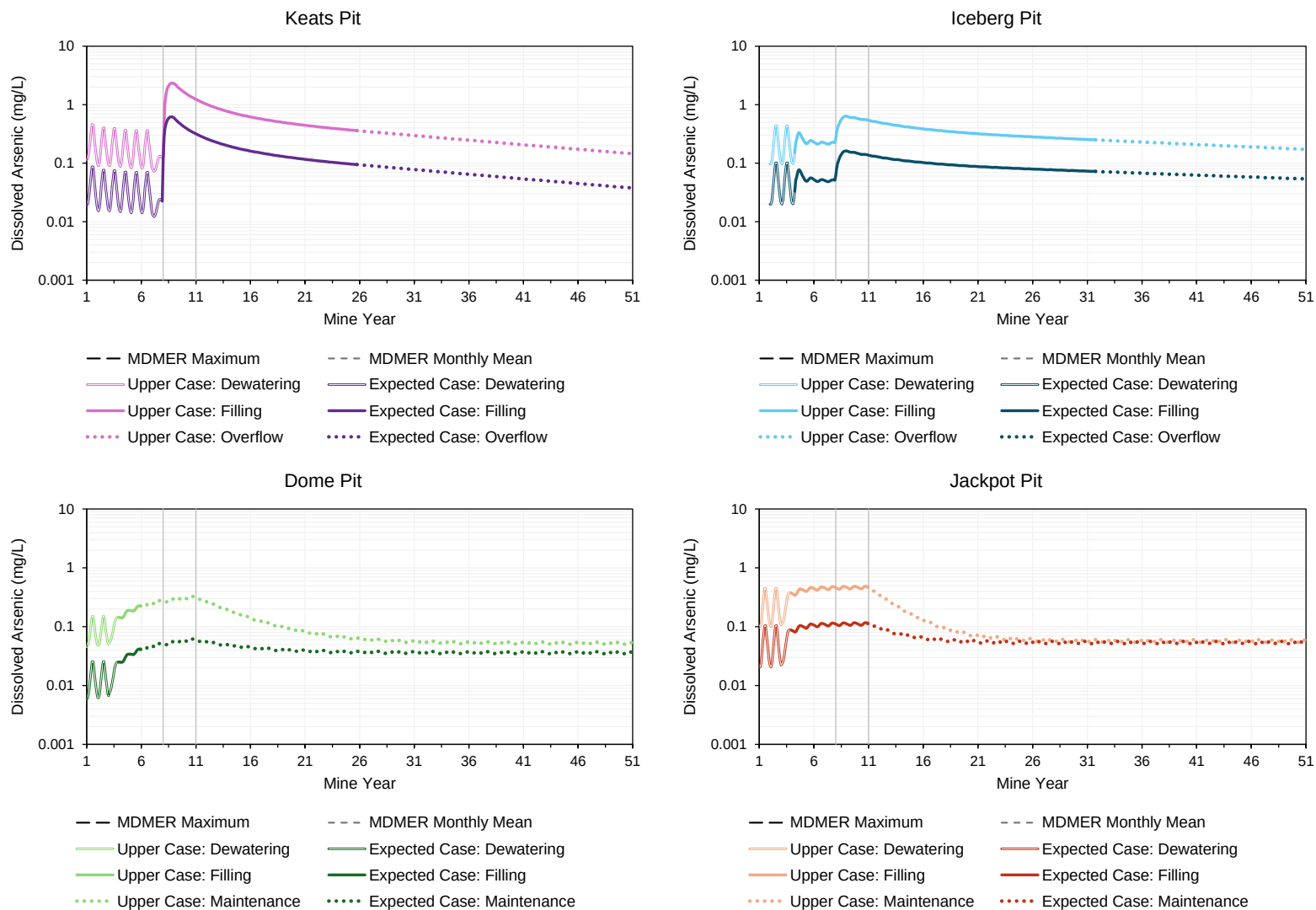
Figure F.11 Open Pit Water Quality Time-Series Plots for Dissolved Antimony (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.12 Open Pit Water Quality Time-Series Plots for Total Arsenic (mg/L) Under Climate Normal Conditions

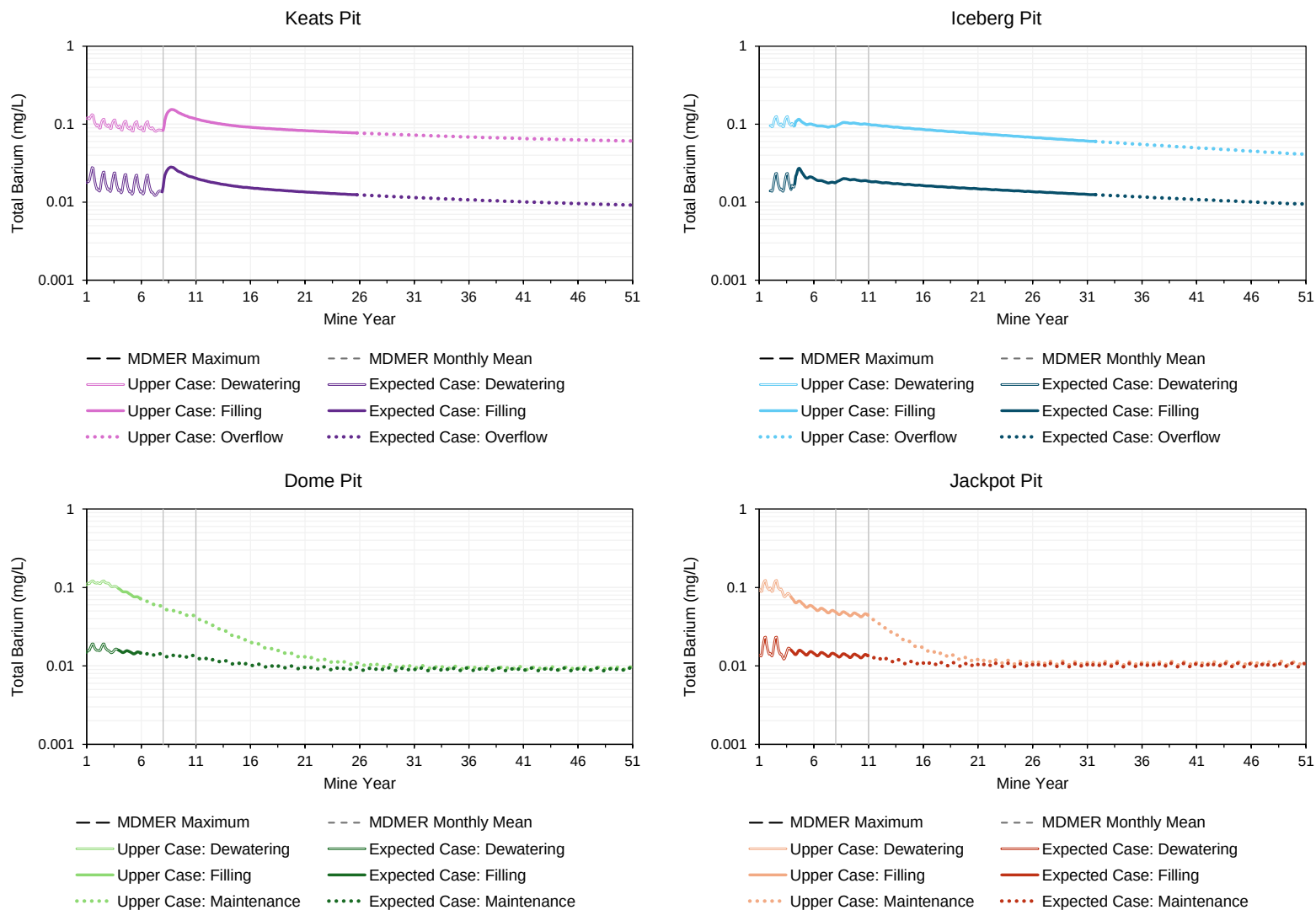


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.13 Open Pit Water Quality Time-Series Plots for Dissolved Arsenic (mg/L) Under Climate Normal Conditions

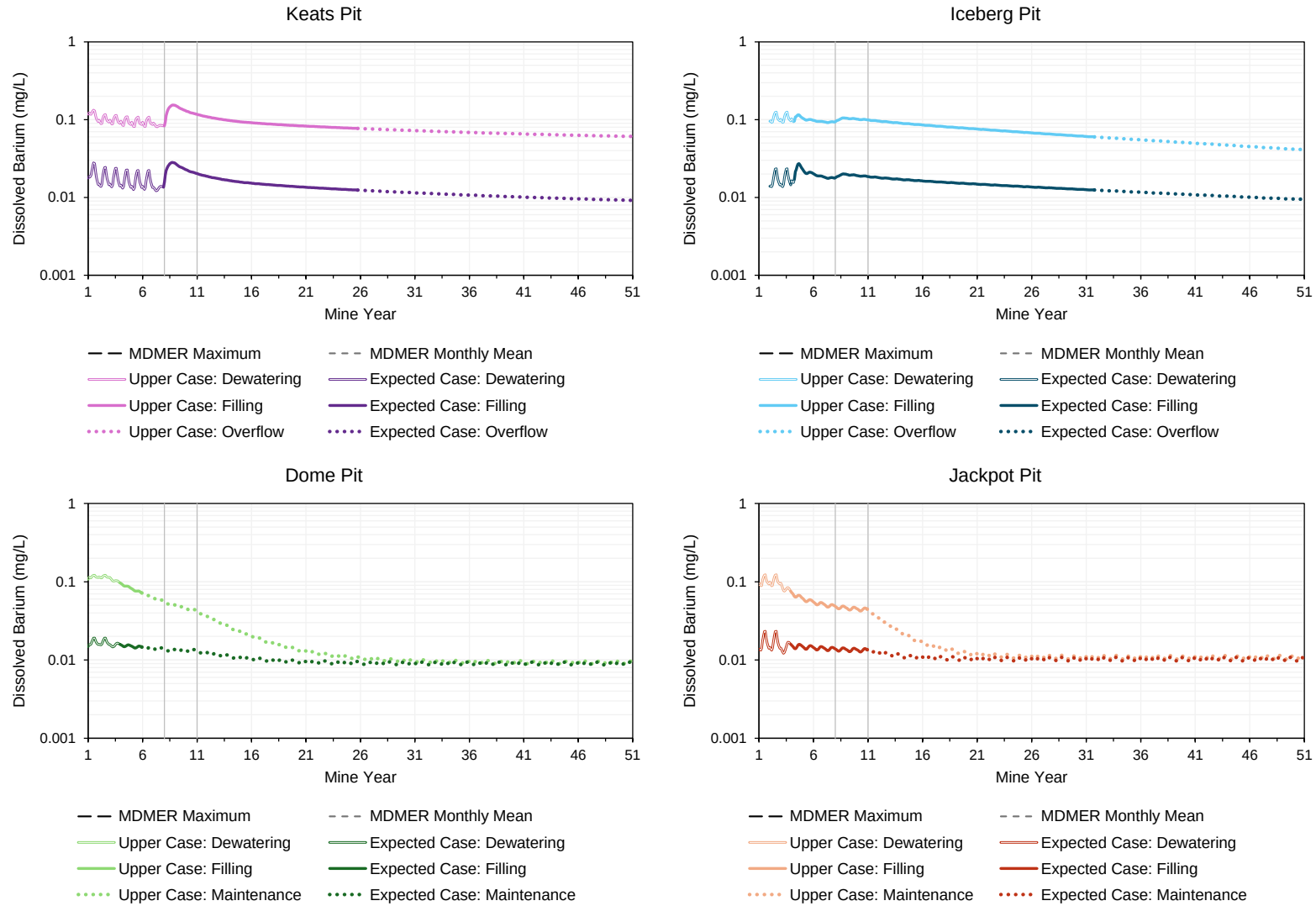




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

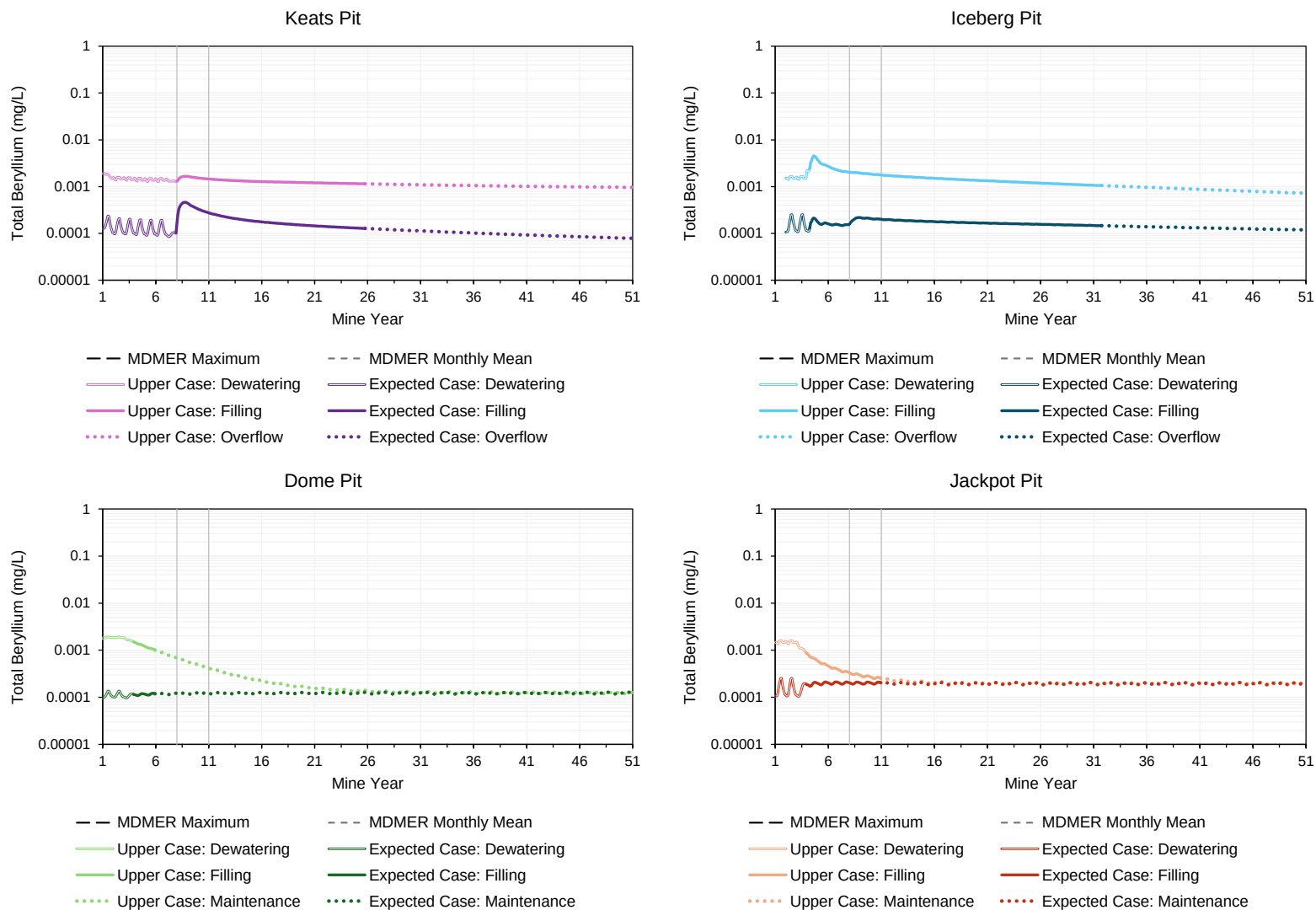
Figure F.14 Open Pit Water Quality Time-Series Plots for Total Barium (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.15 Open Pit Water Quality Time-Series Plots for Dissolved Barium (mg/L) Under Climate Normal Conditions

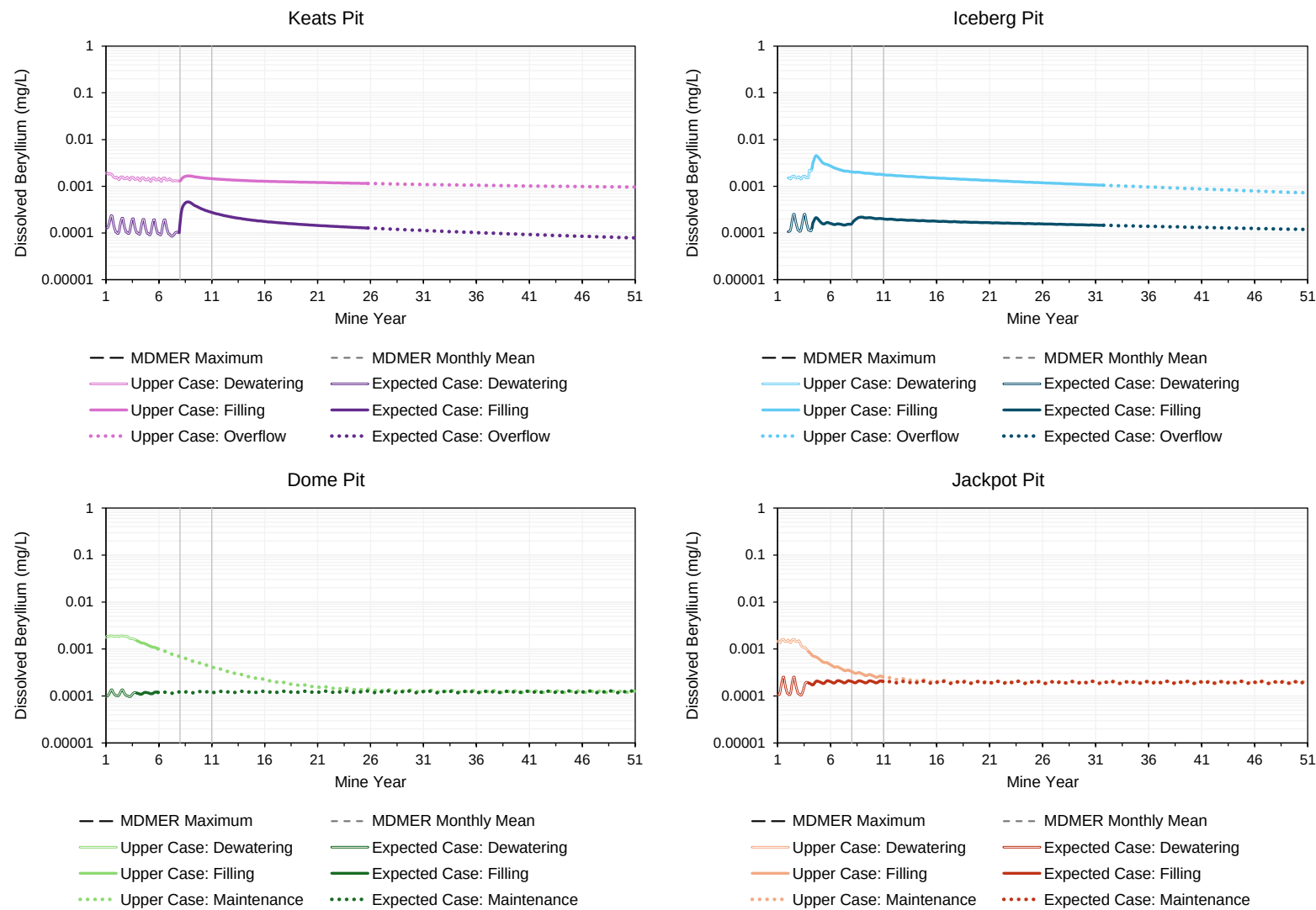


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.16 Open Pit Water Quality Time-Series Plots for Total Beryllium (mg/L) Under Climate Normal Conditions

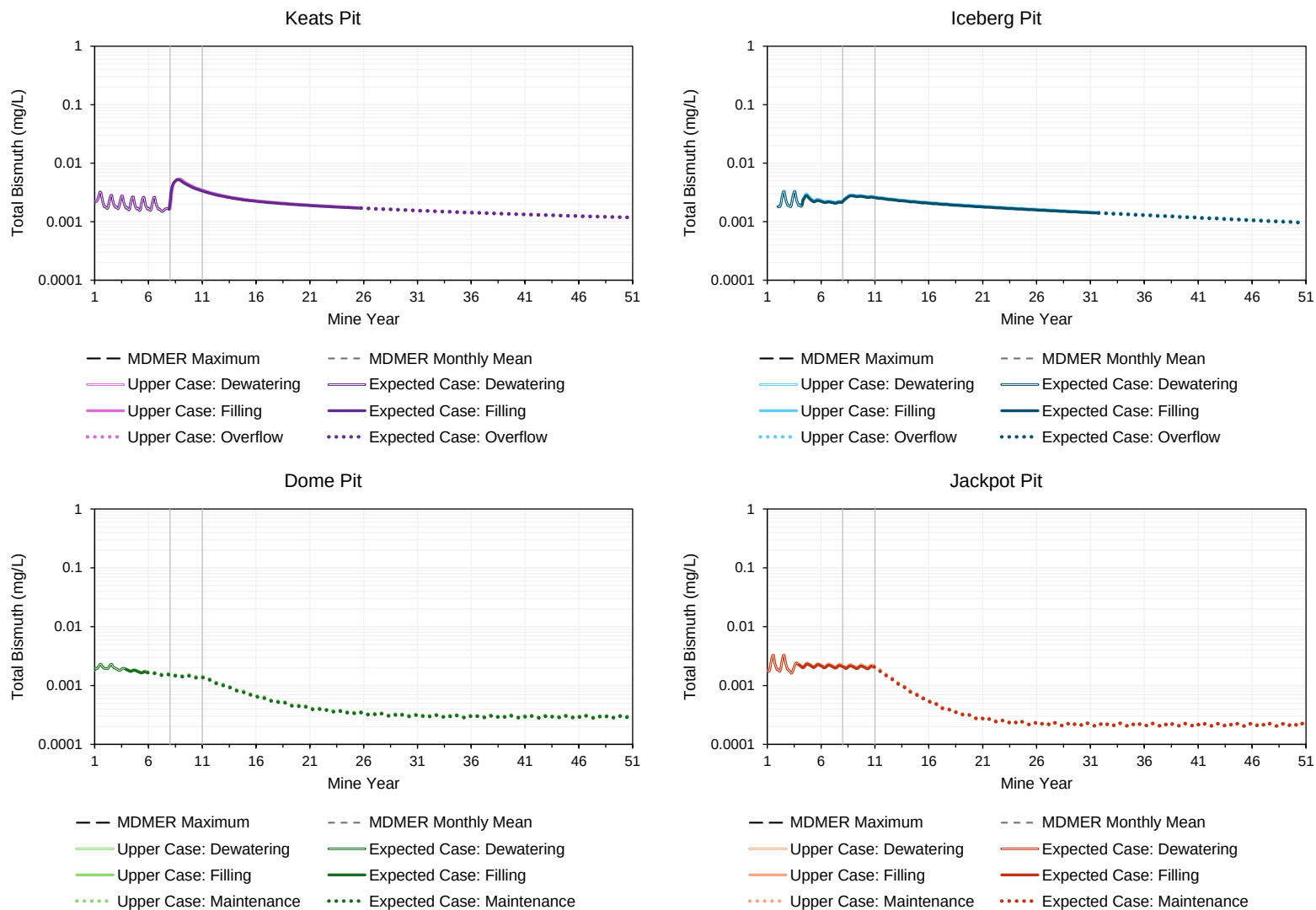




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.17 Open Pit Water Quality Time-Series Plots for Dissolved Beryllium (mg/L) Under Climate Normal Conditions



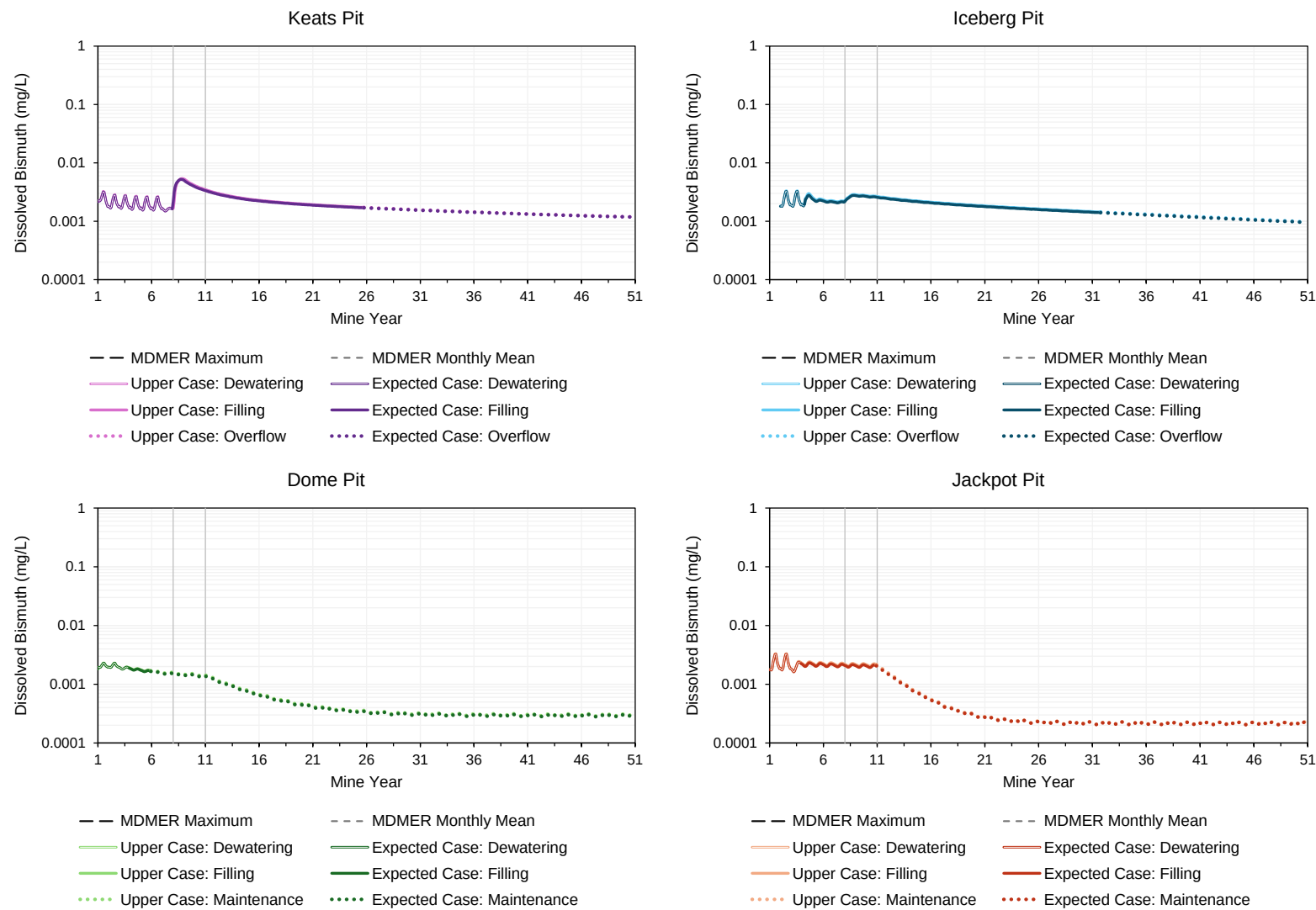


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.18 Open Pit Water Quality Time-Series Plots for Total Bismuth (mg/L) Under Climate Normal Conditions

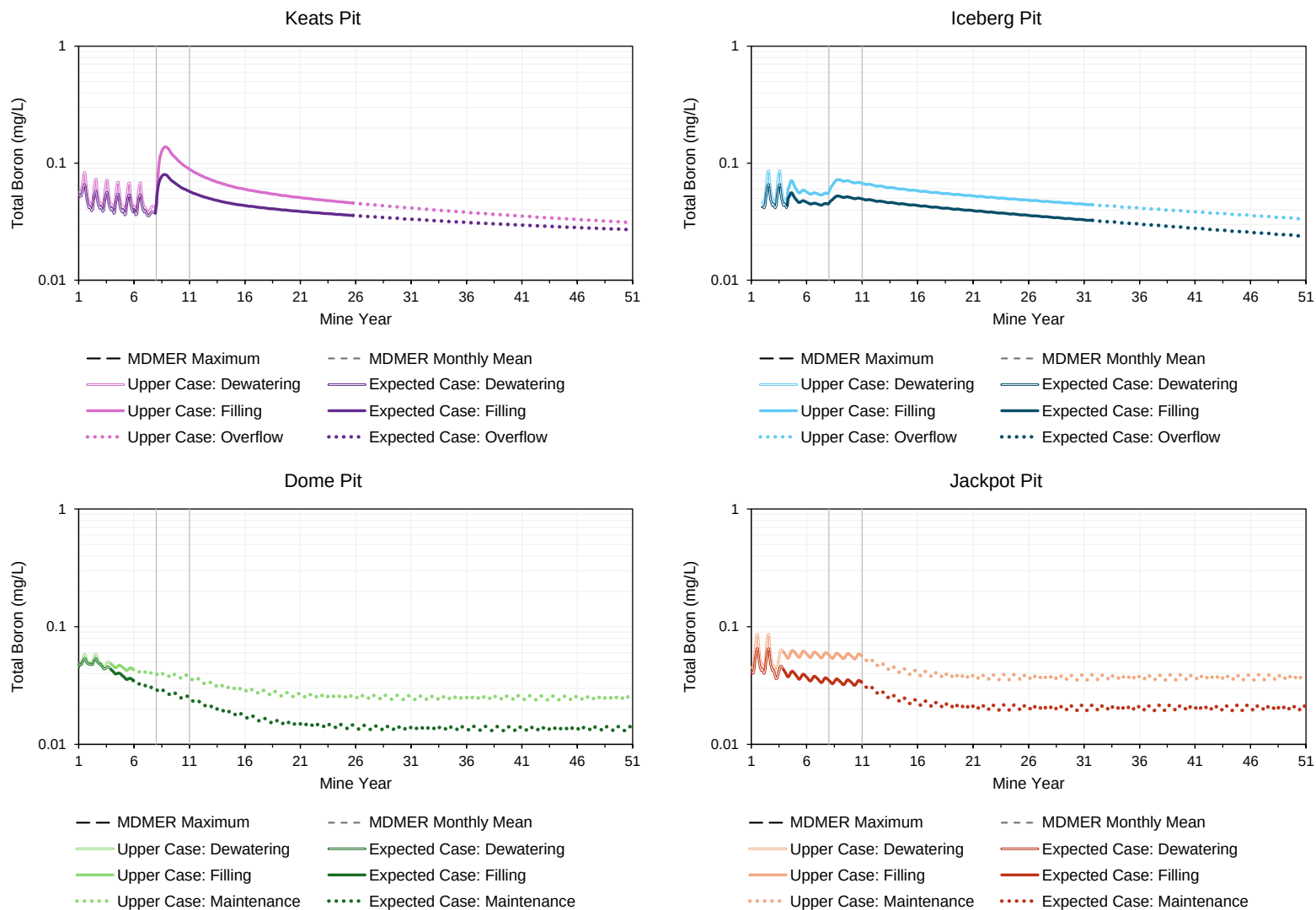




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.19 Open Pit Water Quality Time-Series Plots for Dissolved Bismuth (mg/L) Under Climate Normal Conditions

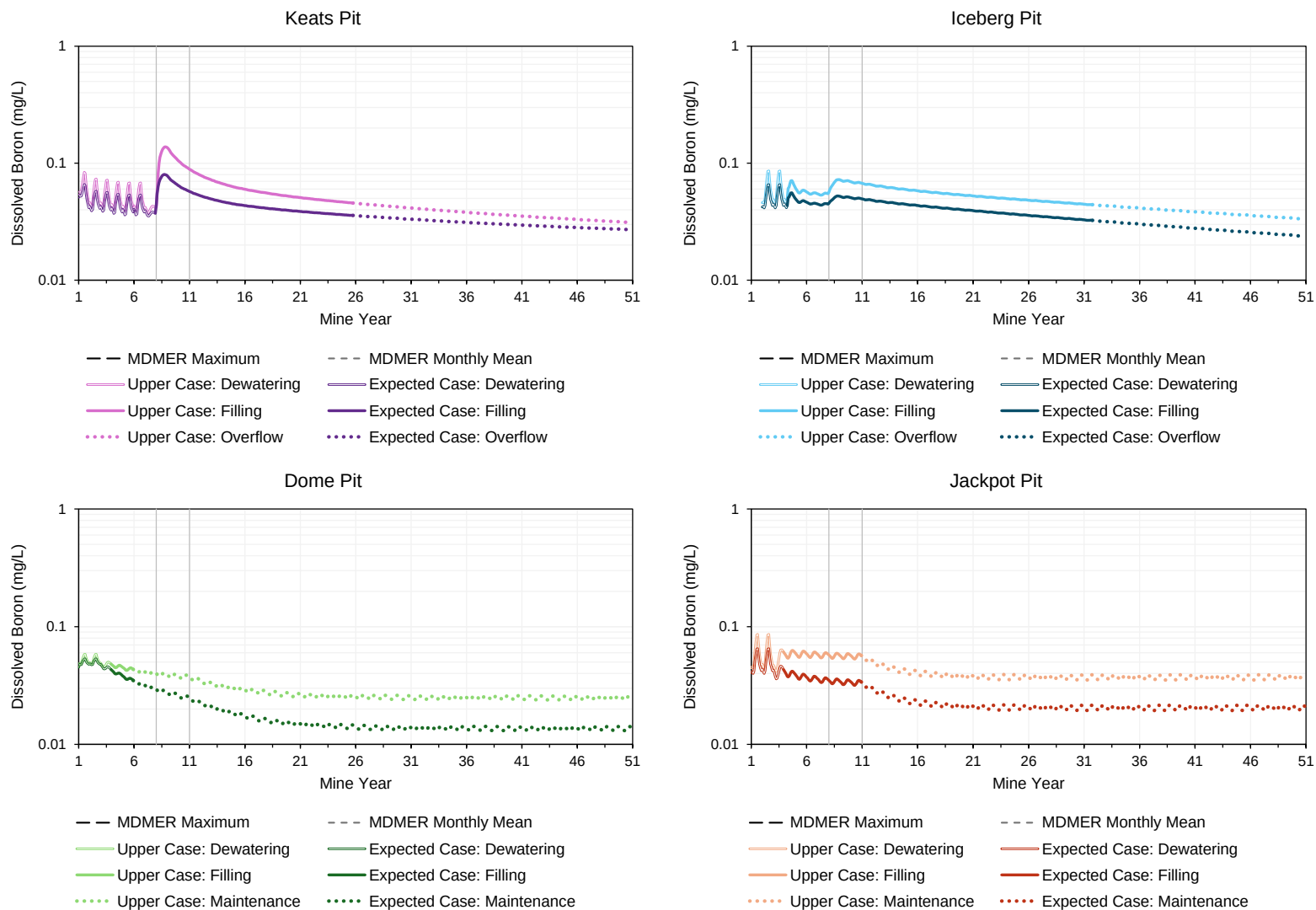




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.20 Open Pit Water Quality Time-Series Plots for Total Boron (mg/L) Under Climate Normal Conditions

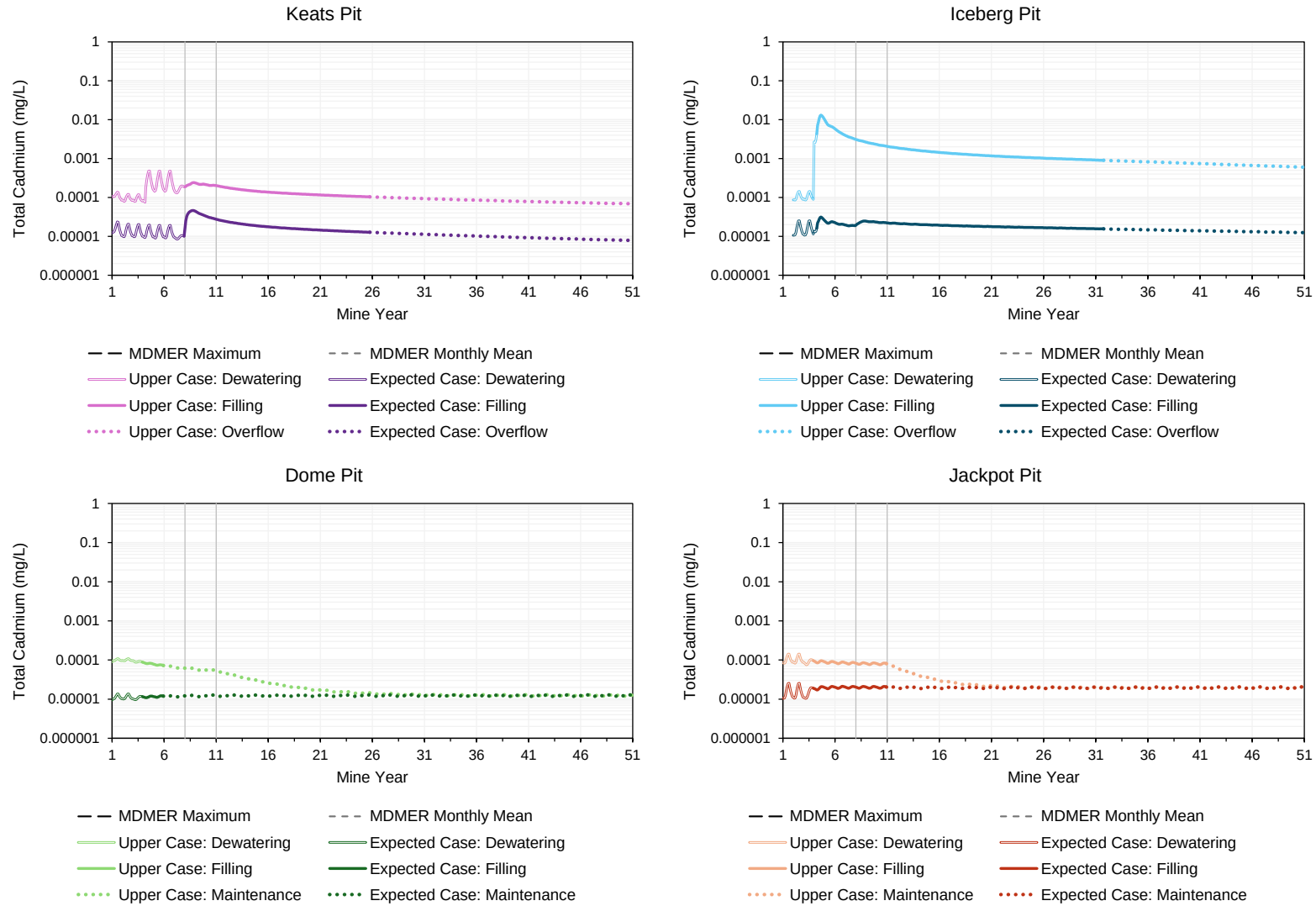


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.21 Open Pit Water Quality Time-Series Plots for Dissolved Boron (mg/L) Under Climate Normal Conditions



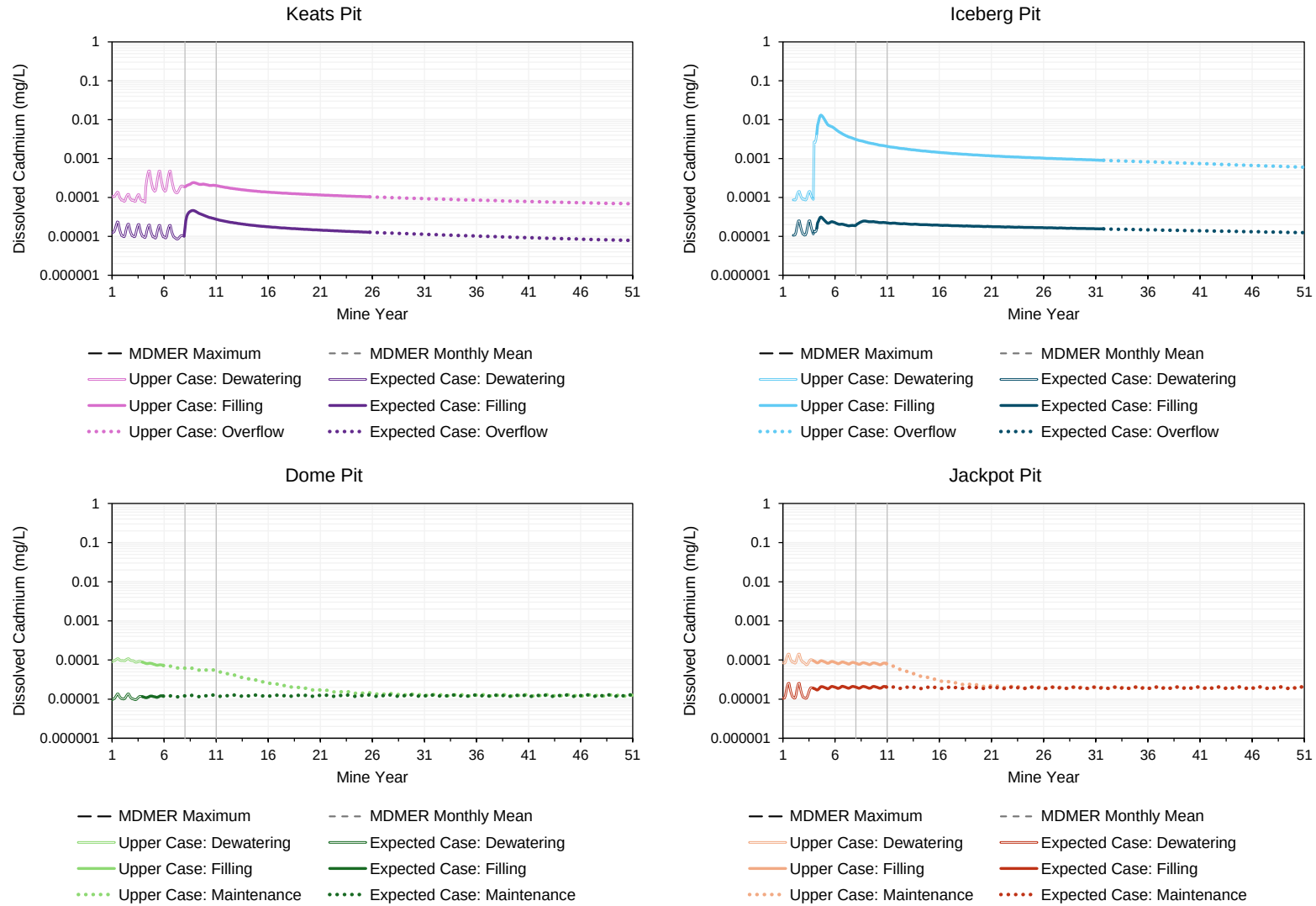


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.22 Open Pit Water Quality Time-Series Plots for Total Cadmium (mg/L) Under Climate Normal Conditions



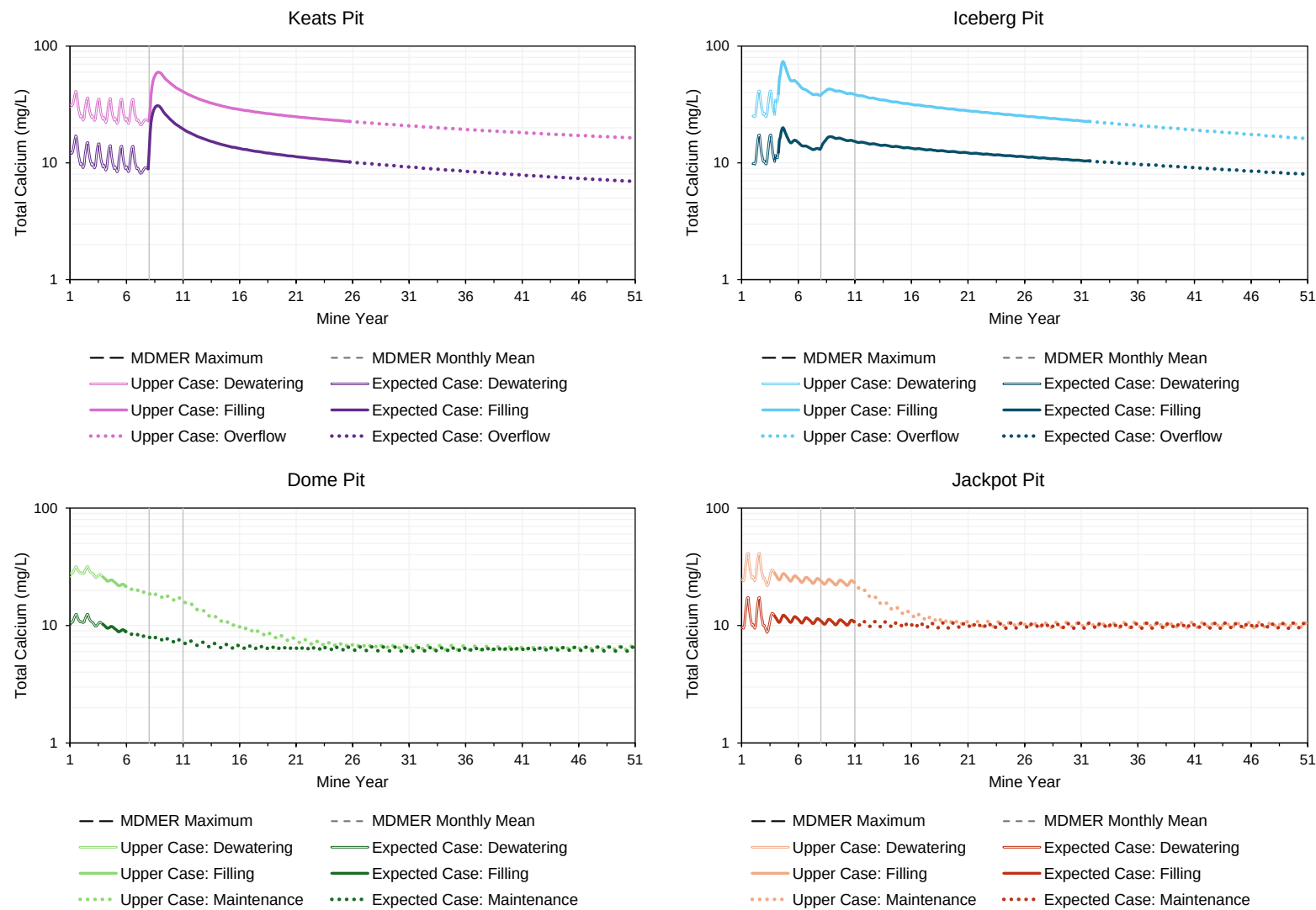


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.23 Open Pit Water Quality Time-Series Plots for Dissolved Cadmium (mg/L) Under Climate Normal Conditions

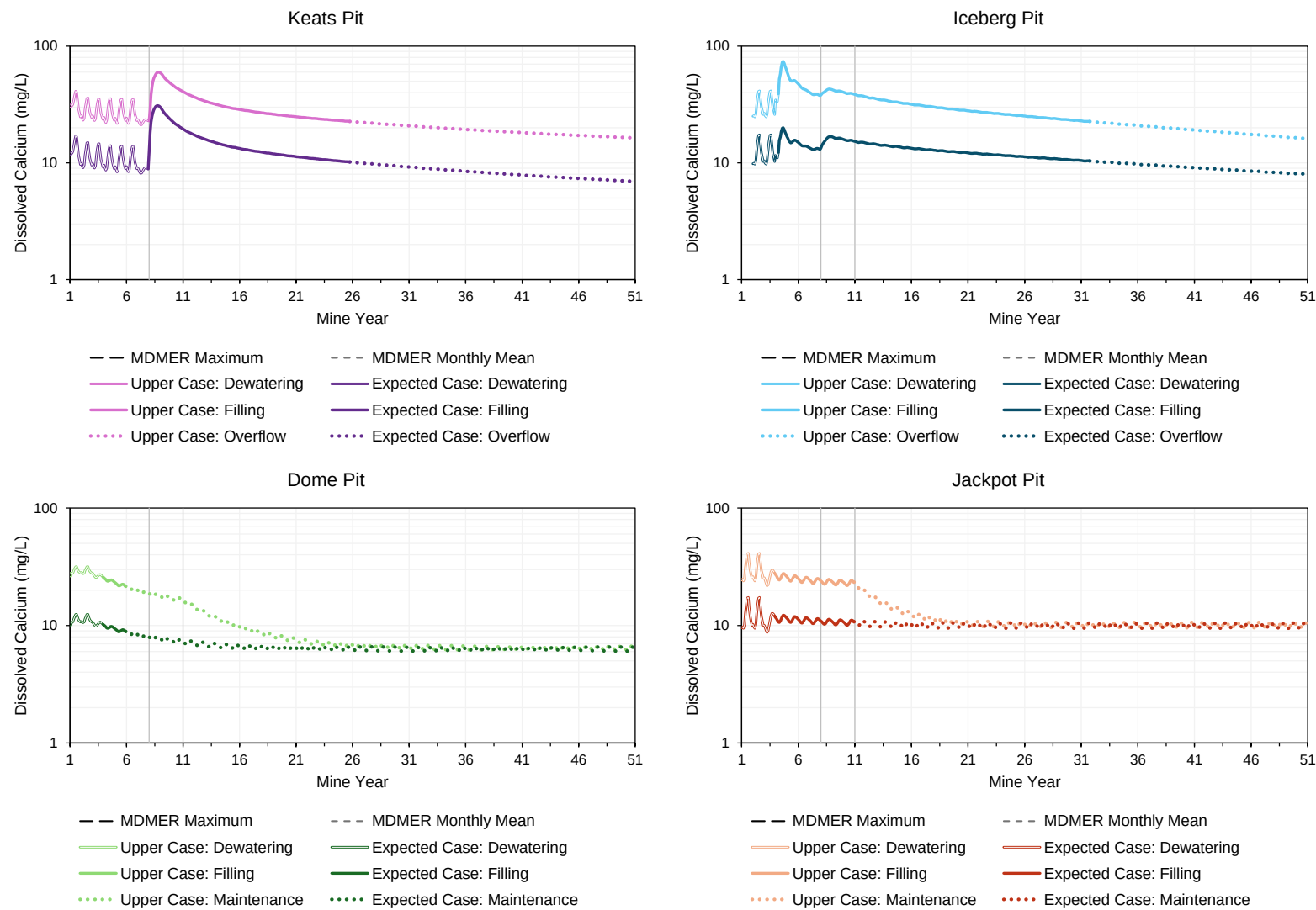




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.24 Open Pit Water Quality Time-Series Plots for Total Calcium (mg/L) Under Climate Normal Conditions

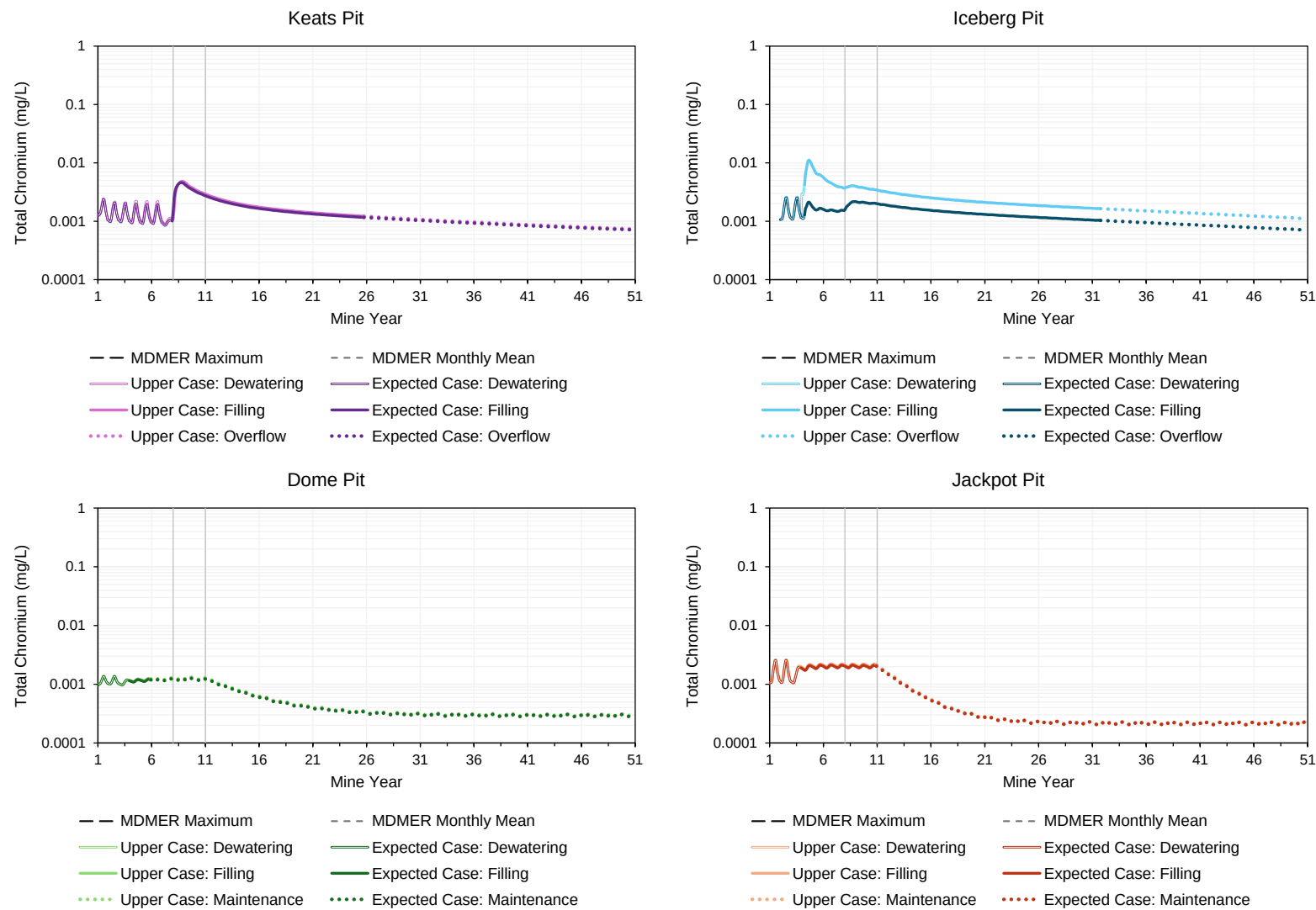




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.25 Open Pit Water Quality Time-Series Plots for Dissolved Calcium (mg/L) Under Climate Normal Conditions

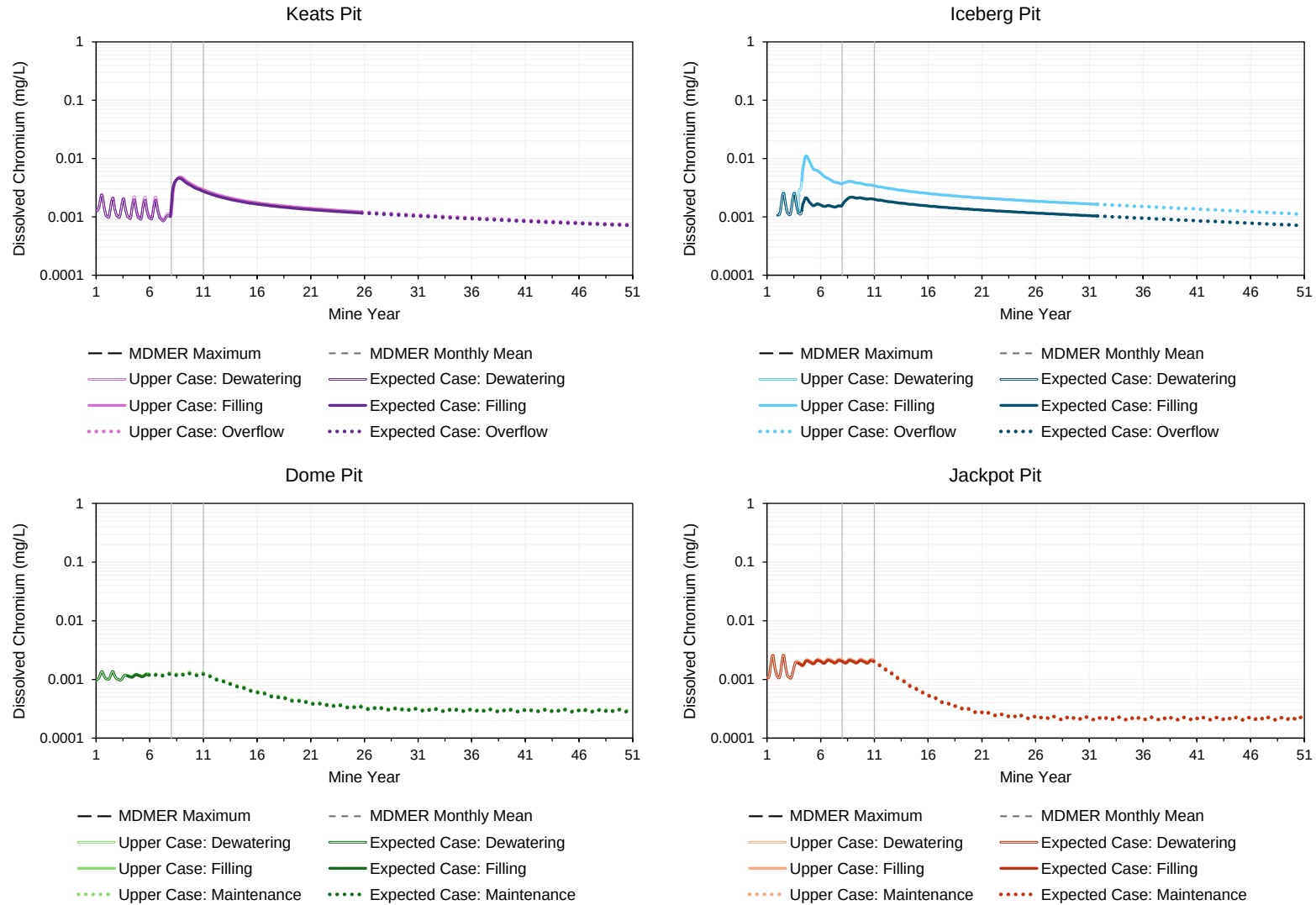




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.26 Open Pit Water Quality Time-Series Plots for Total Chromium (mg/L) Under Climate Normal Conditions

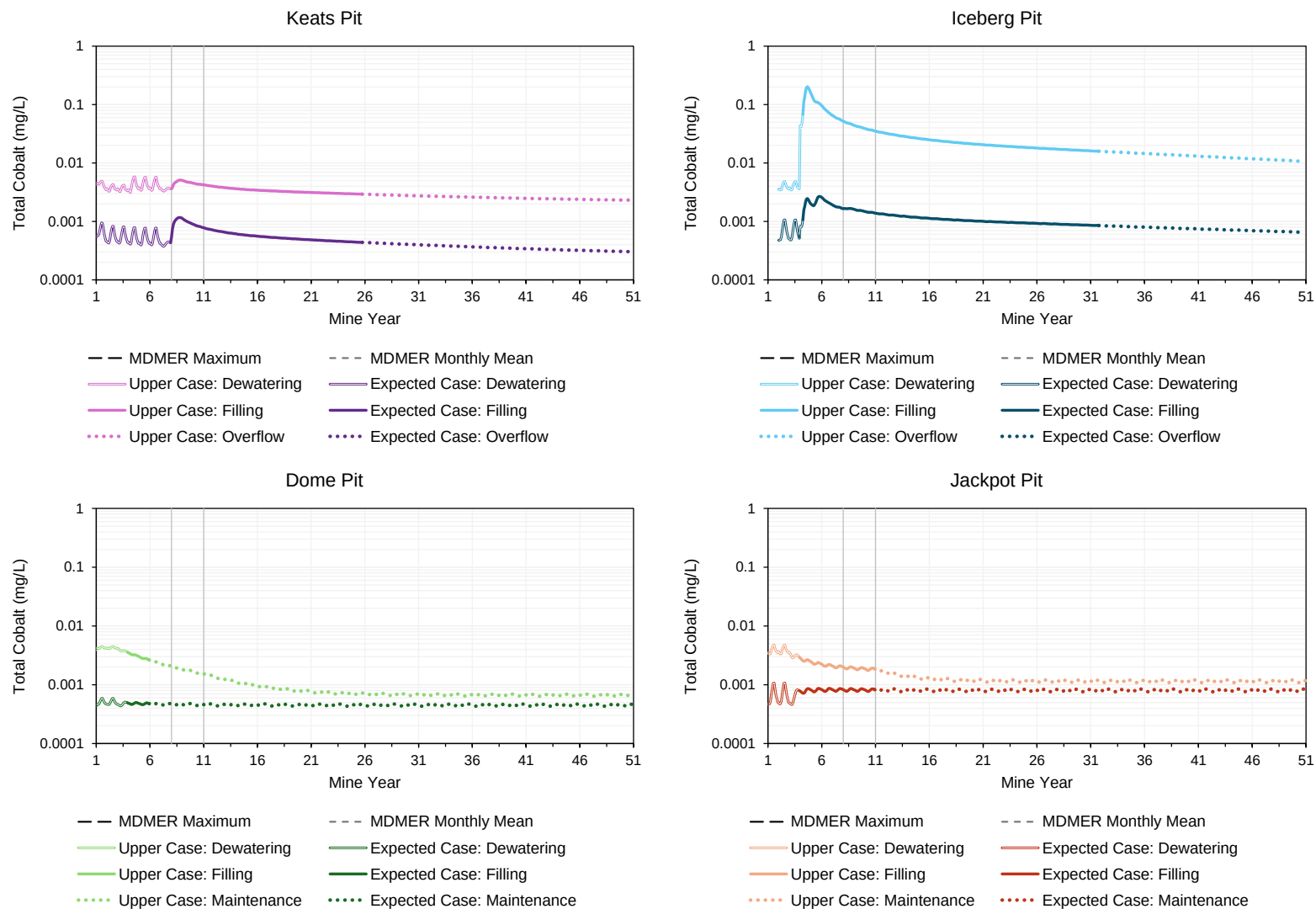




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

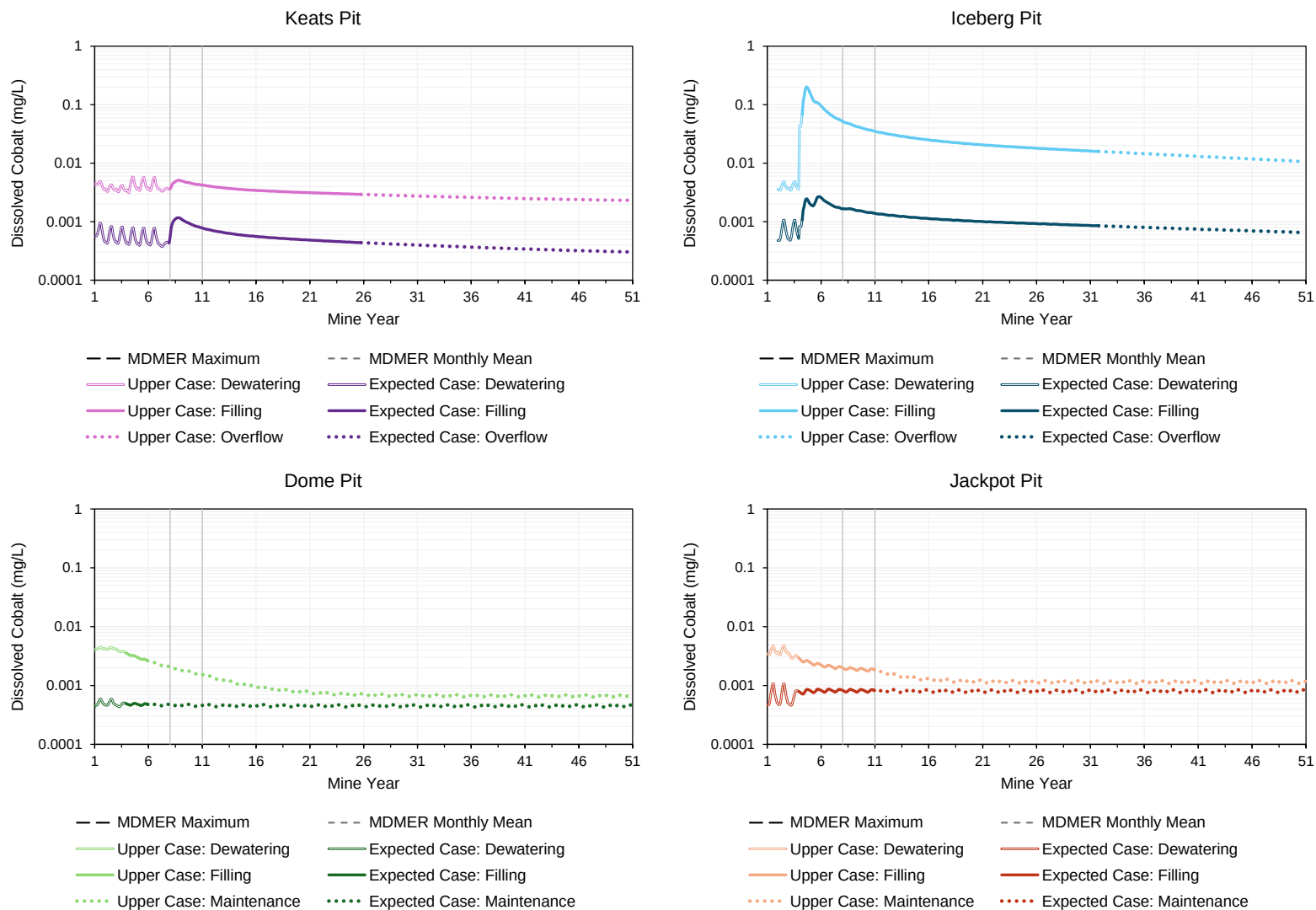
Figure F.27 Open Pit Water Quality Time-Series Plots for Dissolved Chromium (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

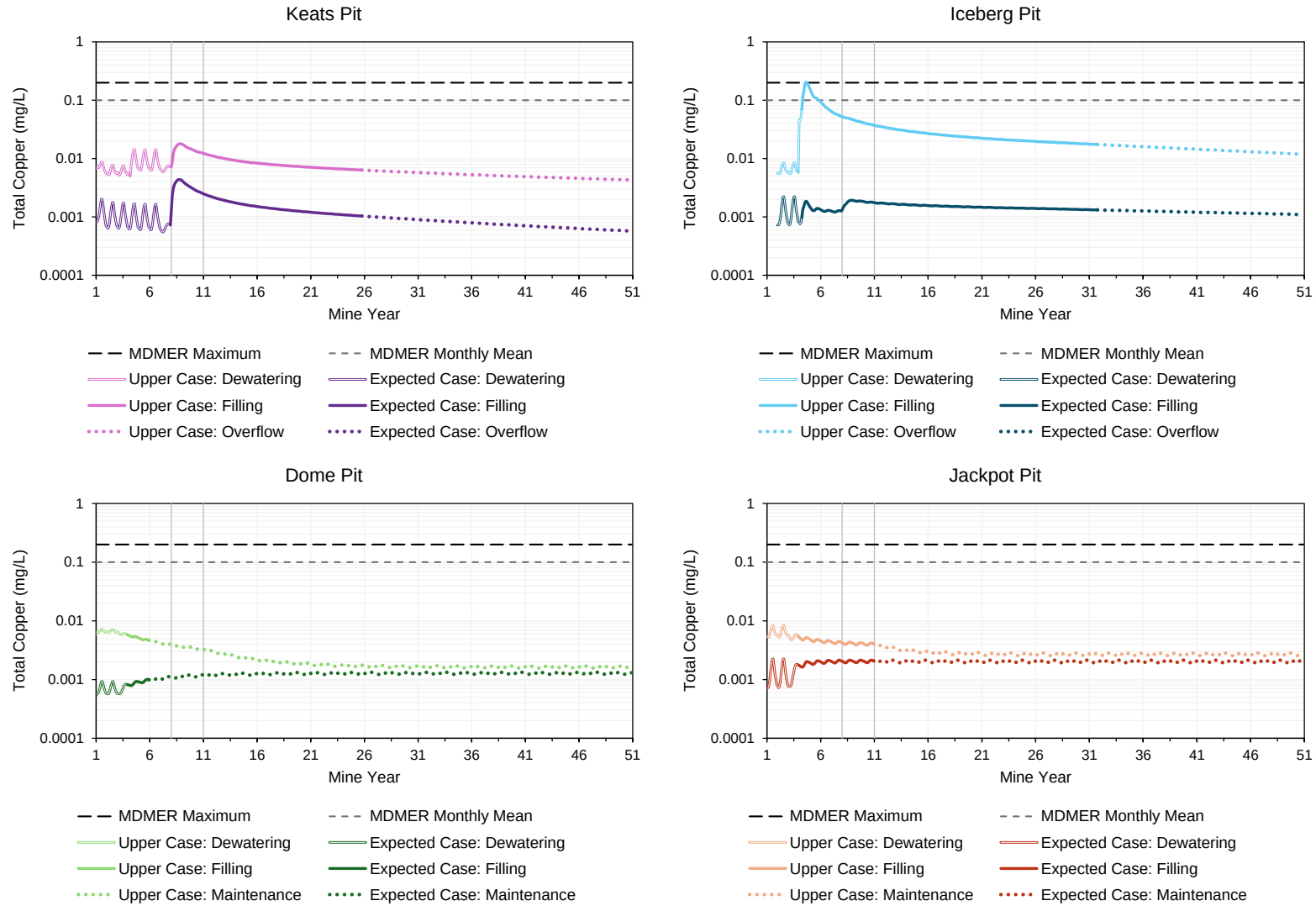
Figure F.28 Open Pit Water Quality Time-Series Plots for Total Cobalt (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

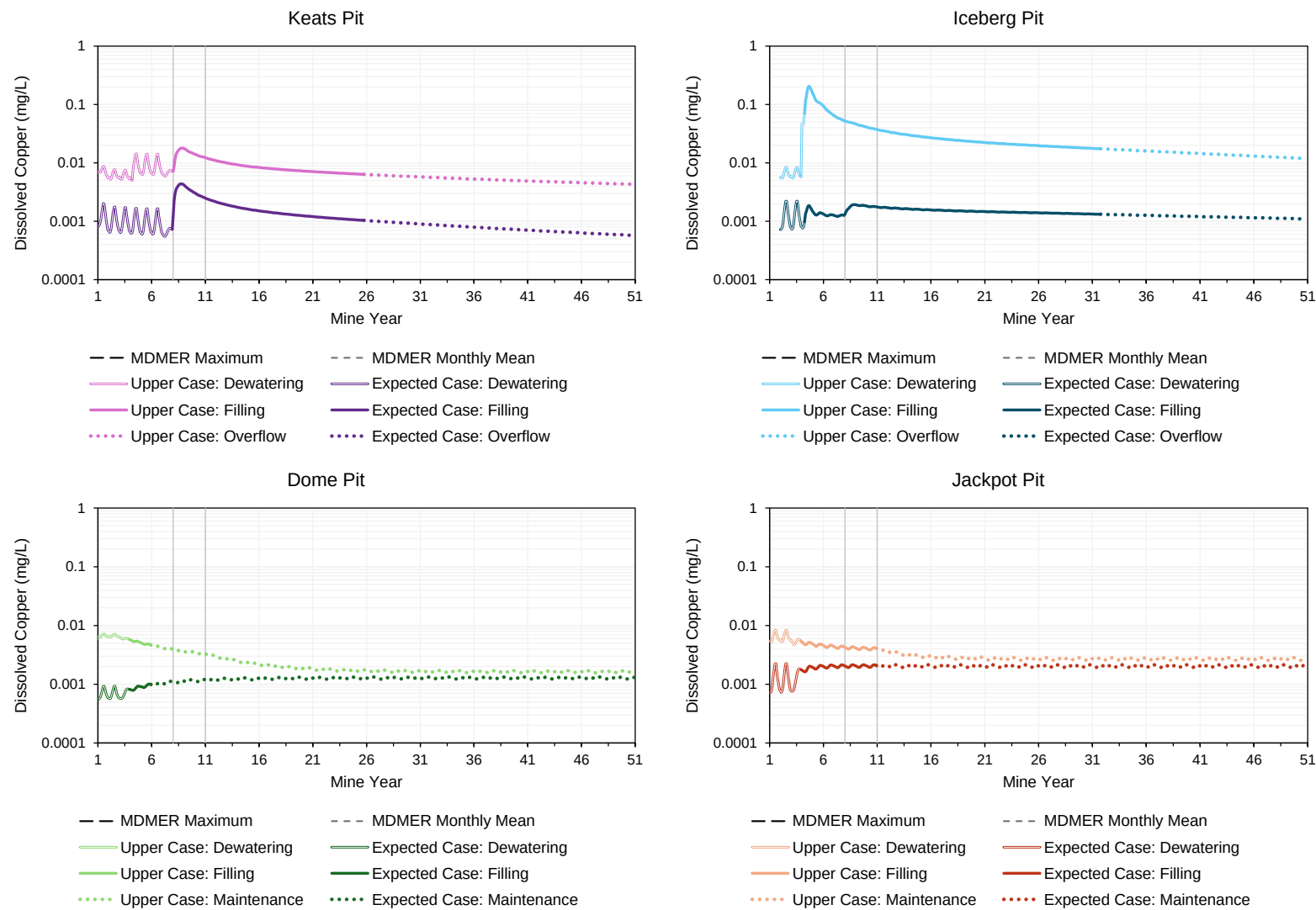
Figure F.29 Open Pit Water Quality Time-Series Plots for Dissolved Cobalt (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

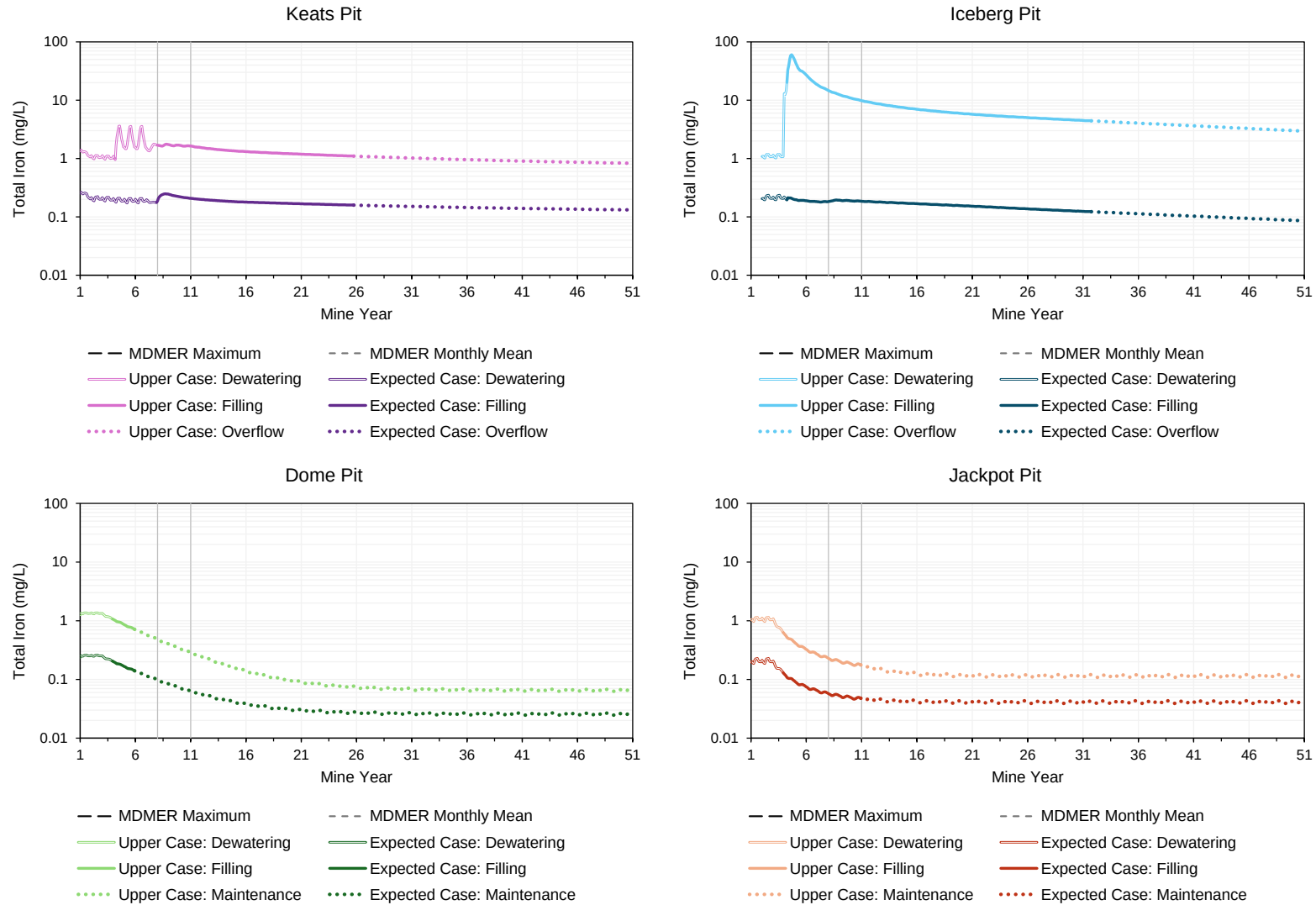
Figure F.30 Open Pit Water Quality Time-Series Plots for Total Copper (mg/L) Under Climate Normal Conditions



Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.31 Open Pit Water Quality Time-Series Plots for Dissolved Copper (mg/L) Under Climate Normal Conditions

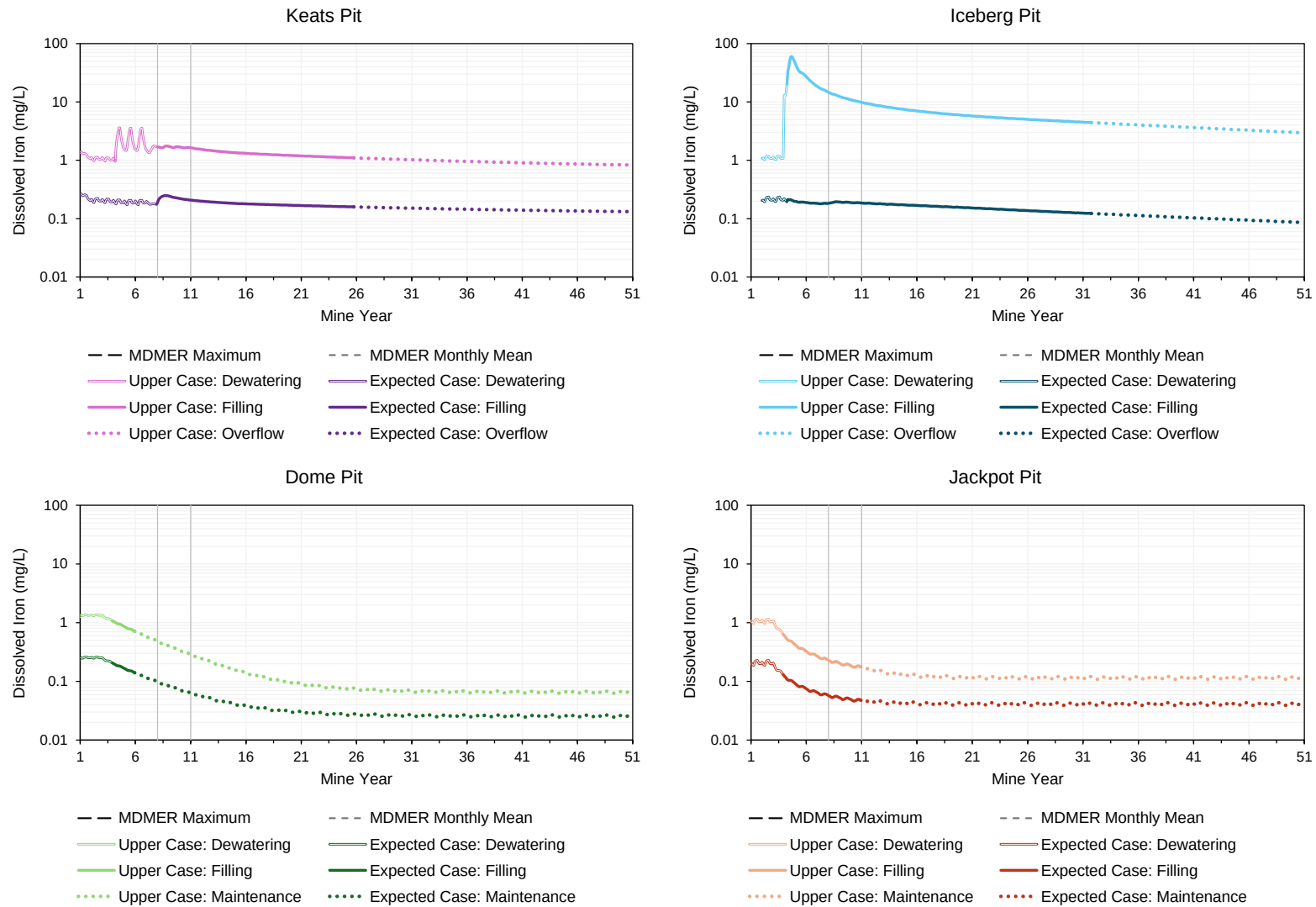




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

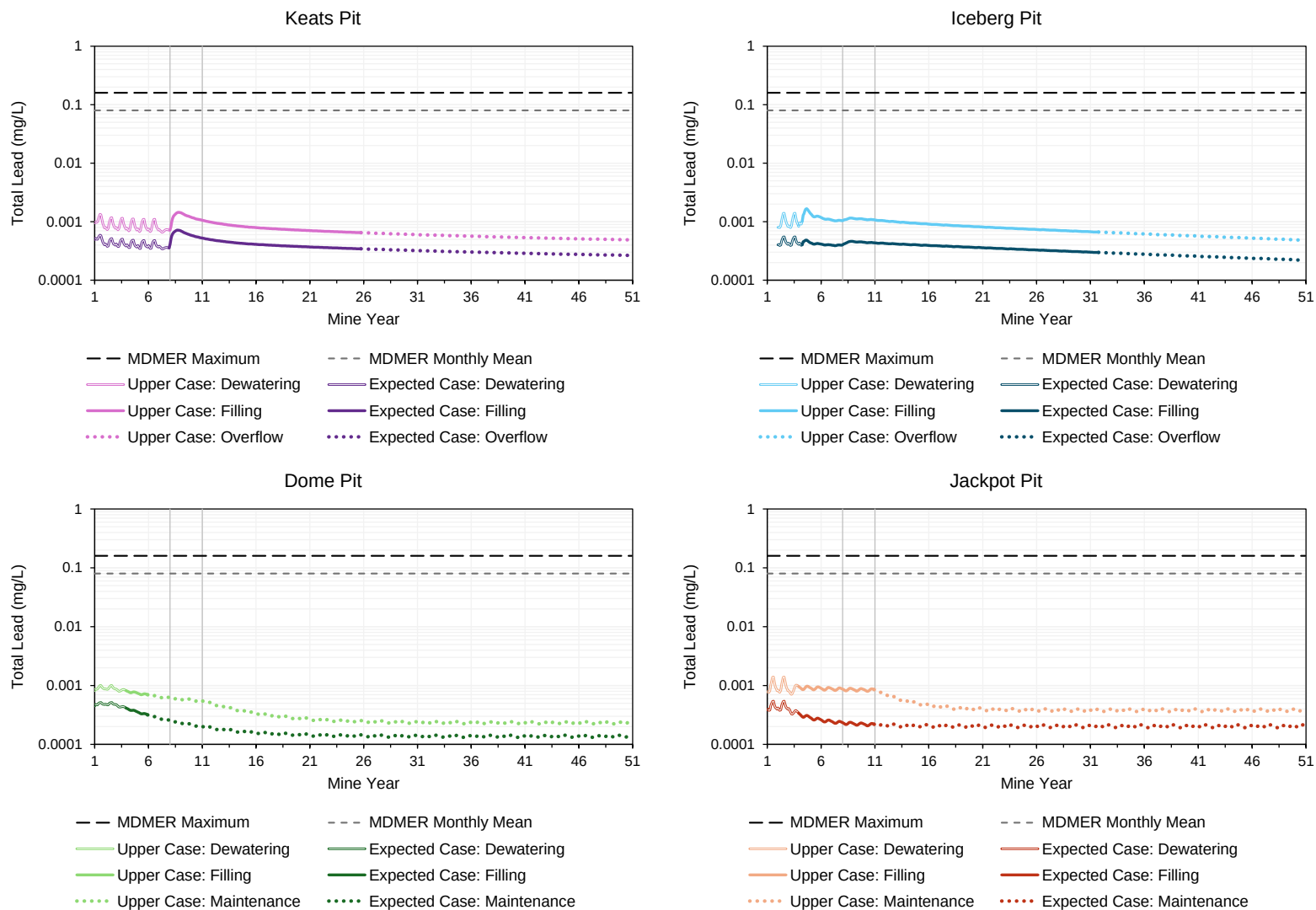
Figure F.32 Open Pit Water Quality Time-Series Plots for Total Iron (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

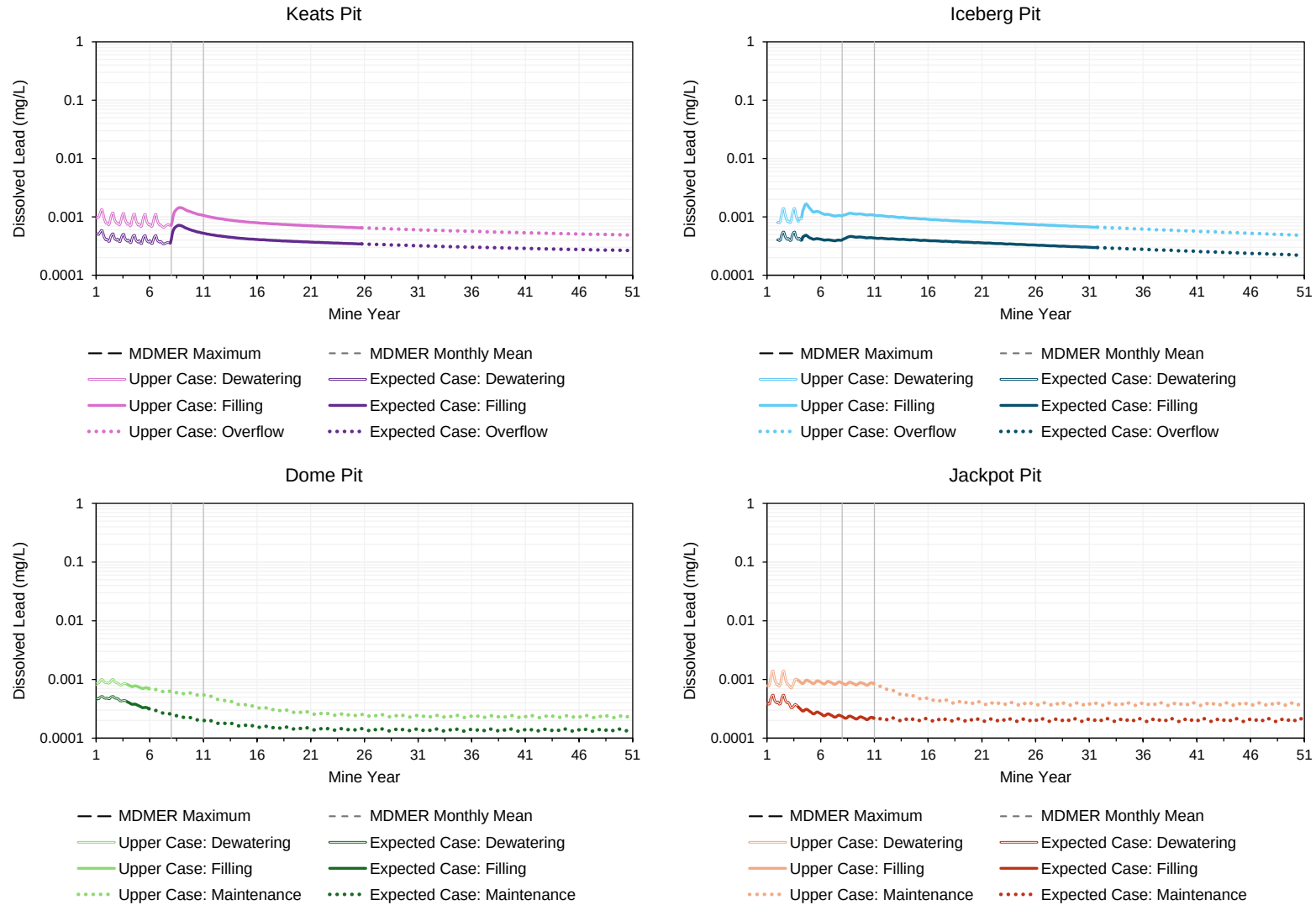
Figure F.33 Open Pit Water Quality Time-Series Plots for Dissolved Iron (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.34 Open Pit Water Quality Time-Series Plots for Total Lead (mg/L) Under Climate Normal Conditions

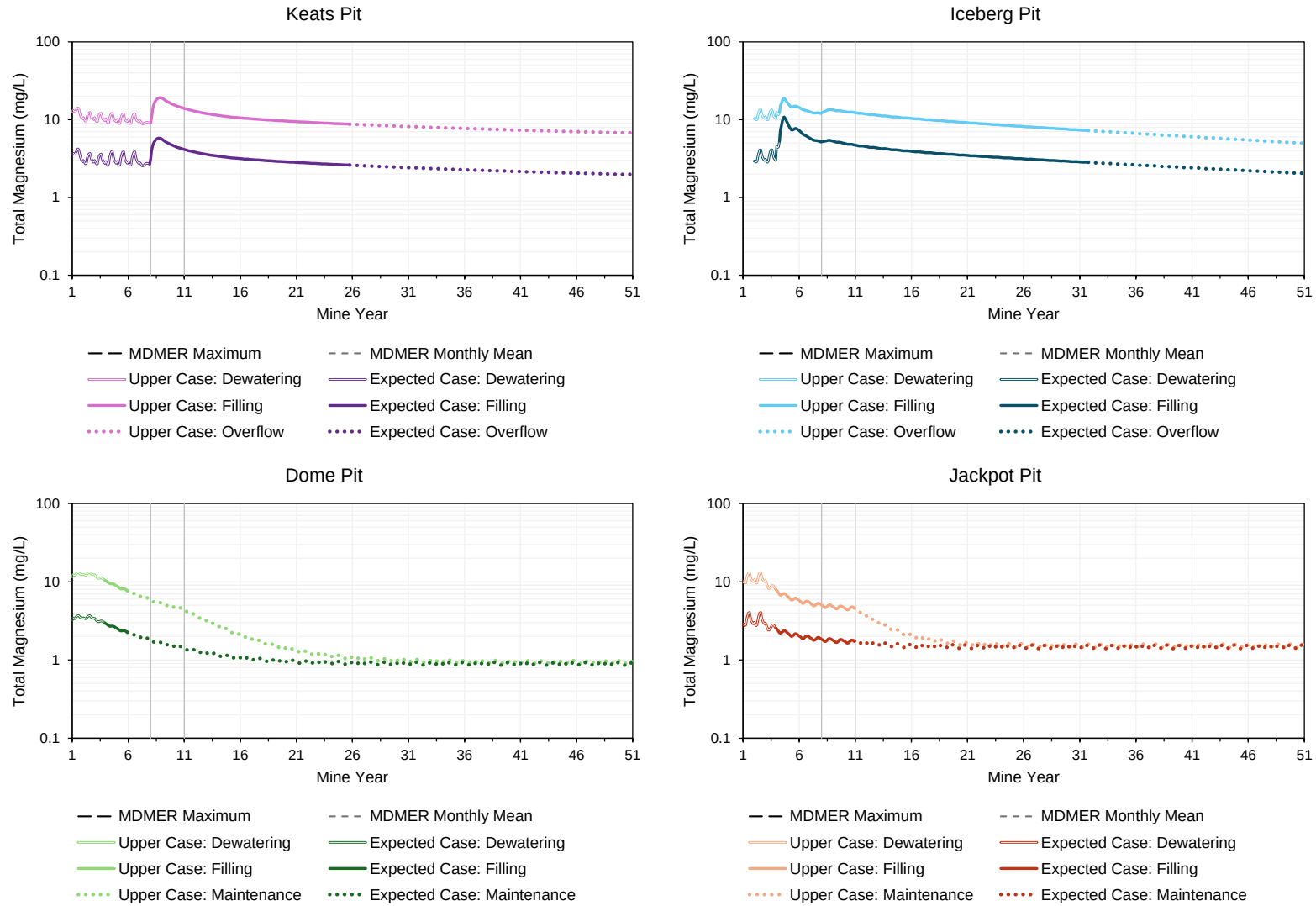


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.35 Open Pit Water Quality Time-Series Plots for Dissolved Lead (mg/L) Under Climate Normal Conditions

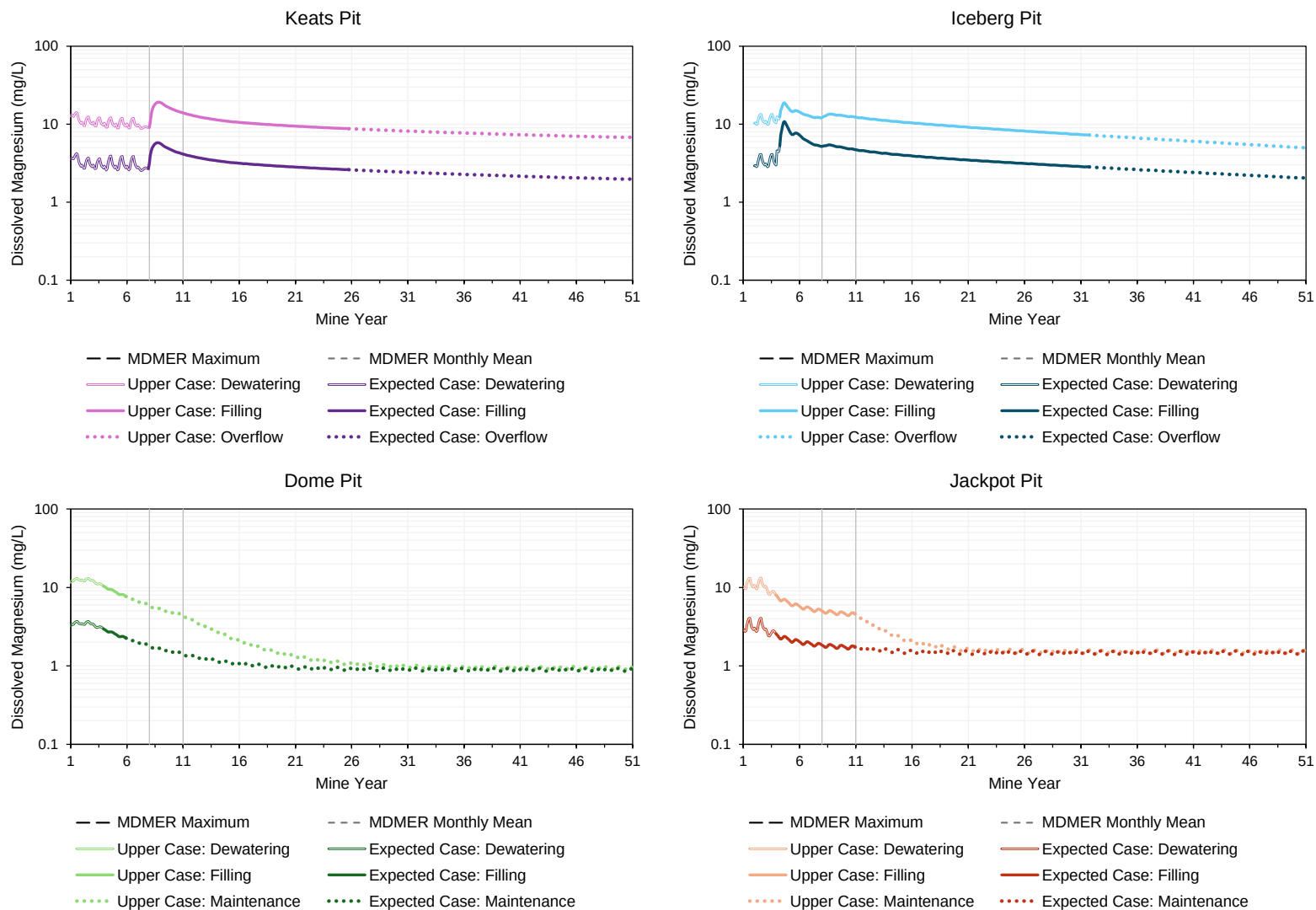




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

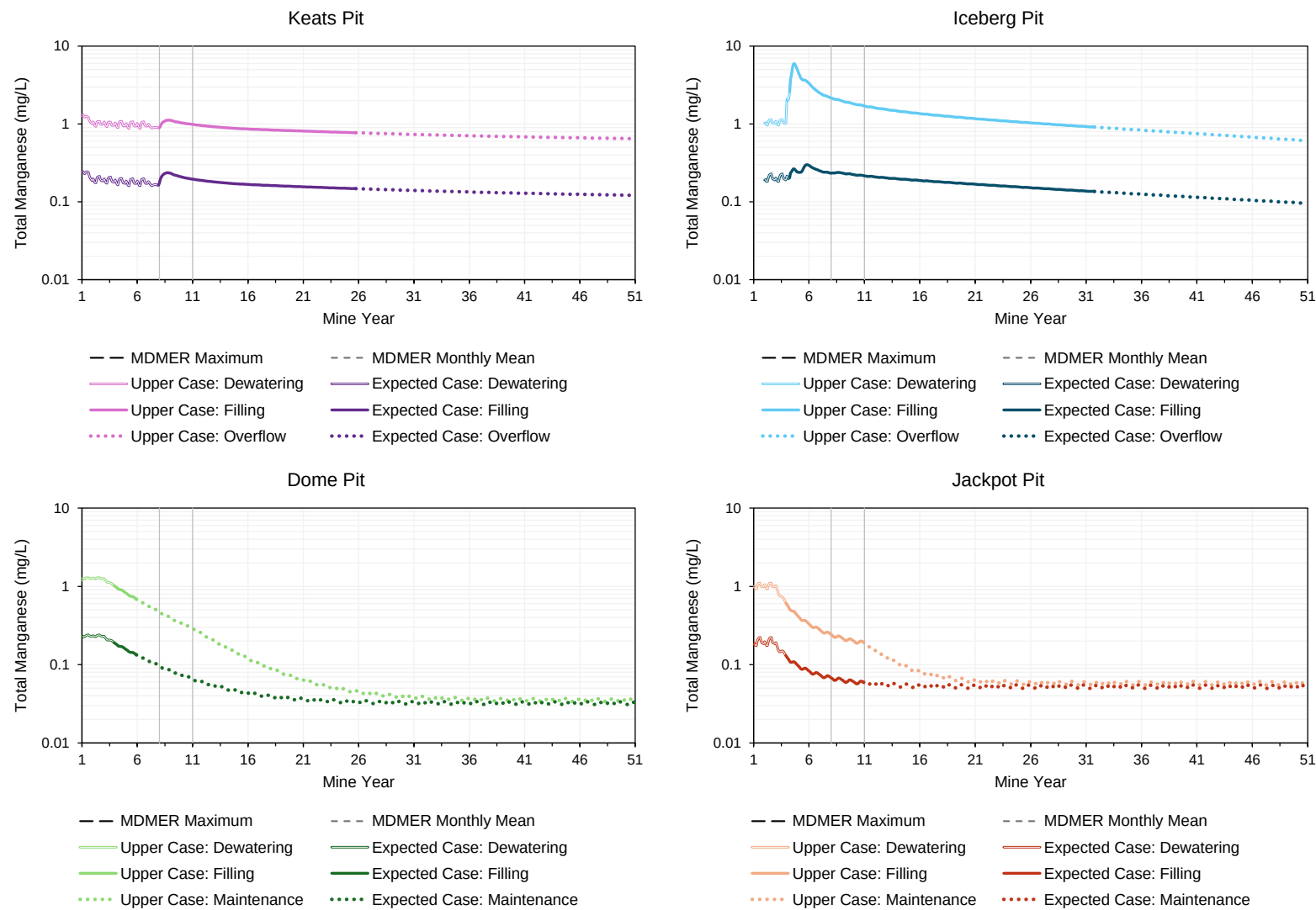
Figure F.36 Open Pit Water Quality Time-Series Plots for Total Magnesium (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

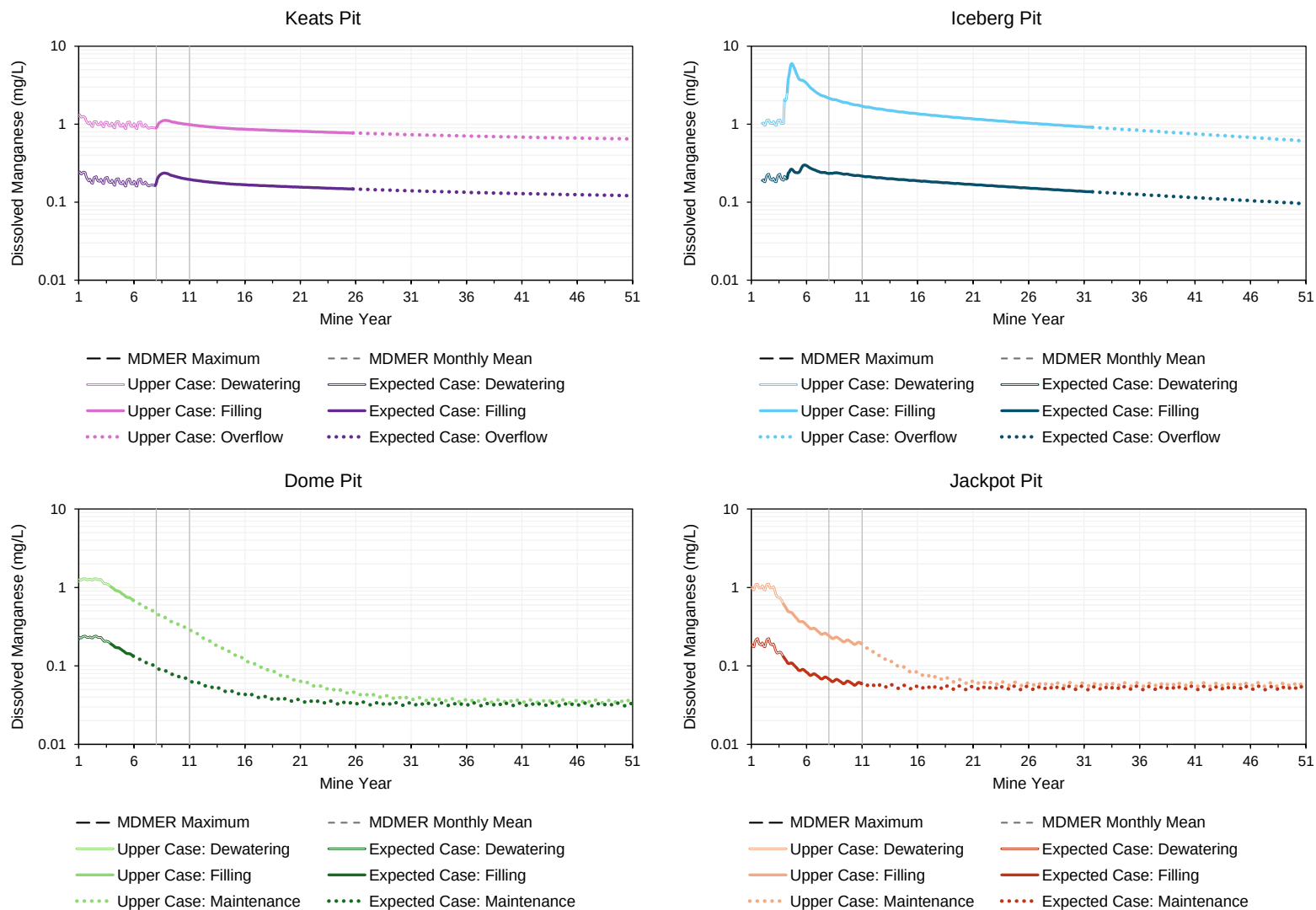
Figure F.37 Open Pit Water Quality Time-Series Plots for Dissolved Magnesium (mg/L) Under Climate Normal Conditions



Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.38 Open Pit Water Quality Time-Series Plots for Total Manganese (mg/L) Under Climate Normal Conditions



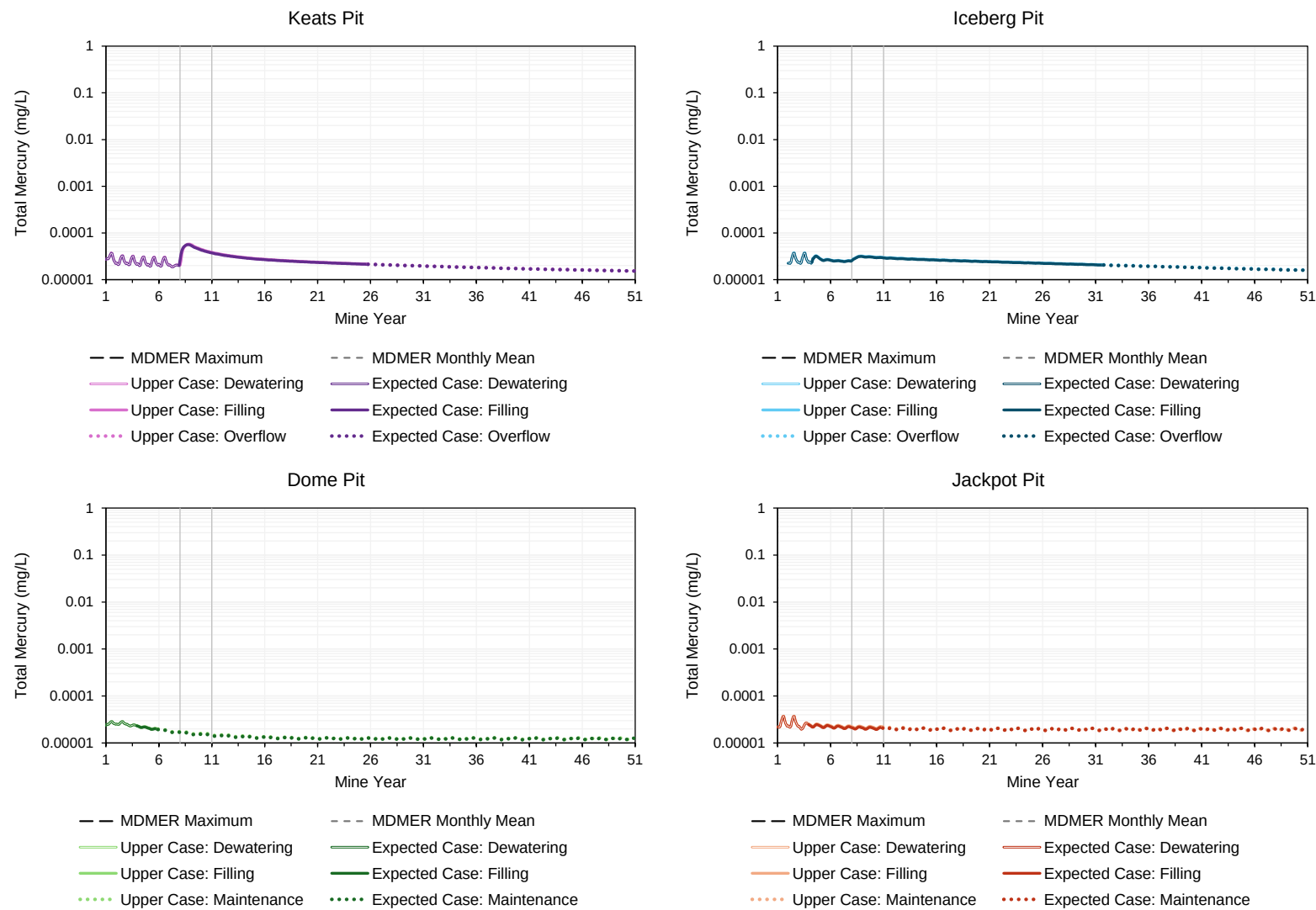


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.39 Open Pit Water Quality Time-Series Plots for Dissolved Manganese (mg/L) Under Climate Normal Conditions

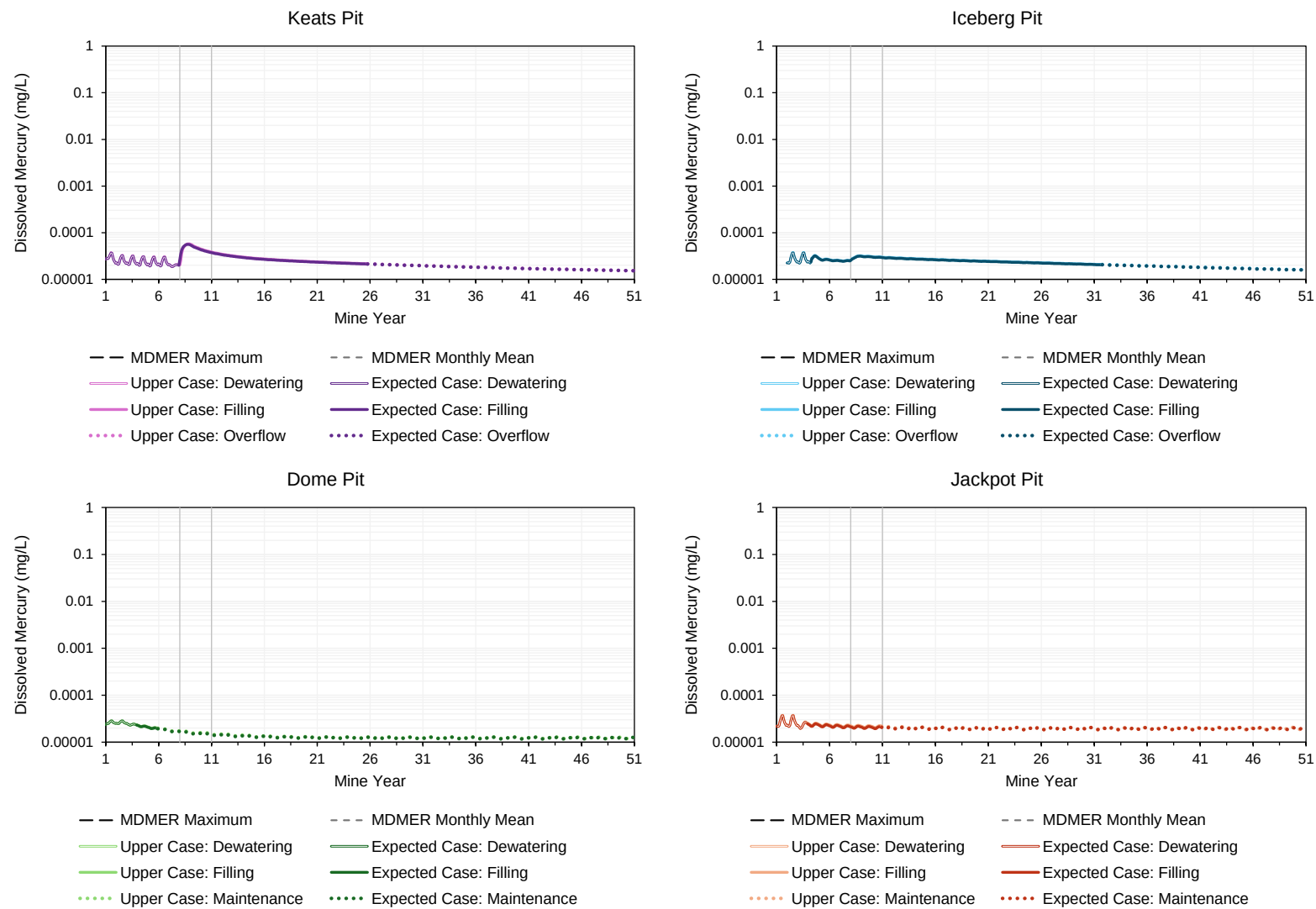




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.40 Open Pit Water Quality Time-Series Plots for Total Mercury (mg/L) Under Climate Normal Conditions





Notes:

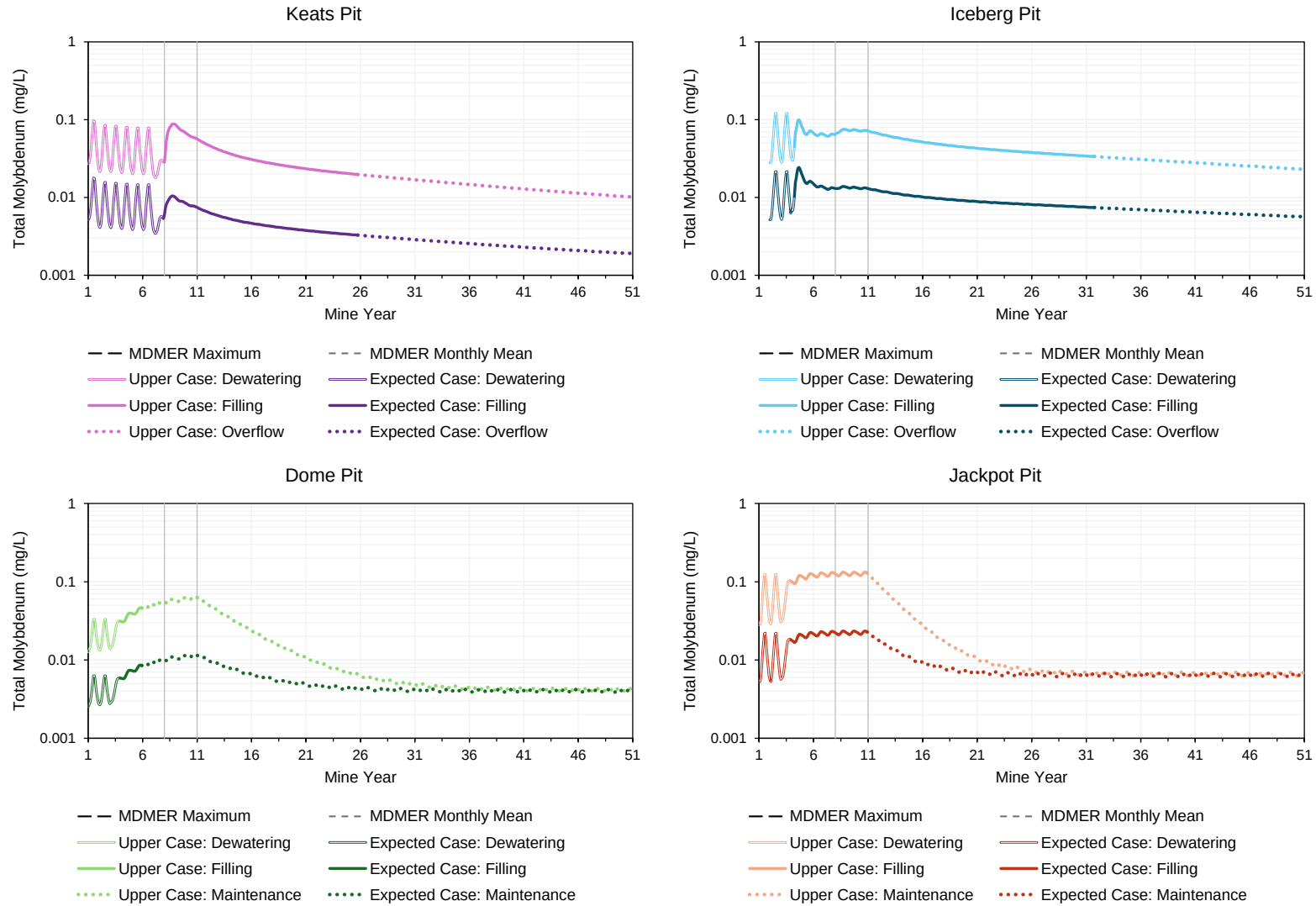
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).

"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.

mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.41 Open Pit Water Quality Time-Series Plots for Dissolved Mercury (mg/L) Under Climate Normal Conditions

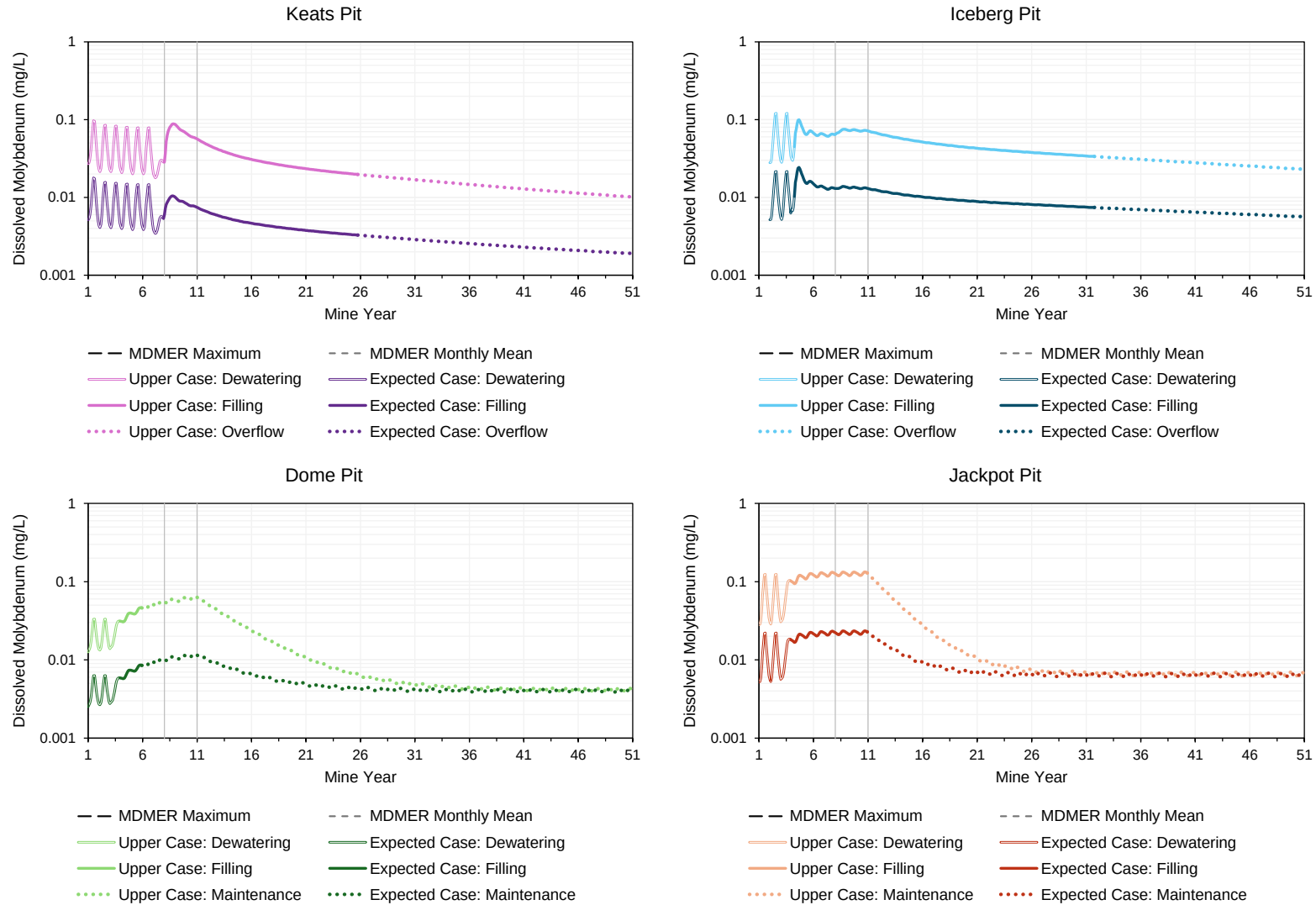




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

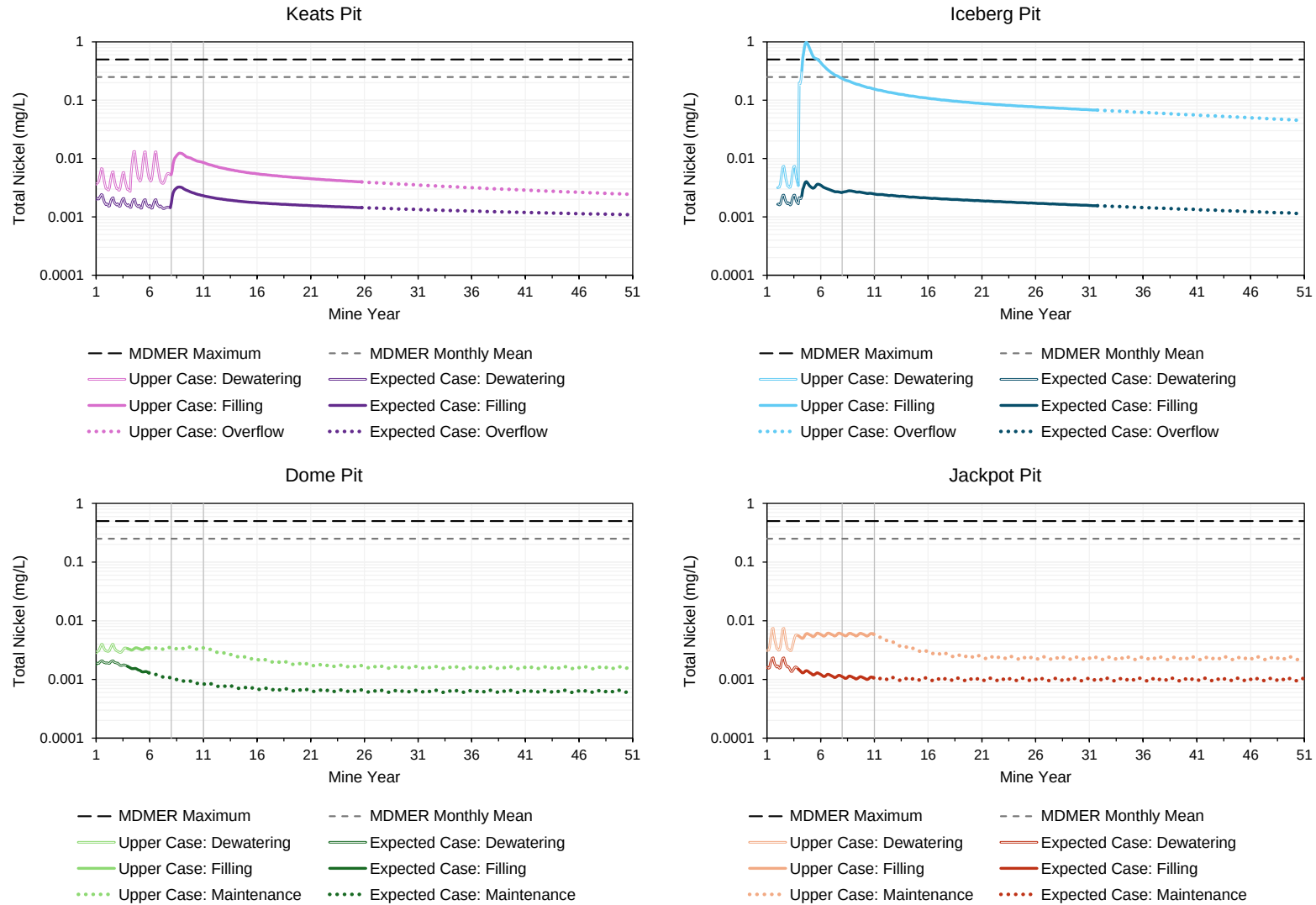
Figure F.42 Open Pit Water Quality Time-Series Plots for Total Molybdenum (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

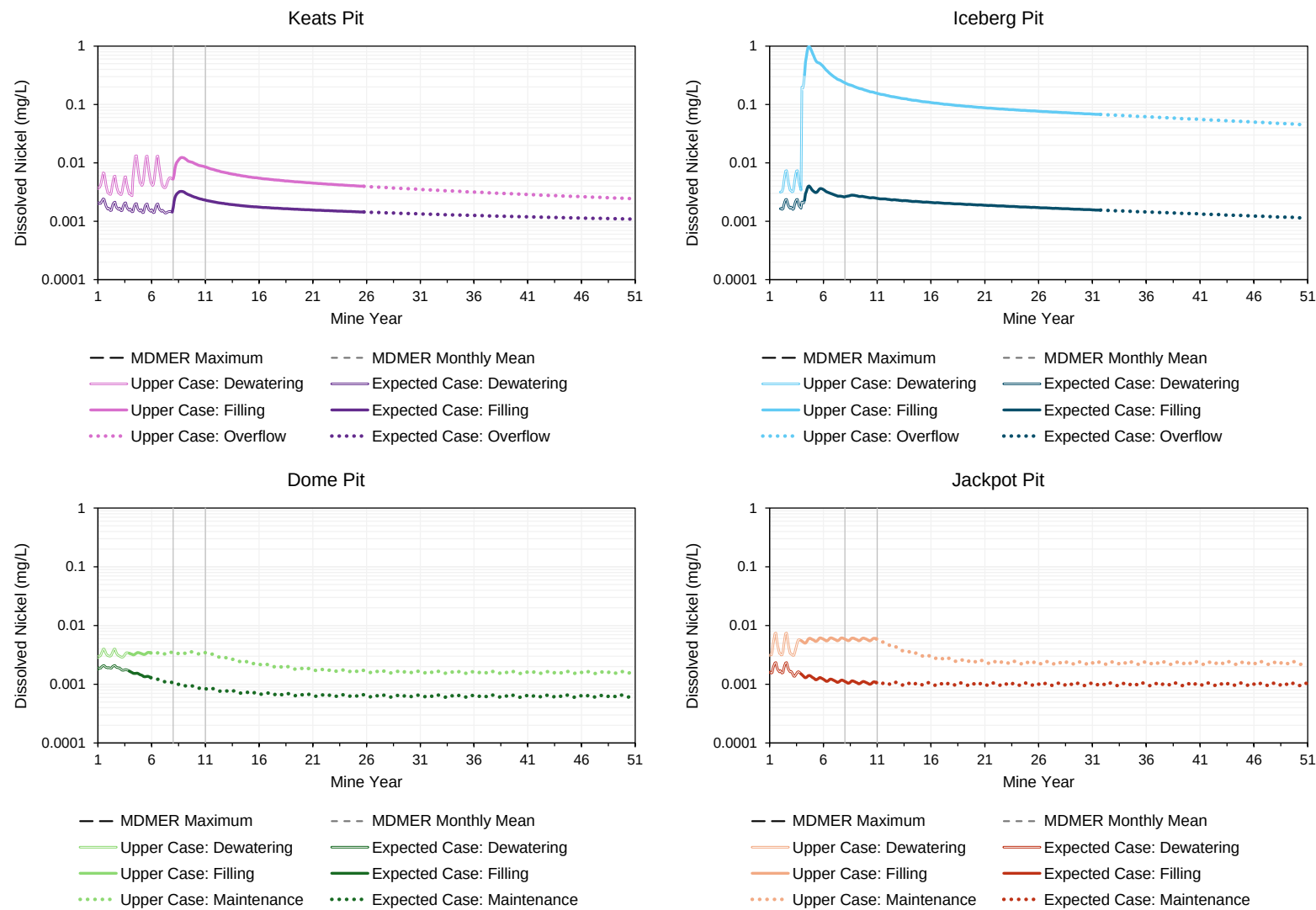
Figure F.43 Open Pit Water Quality Time-Series Plots for Dissolved Molybdenum (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

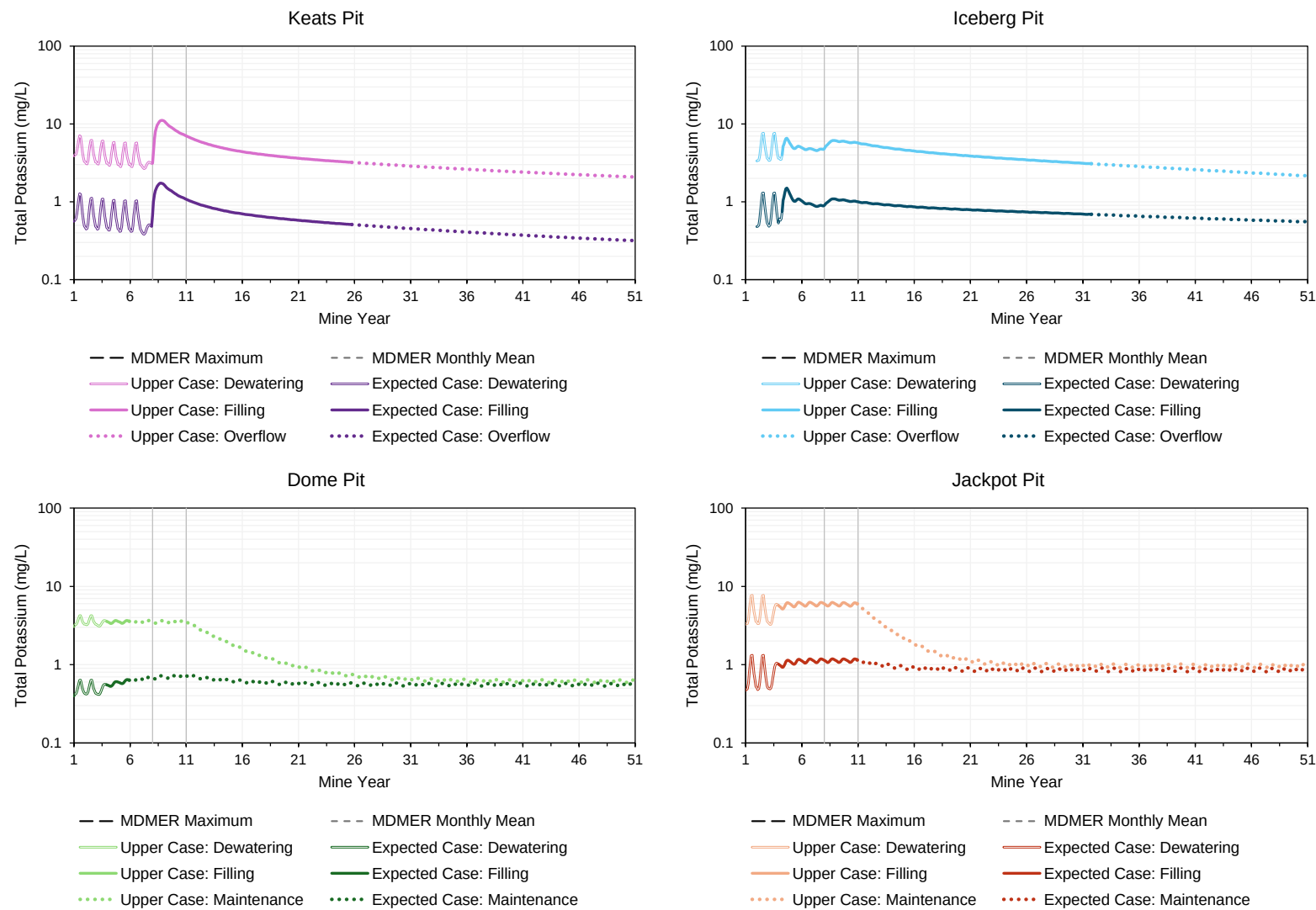
Figure F.44 Open Pit Water Quality Time-Series Plots for Total Nickel (mg/L) Under Climate Normal Conditions



Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.45 Open Pit Water Quality Time-Series Plots for Dissolved Nickel (mg/L) Under Climate Normal Conditions

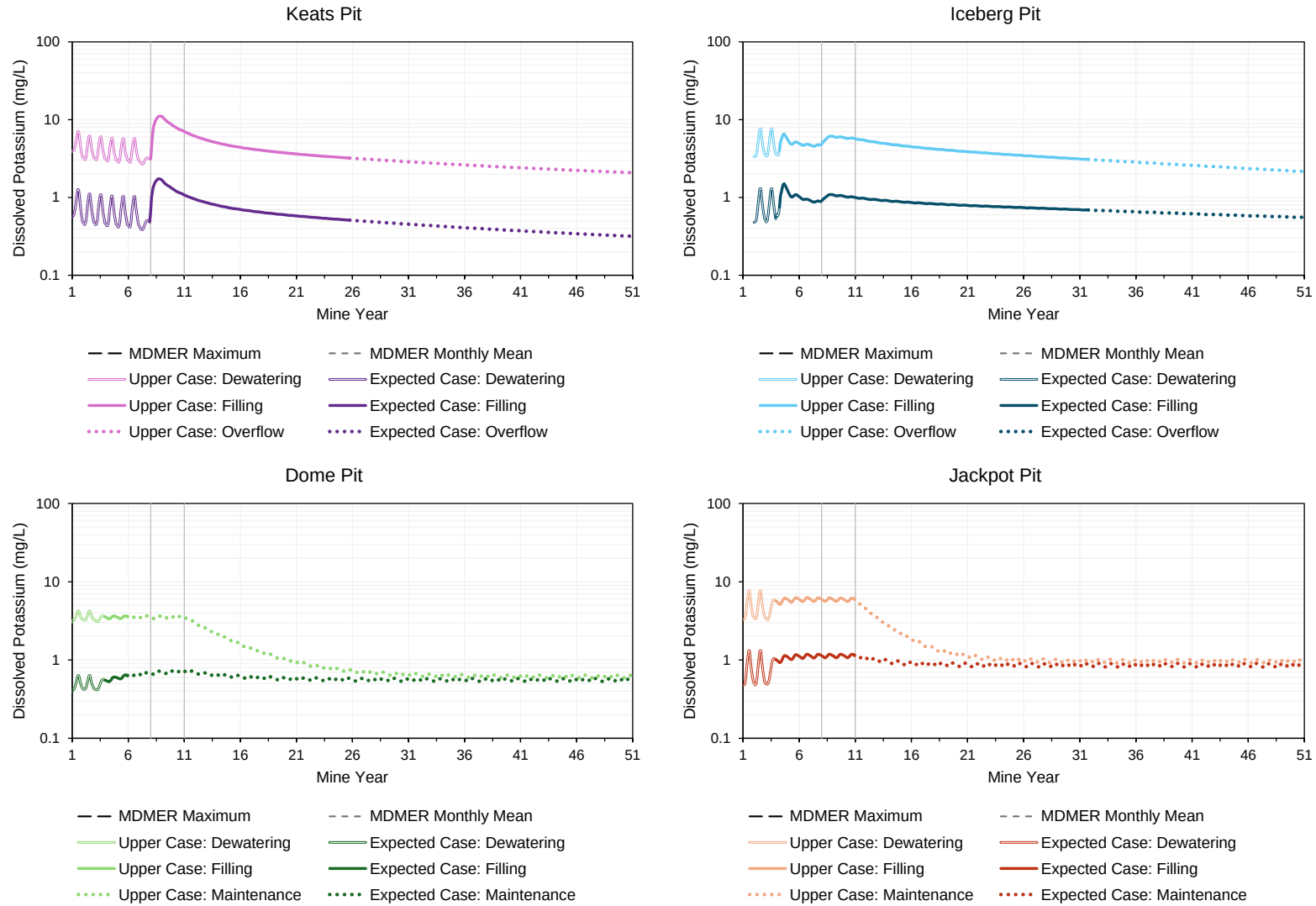




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.46 Open Pit Water Quality Time-Series Plots for Total Potassium (mg/L) Under Climate Normal Conditions



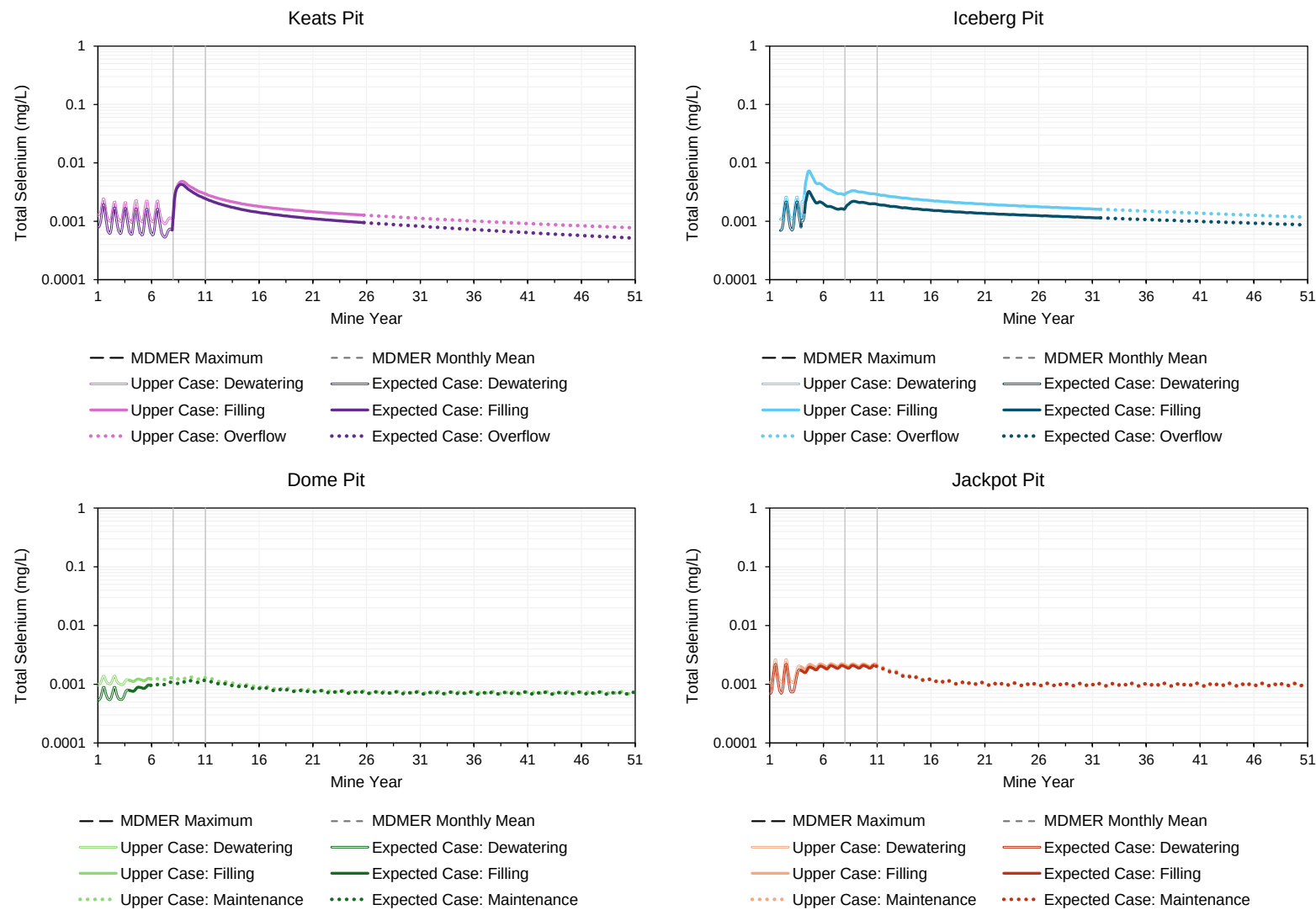


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.47 Open Pit Water Quality Time-Series Plots for Dissolved Potassium (mg/L) Under Climate Normal Conditions





Notes:

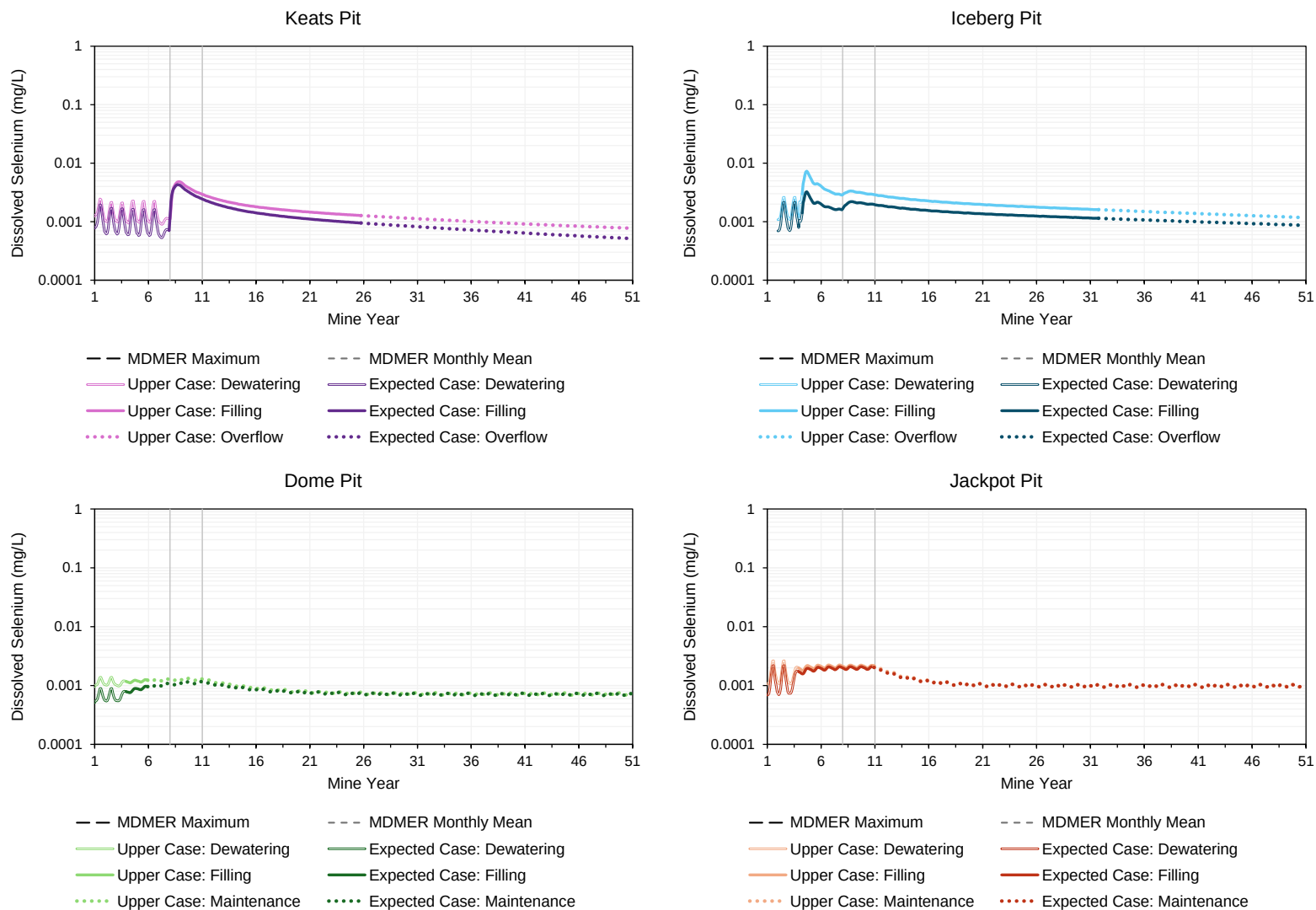
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).

"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.

mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.48 Open Pit Water Quality Time-Series Plots for Total Selenium (mg/L) Under Climate Normal Conditions



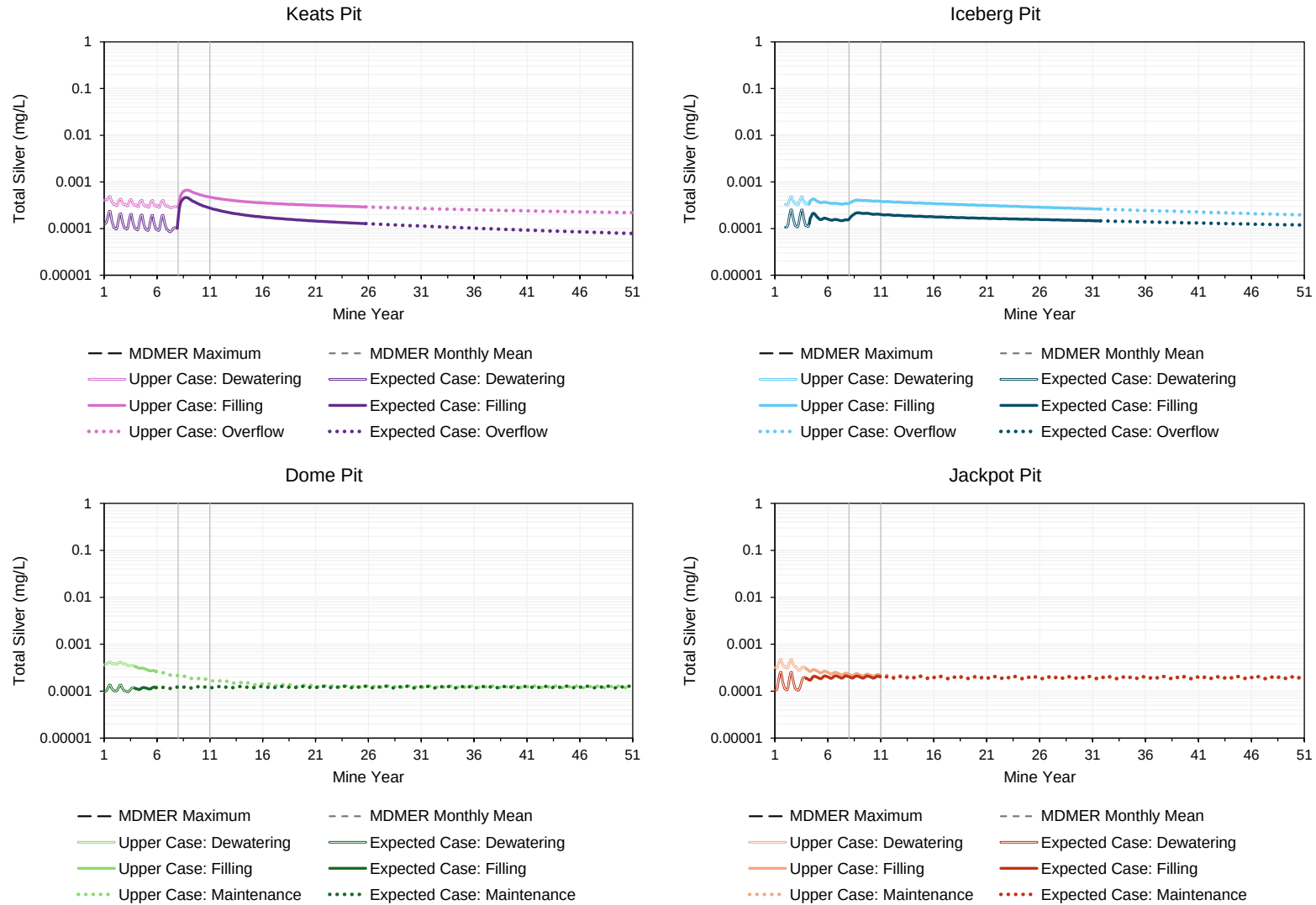


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.49 Open Pit Water Quality Time-Series Plots for Dissolved Selenium (mg/L) Under Climate Normal Conditions

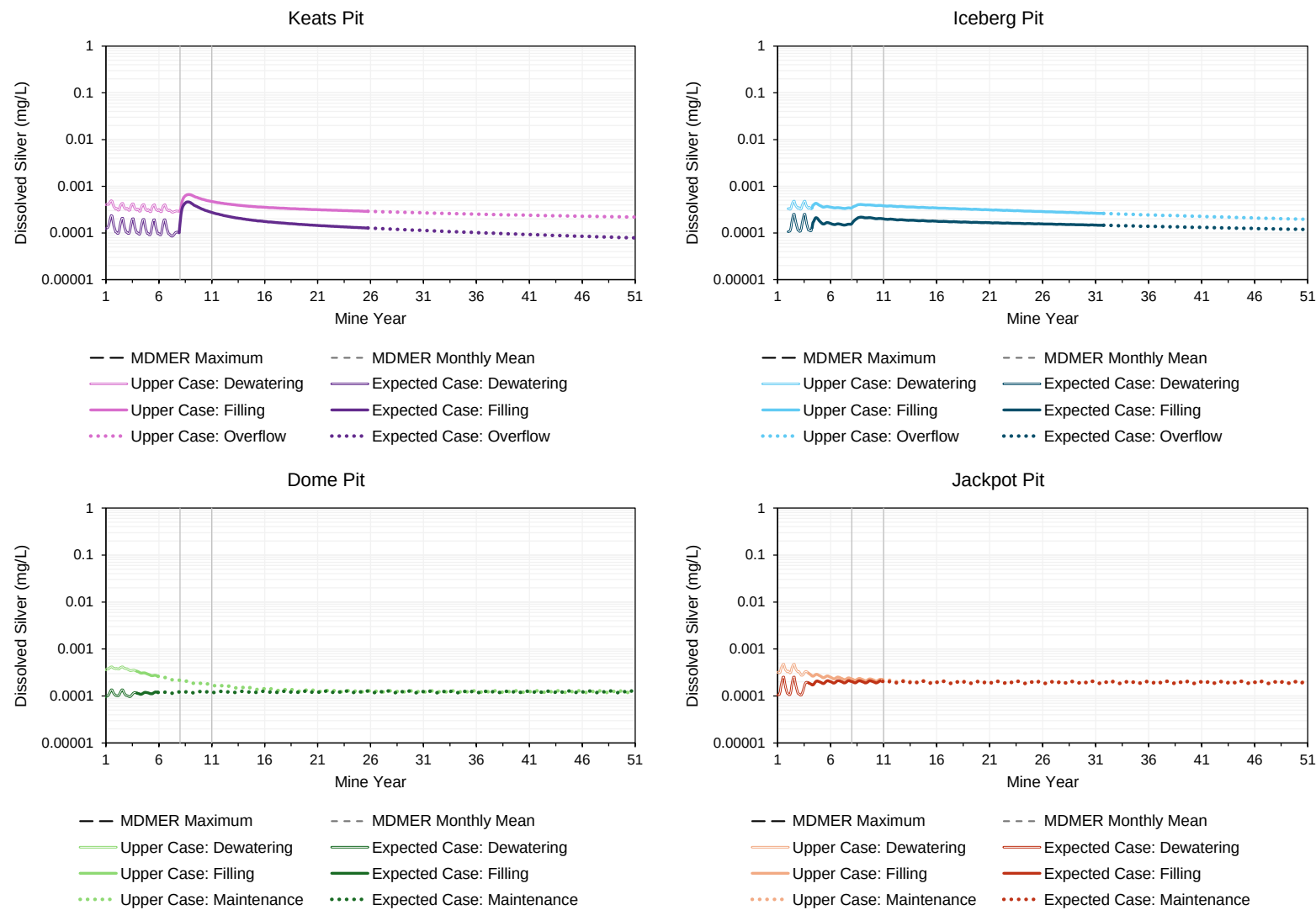




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

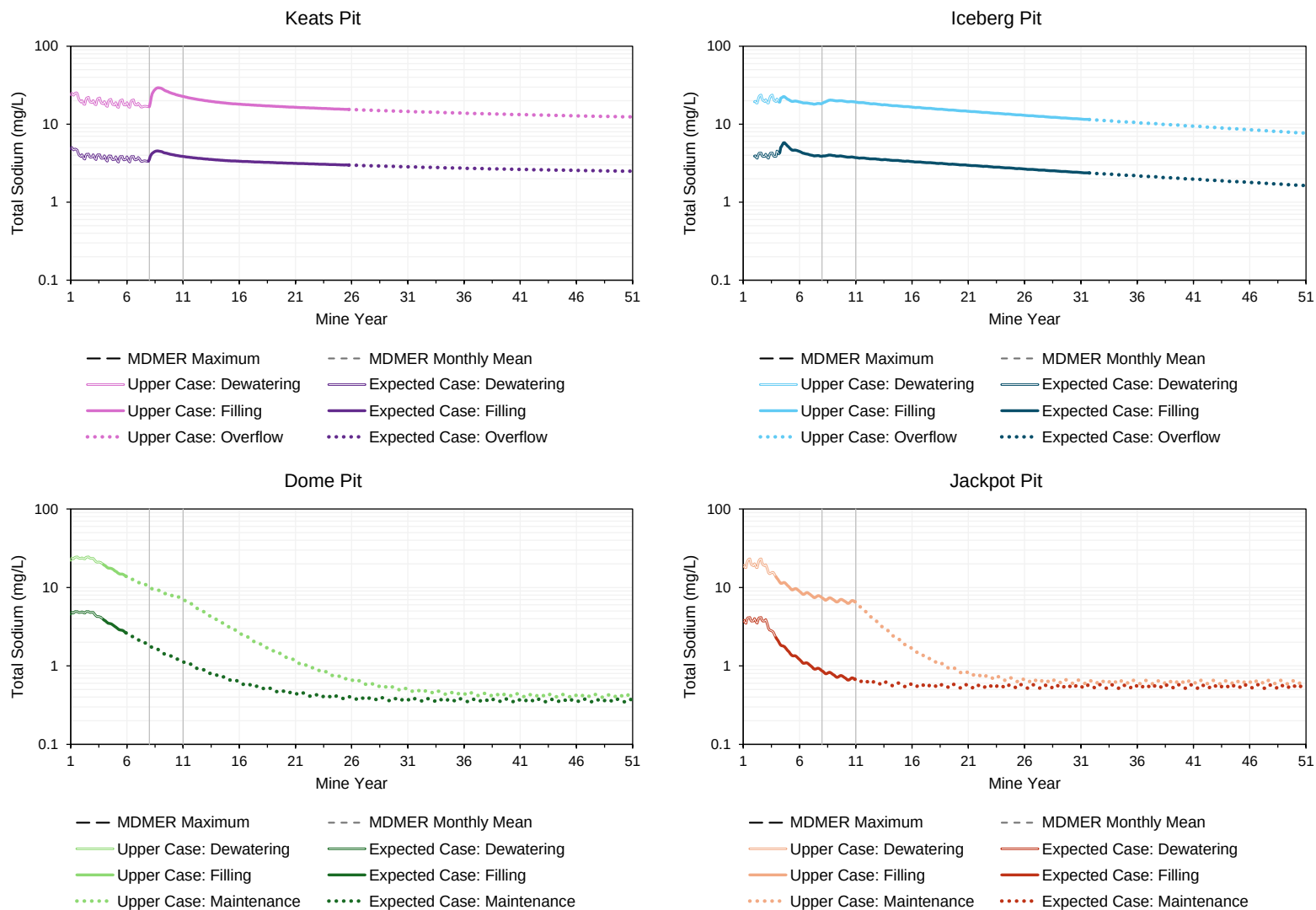
Figure F.50 Open Pit Water Quality Time-Series Plots for Total Silver (mg/L) Under Climate Normal Conditions



Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.51 Open Pit Water Quality Time-Series Plots for Dissolved Silver (mg/L) Under Climate Normal Conditions



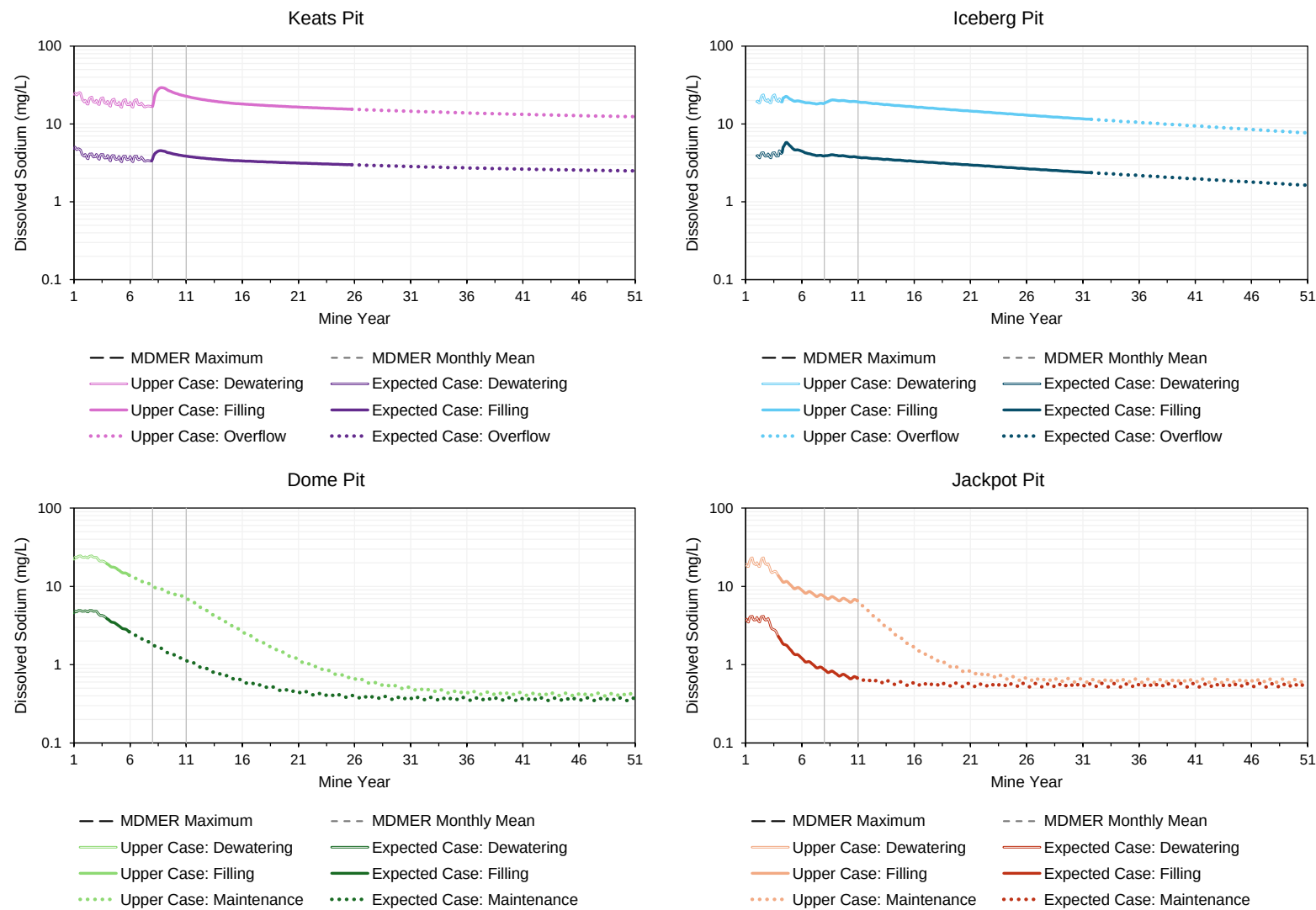


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.52 Open Pit Water Quality Time-Series Plots for Total Sodium (mg/L) Under Climate Normal Conditions

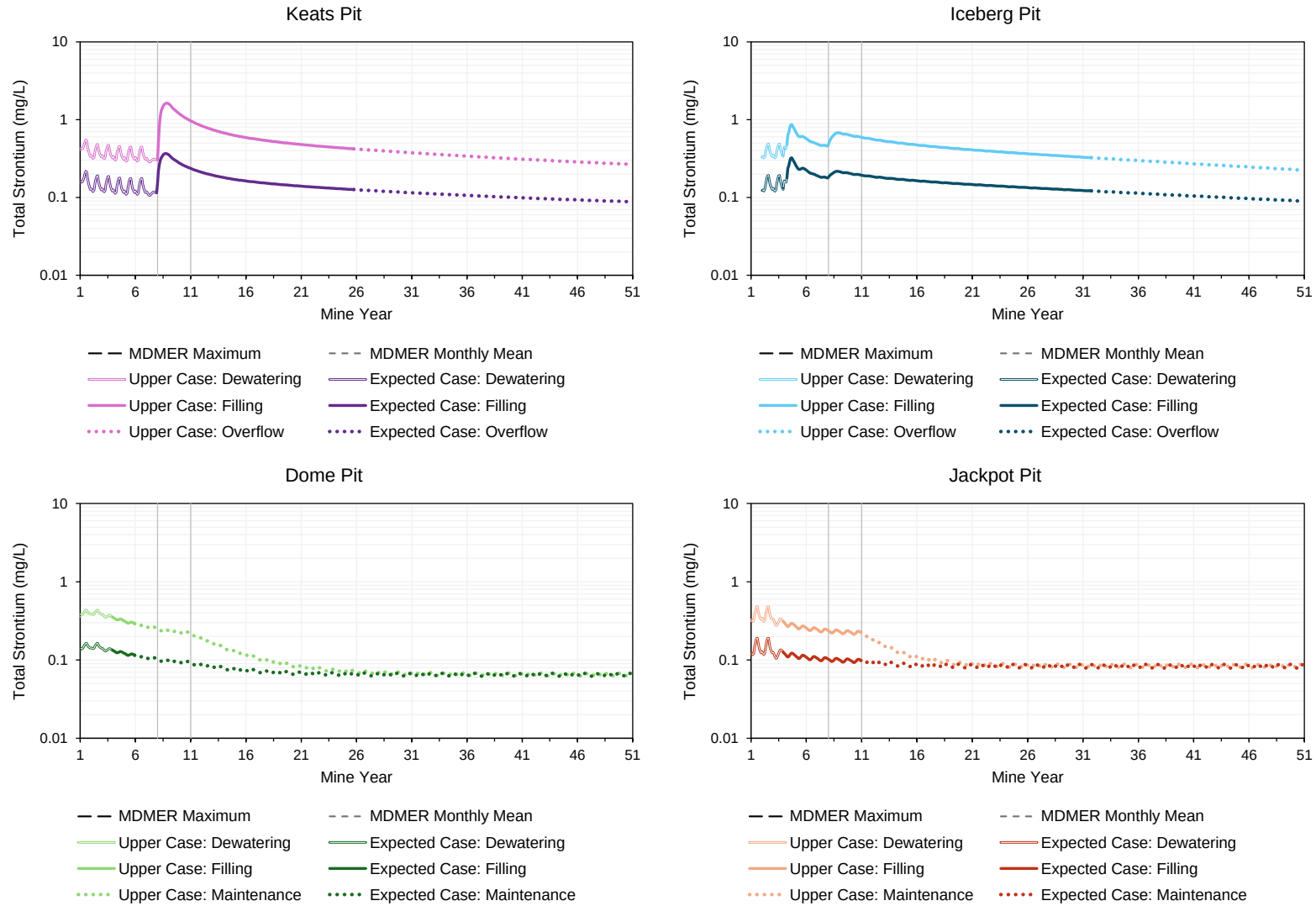




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.53 Open Pit Water Quality Time-Series Plots for Dissolved Sodium (mg/L) Under Climate Normal Conditions

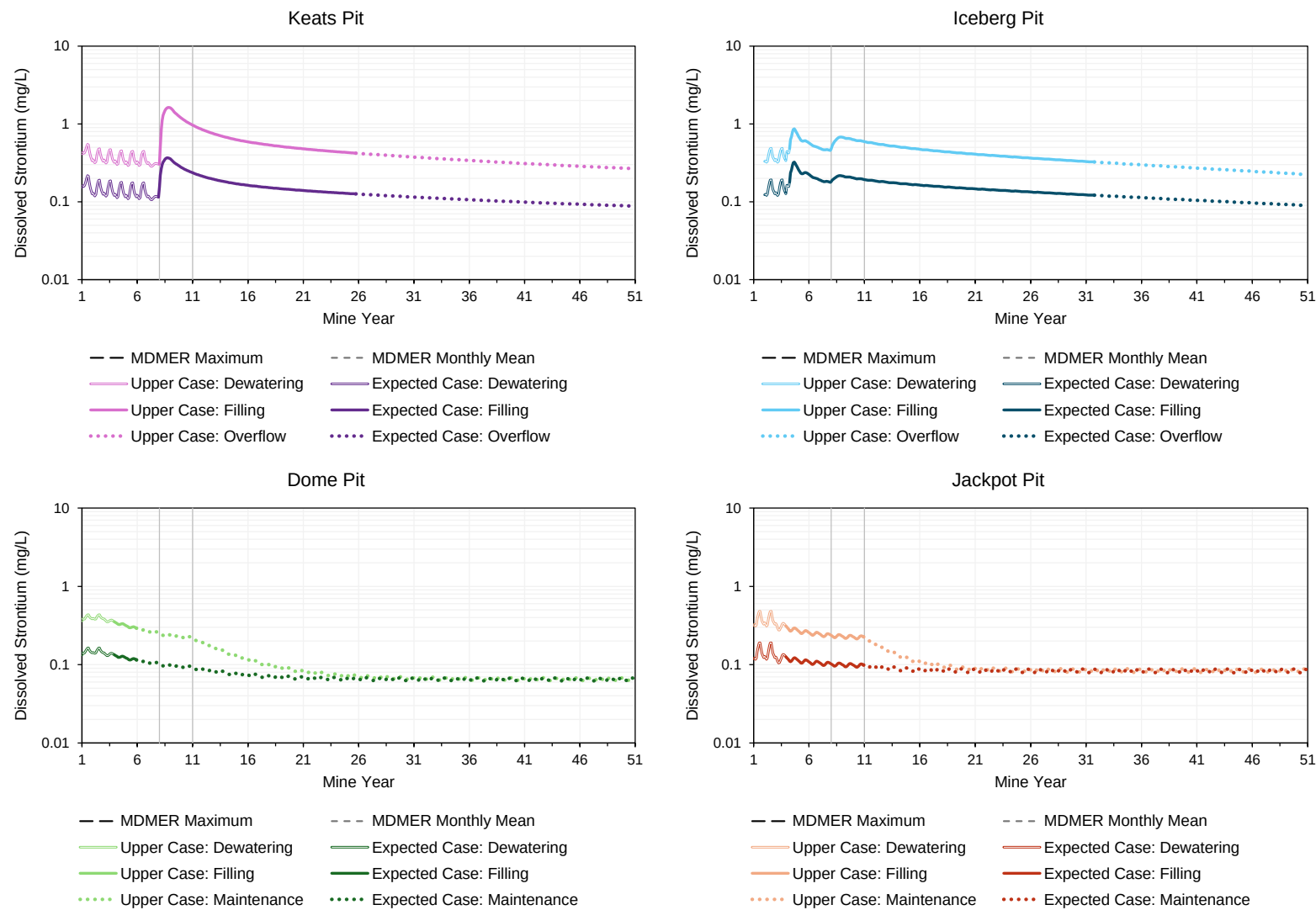




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

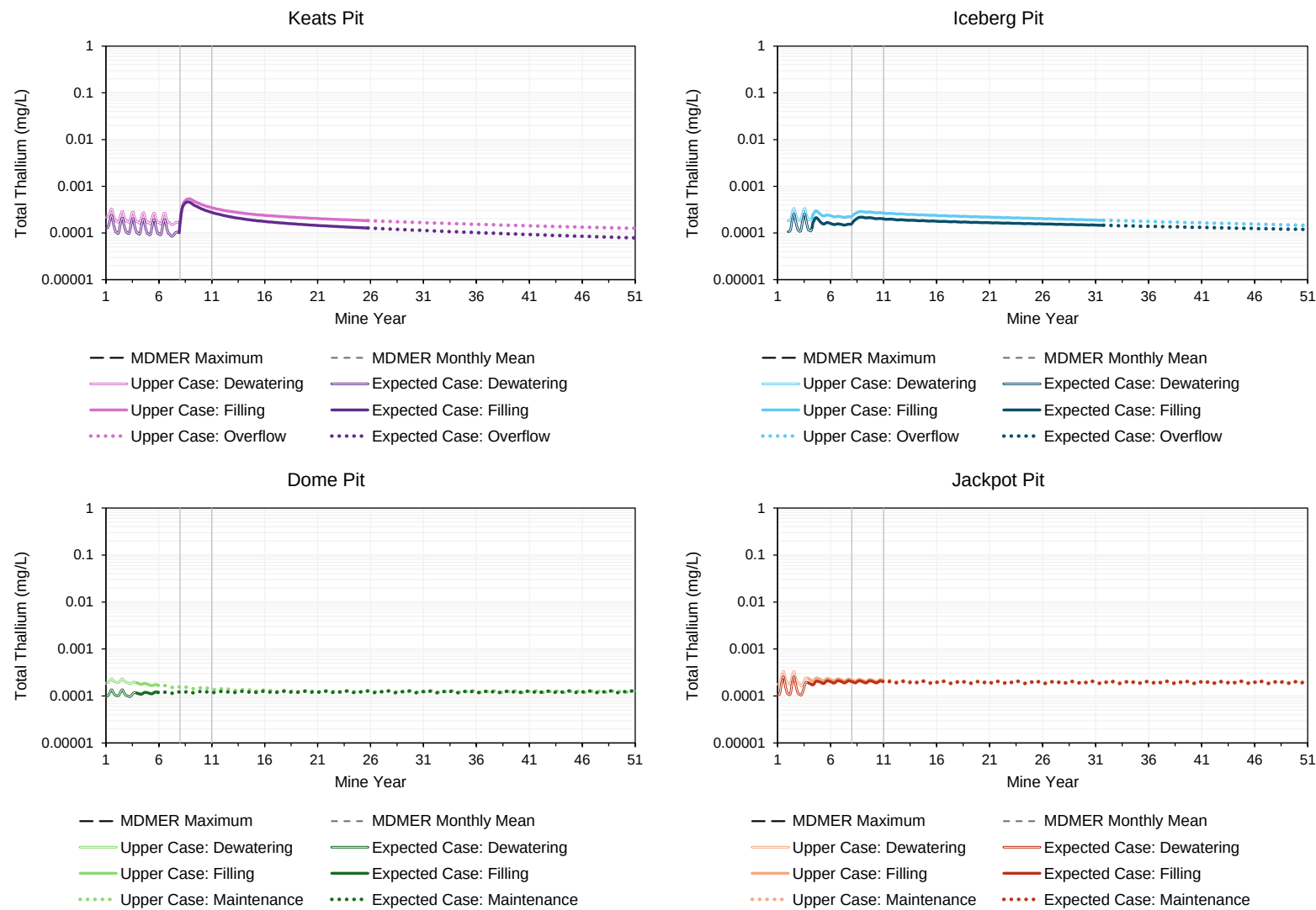
Figure F.54 Open Pit Water Quality Time-Series Plots for Total Strontium (mg/L) Under Climate Normal Conditions



Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.55 Open Pit Water Quality Time-Series Plots for Dissolved Strontium (mg/L) Under Climate Normal Conditions

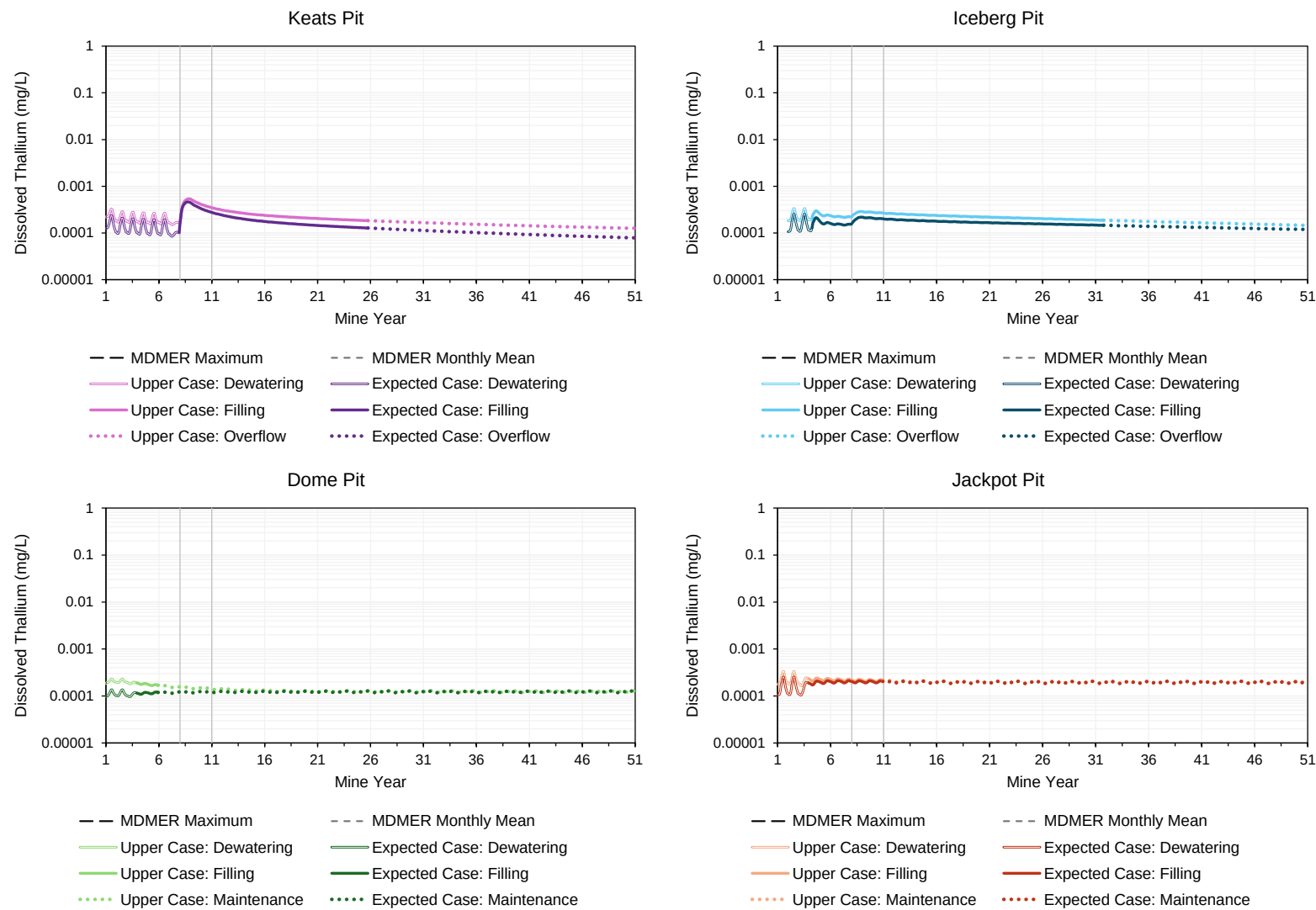




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.56 Open Pit Water Quality Time-Series Plots for Total Thallium (mg/L) Under Climate Normal Conditions

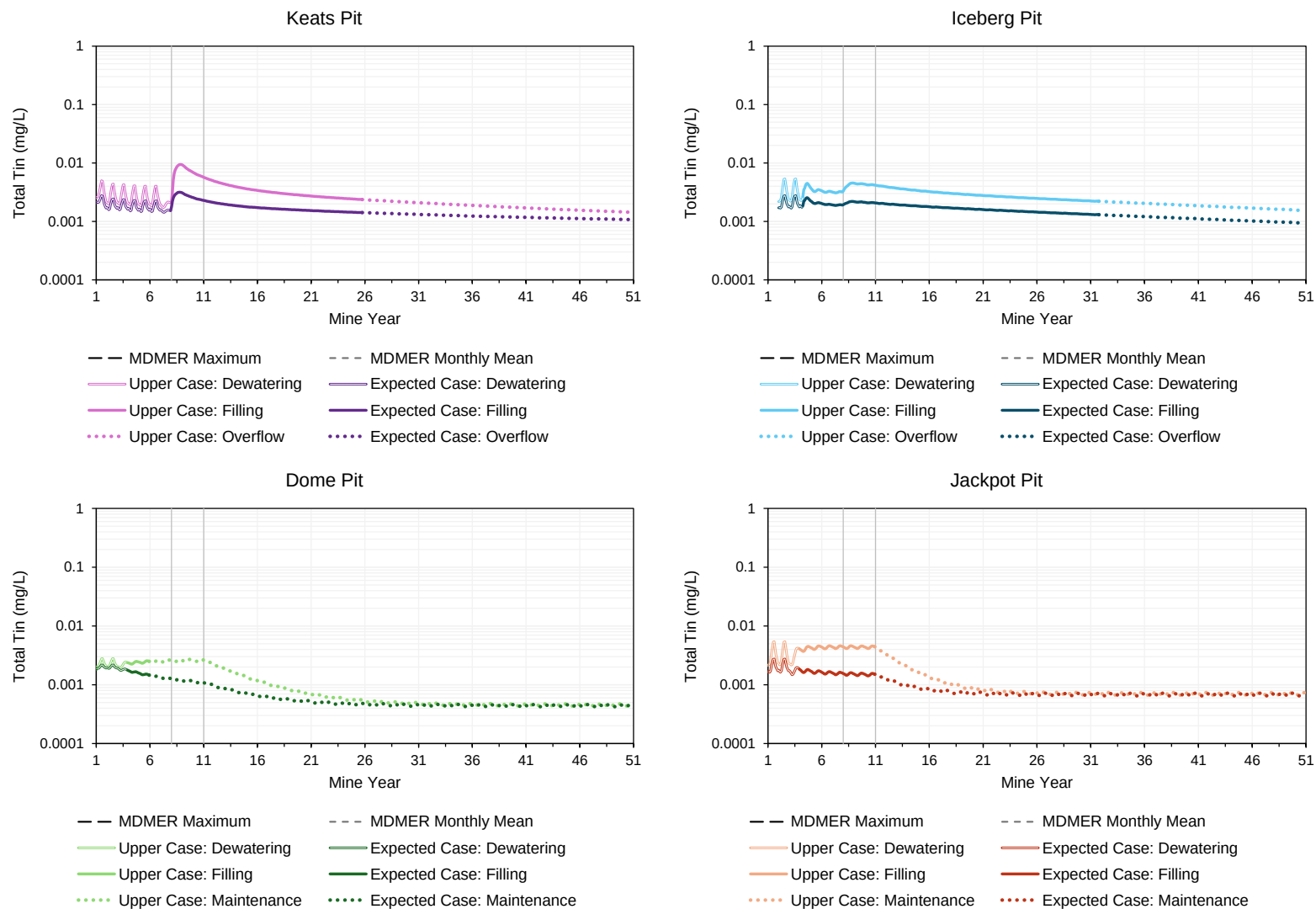




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.57 Open Pit Water Quality Time-Series Plots for Dissolved Thallium (mg/L) Under Climate Normal Conditions

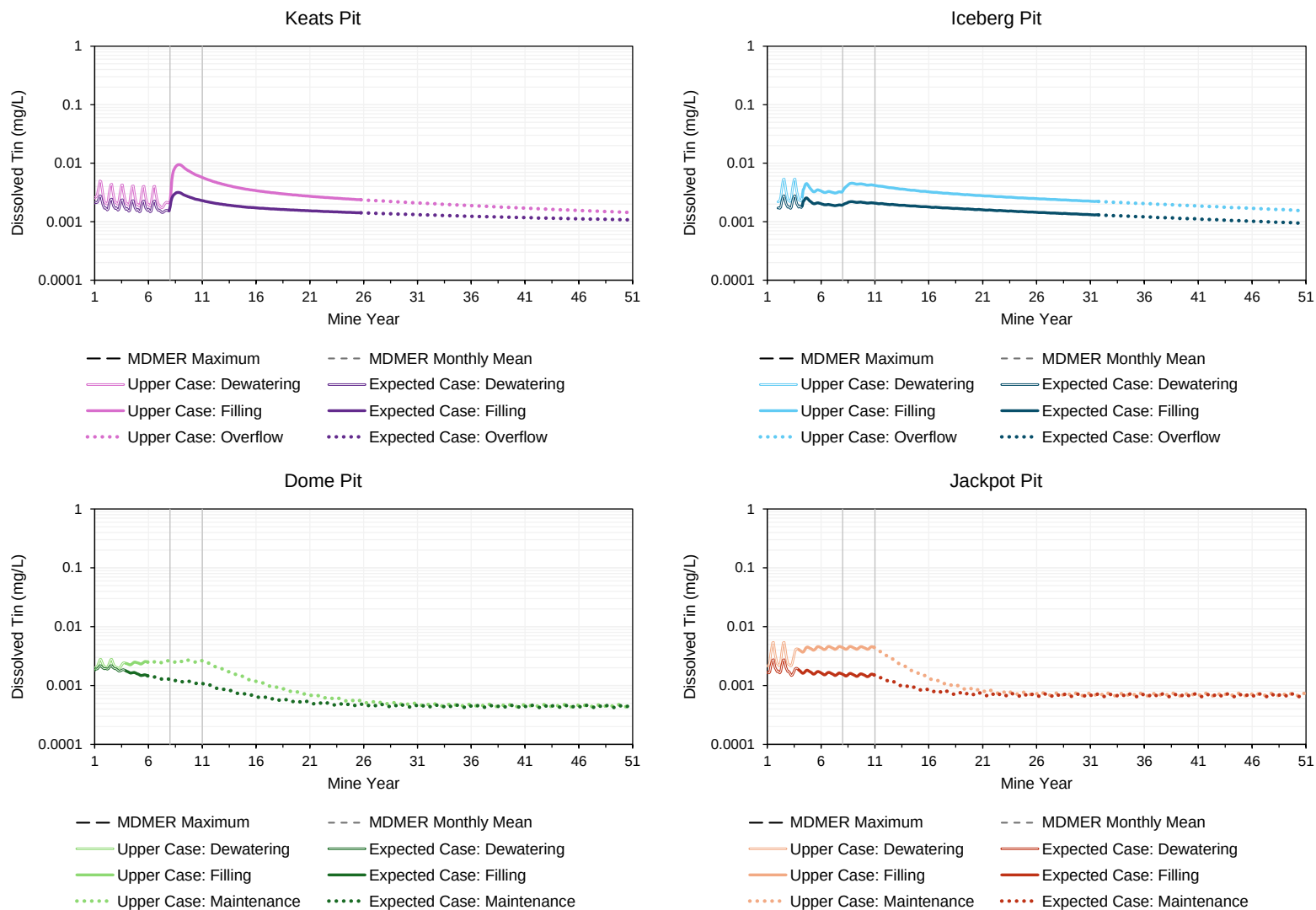




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

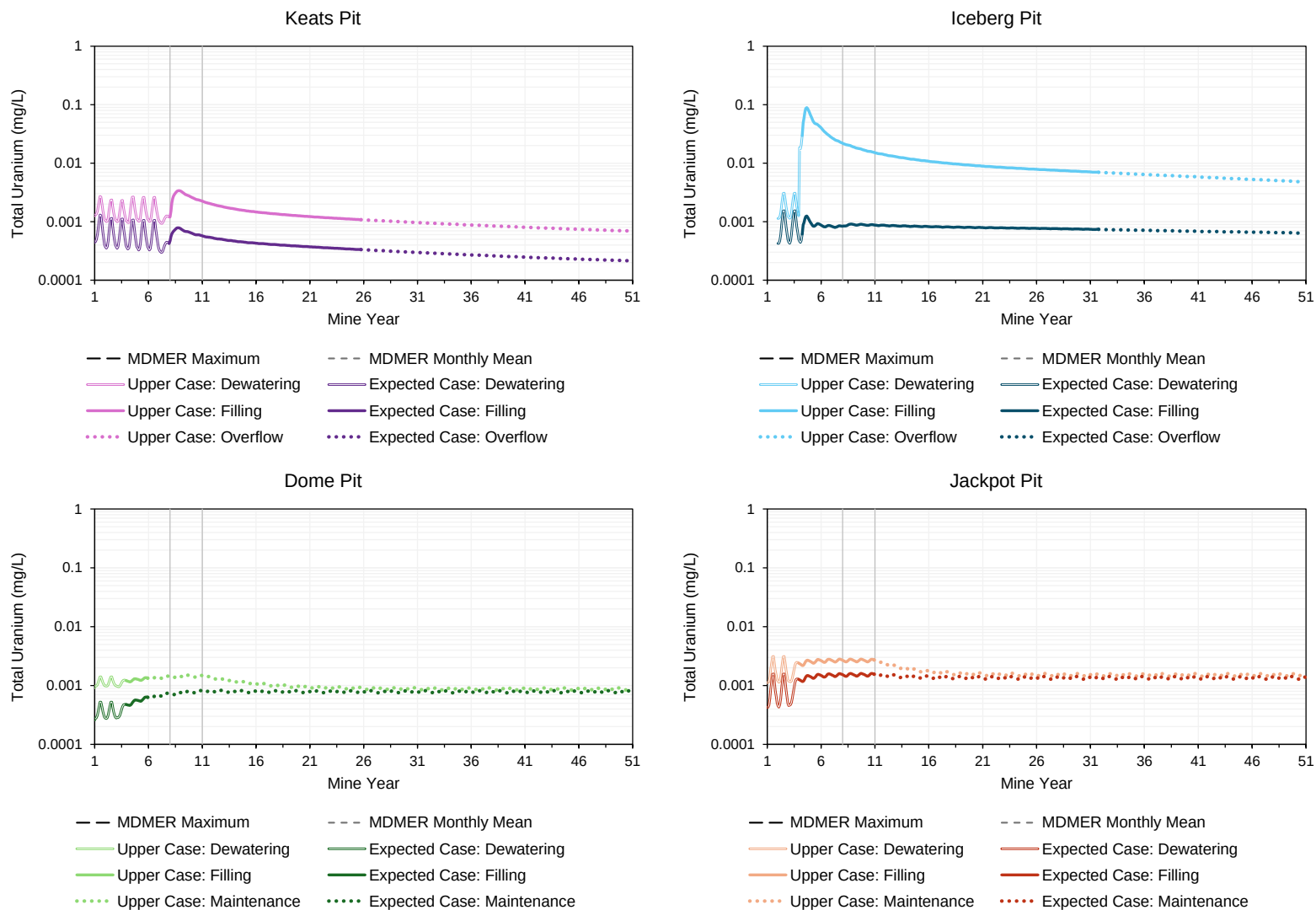
Figure F.58 Open Pit Water Quality Time-Series Plots for Total Tin (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

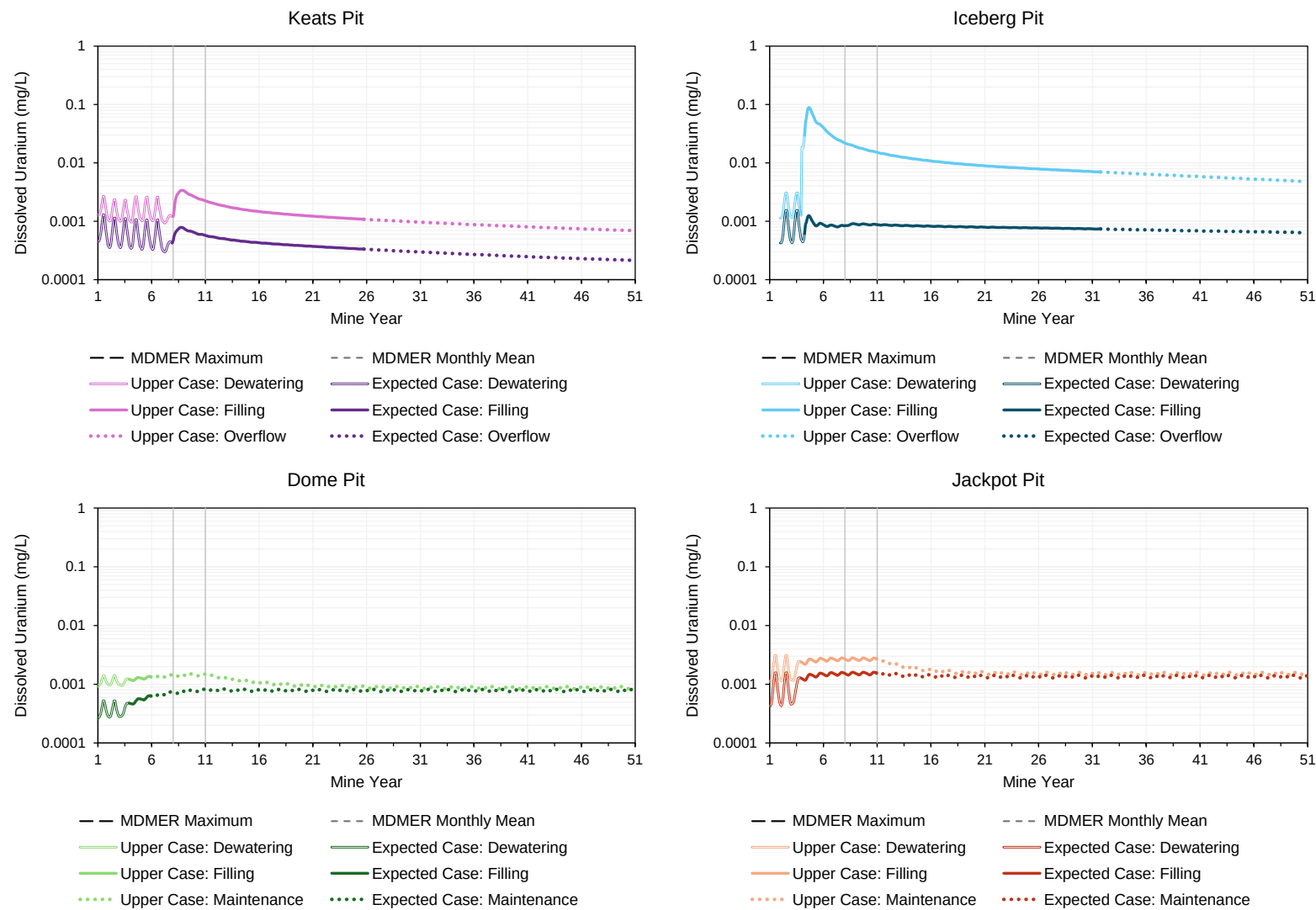
Figure F.59 Open Pit Water Quality Time-Series Plots for Dissolved Tin (mg/L) Under Climate Normal Conditions



Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

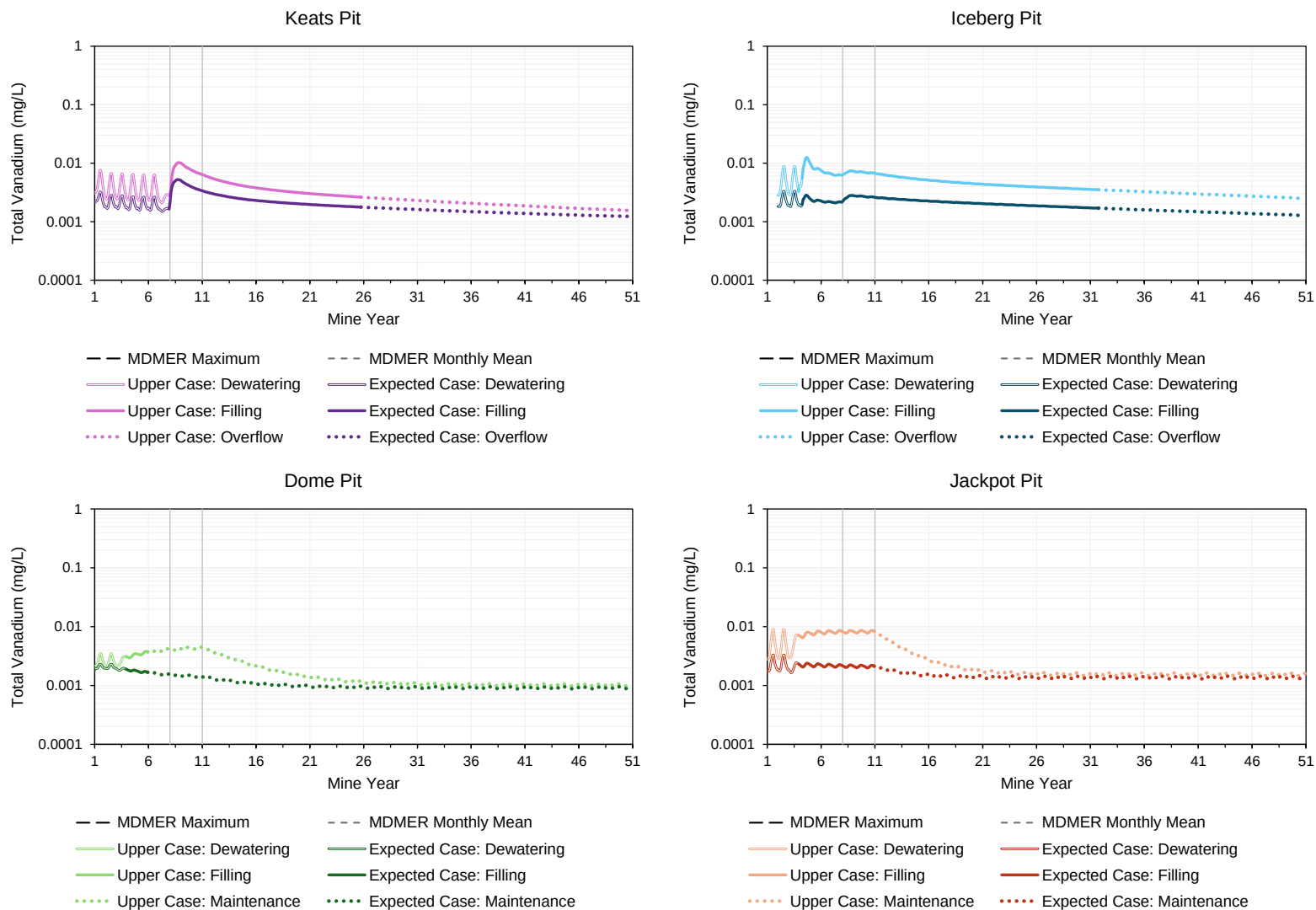
Figure F.60 Open Pit Water Quality Time-Series Plots for Total Uranium (mg/L) Under Climate Normal Conditions



Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.61 Open Pit Water Quality Time-Series Plots for Dissolved Uranium (mg/L) Under Climate Normal Conditions



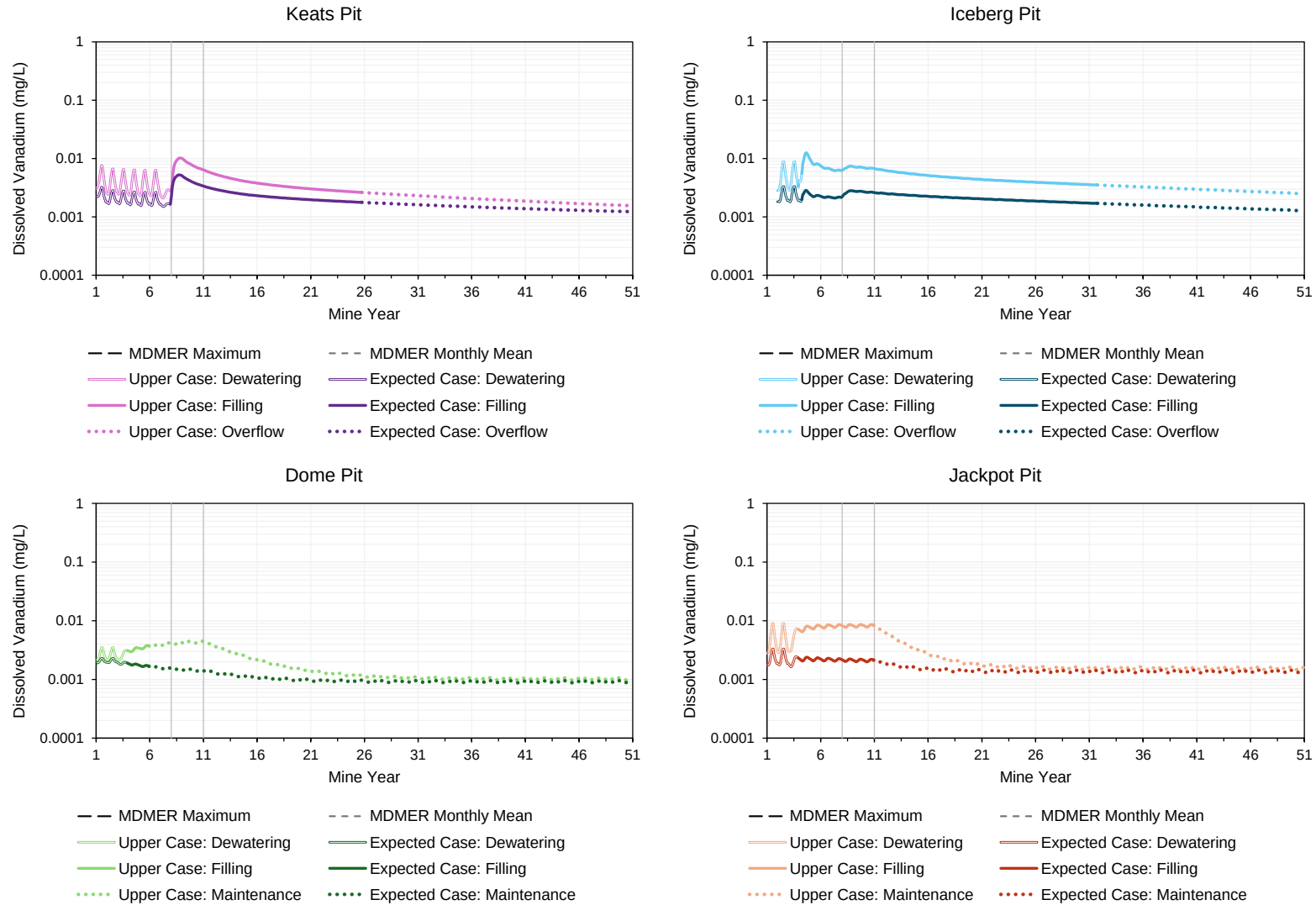


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.62 Open Pit Water Quality Time-Series Plots for Total Vanadium (mg/L) Under Climate Normal Conditions

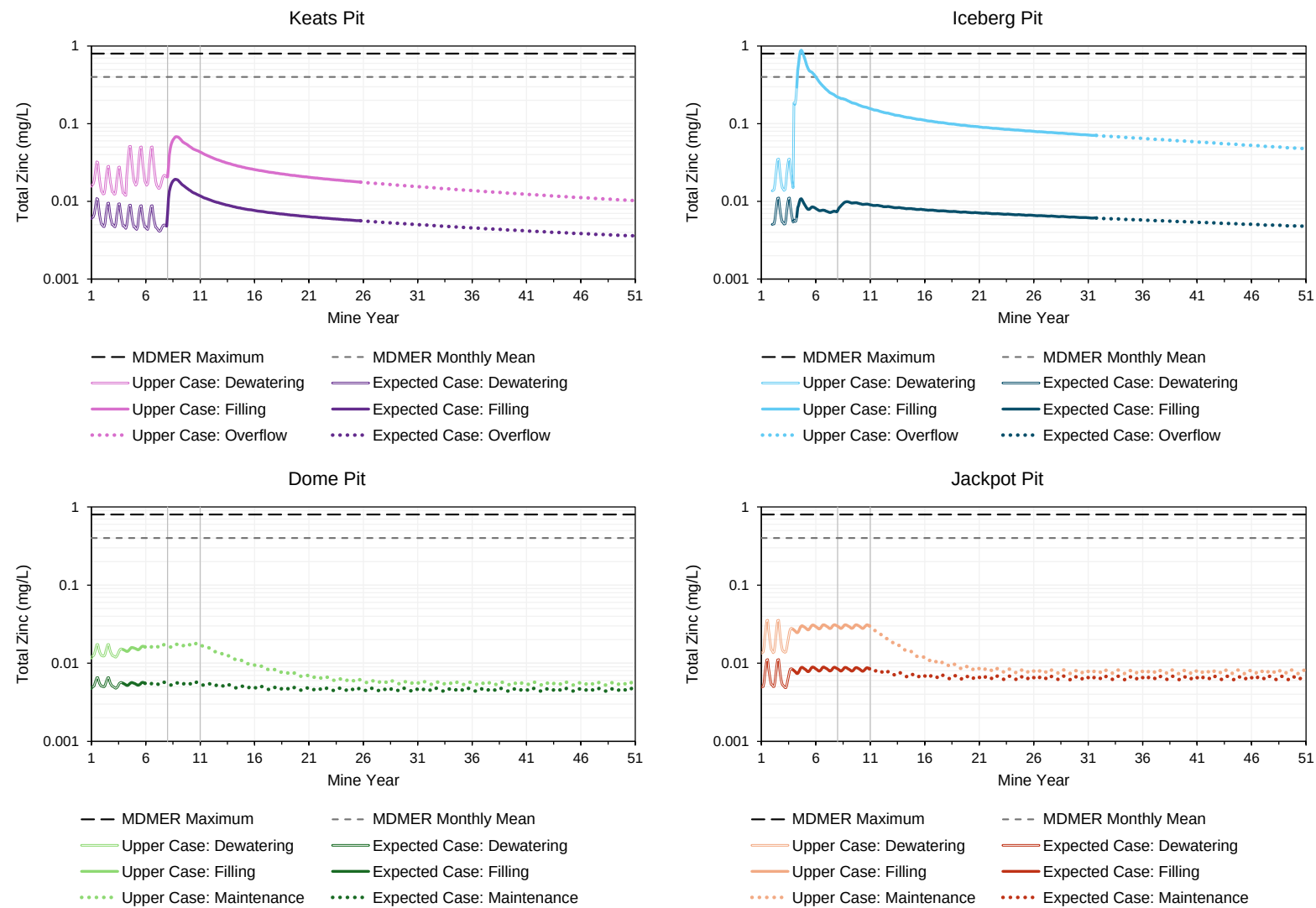




Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

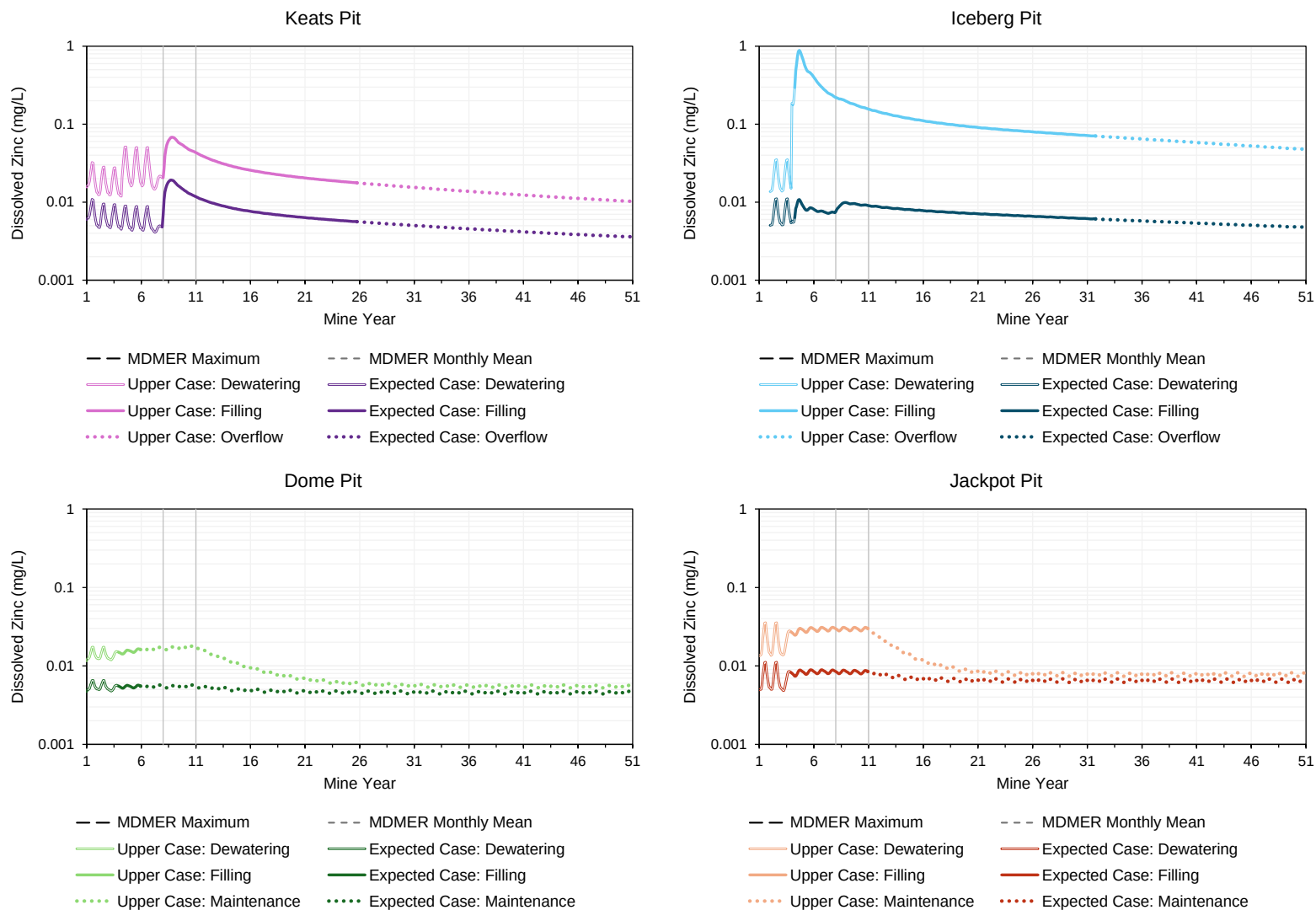
Figure F.63 Open Pit Water Quality Time-Series Plots for Dissolved Vanadium (mg/L) Under Climate Normal Conditions



Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L), and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.64 Open Pit Water Quality Time-Series Plots for Total Zinc (mg/L) Under Climate Normal Conditions





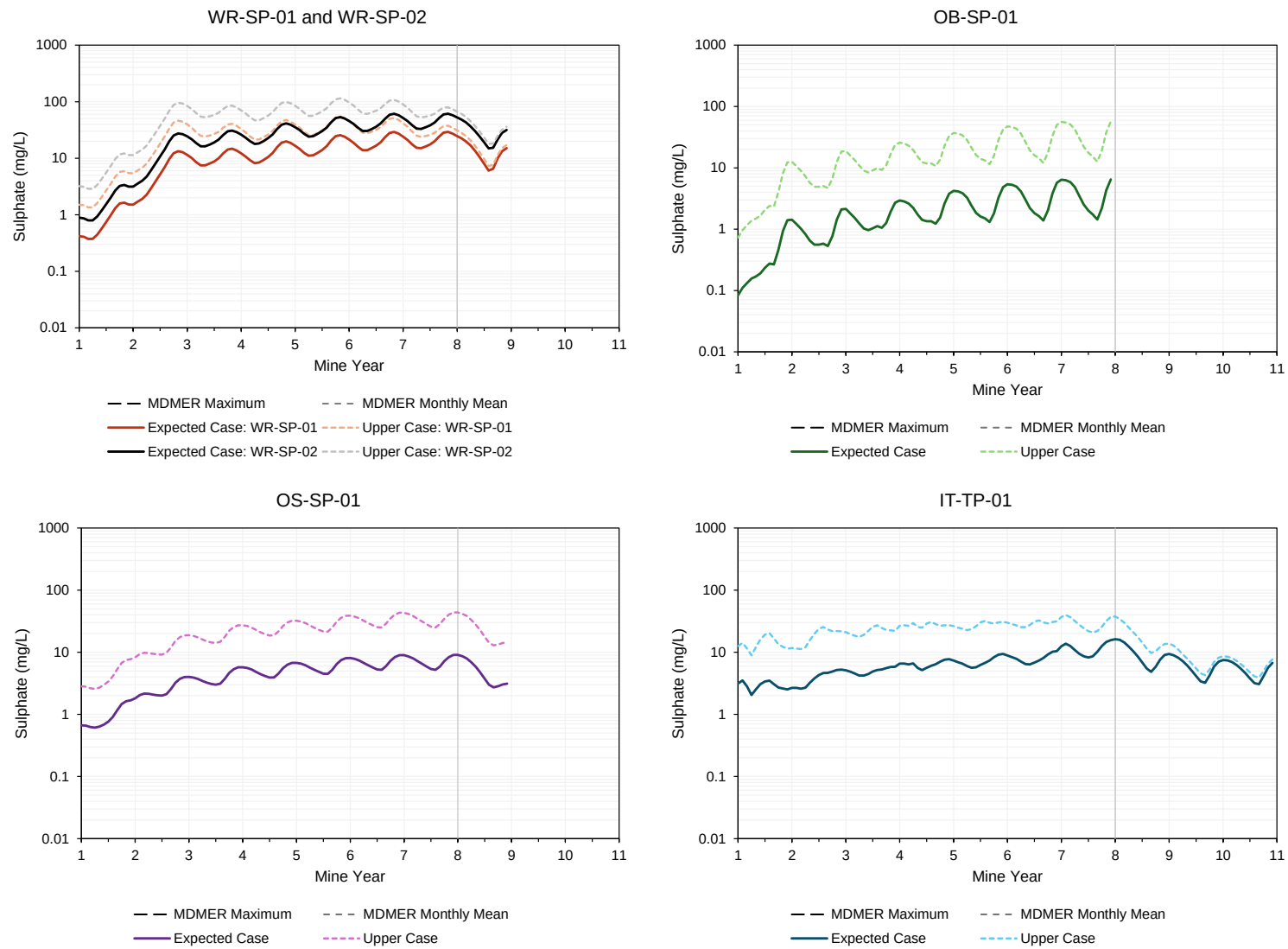
Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7), active closure (Mine Years 8 to 10), and post-closure (Mine Years 11+). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L), and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure F.65 Open Pit Water Quality Time-Series Plots for Dissolved Zinc (mg/L) Under Climate Normal Conditions

Appendix G Water Quality Model Results: Water Management Pond Time-Series Plots

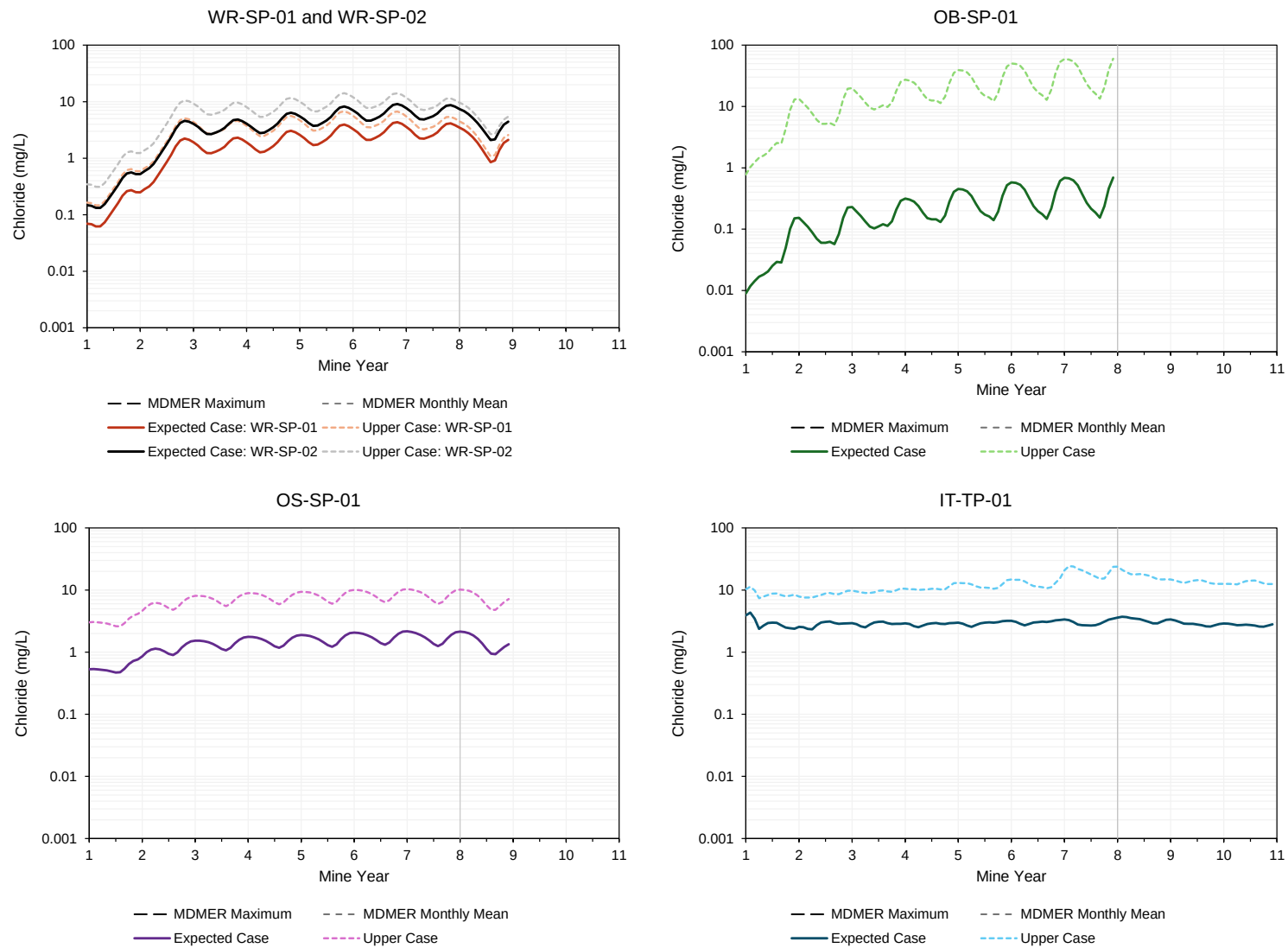




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.1 Water Management Pond Water Quality Time-Series Plots for Sulphate (mg/L) Under Climate Normal Conditions

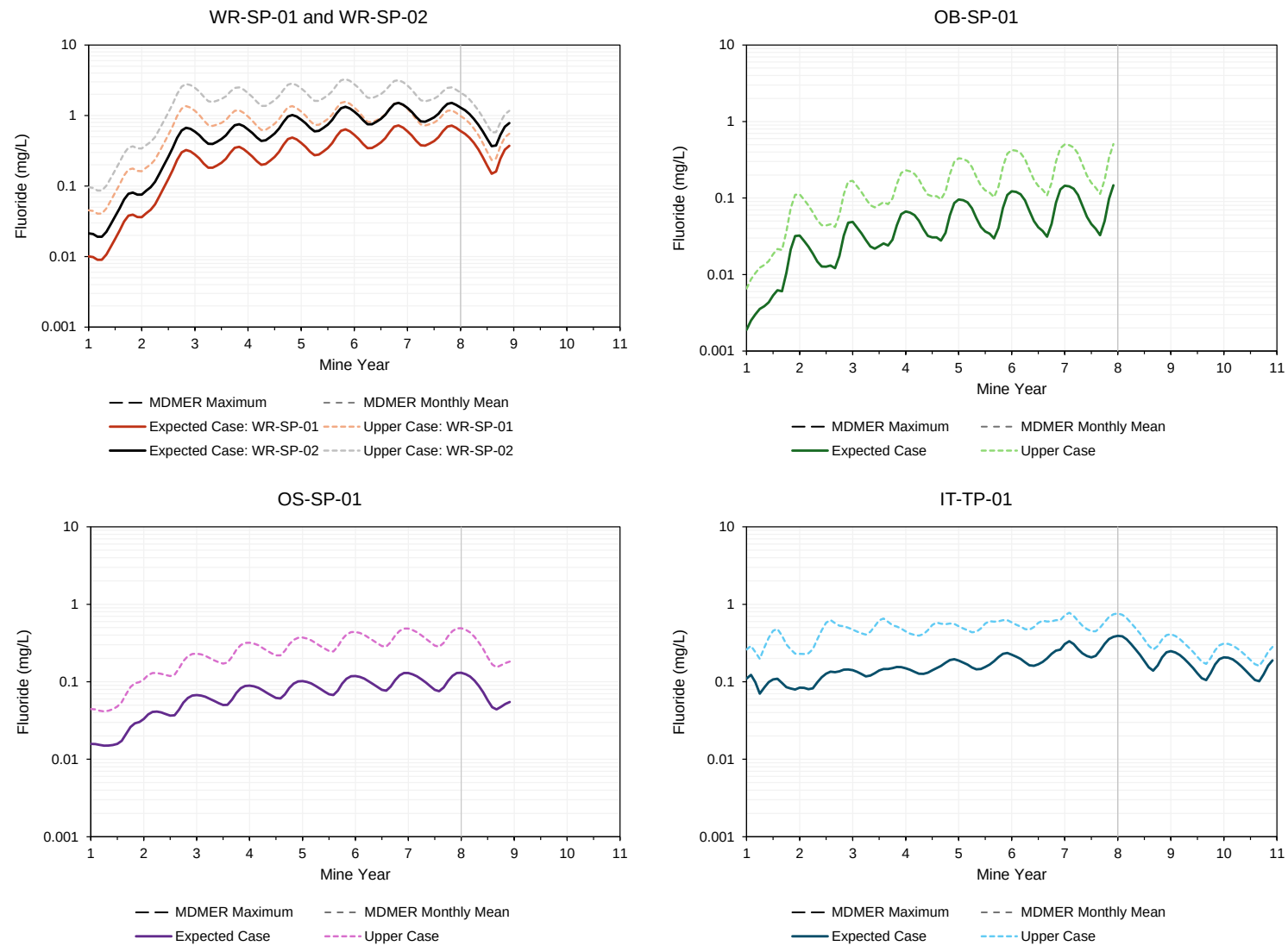




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.2 Water Management Pond Water Quality Time-Series Plots for Chloride (mg/L) Under Climate Normal Conditions

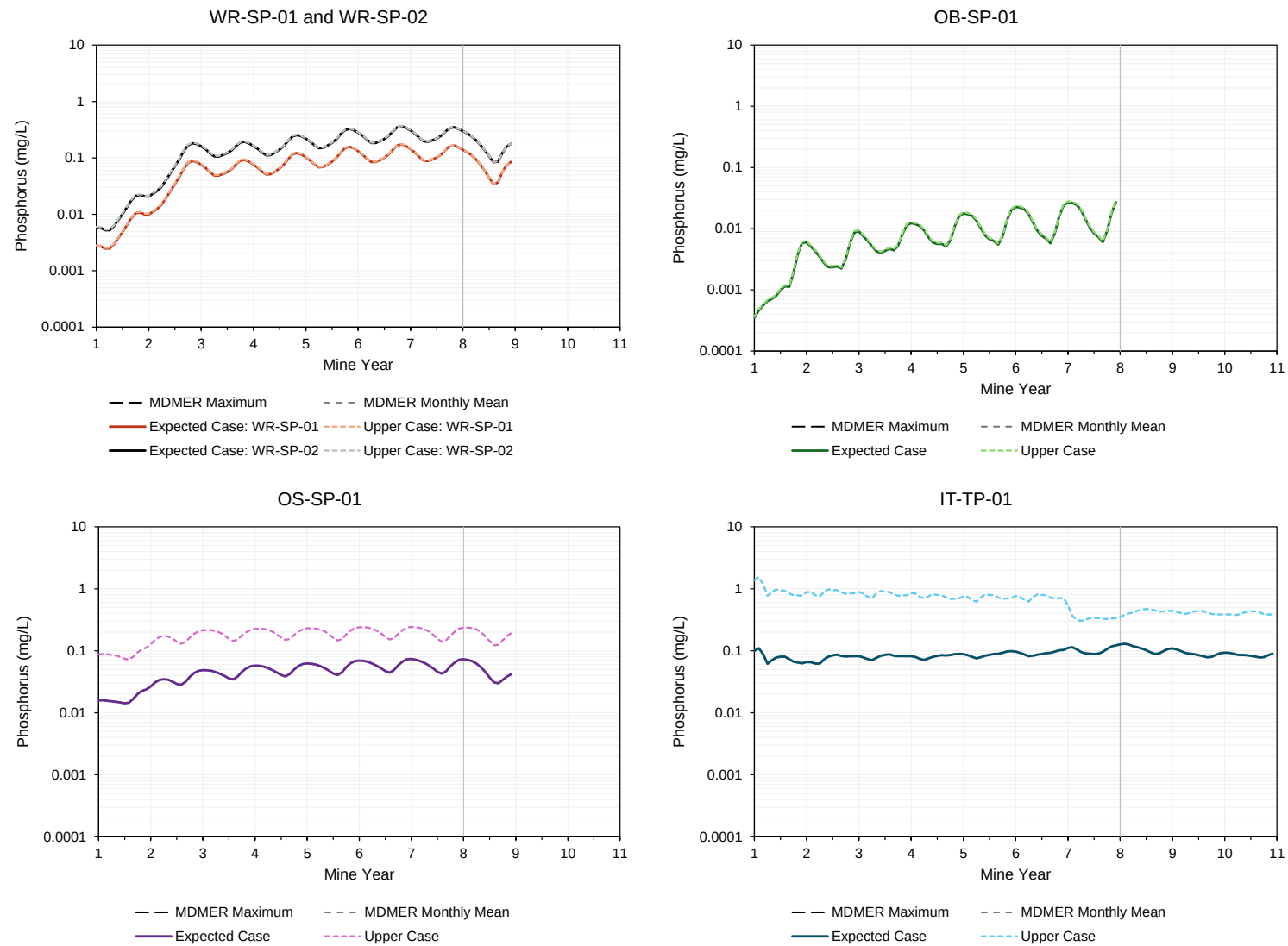




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.3 Water Management Pond Water Quality Time-Series Plots for Fluoride (mg/L) Under Climate Normal Conditions

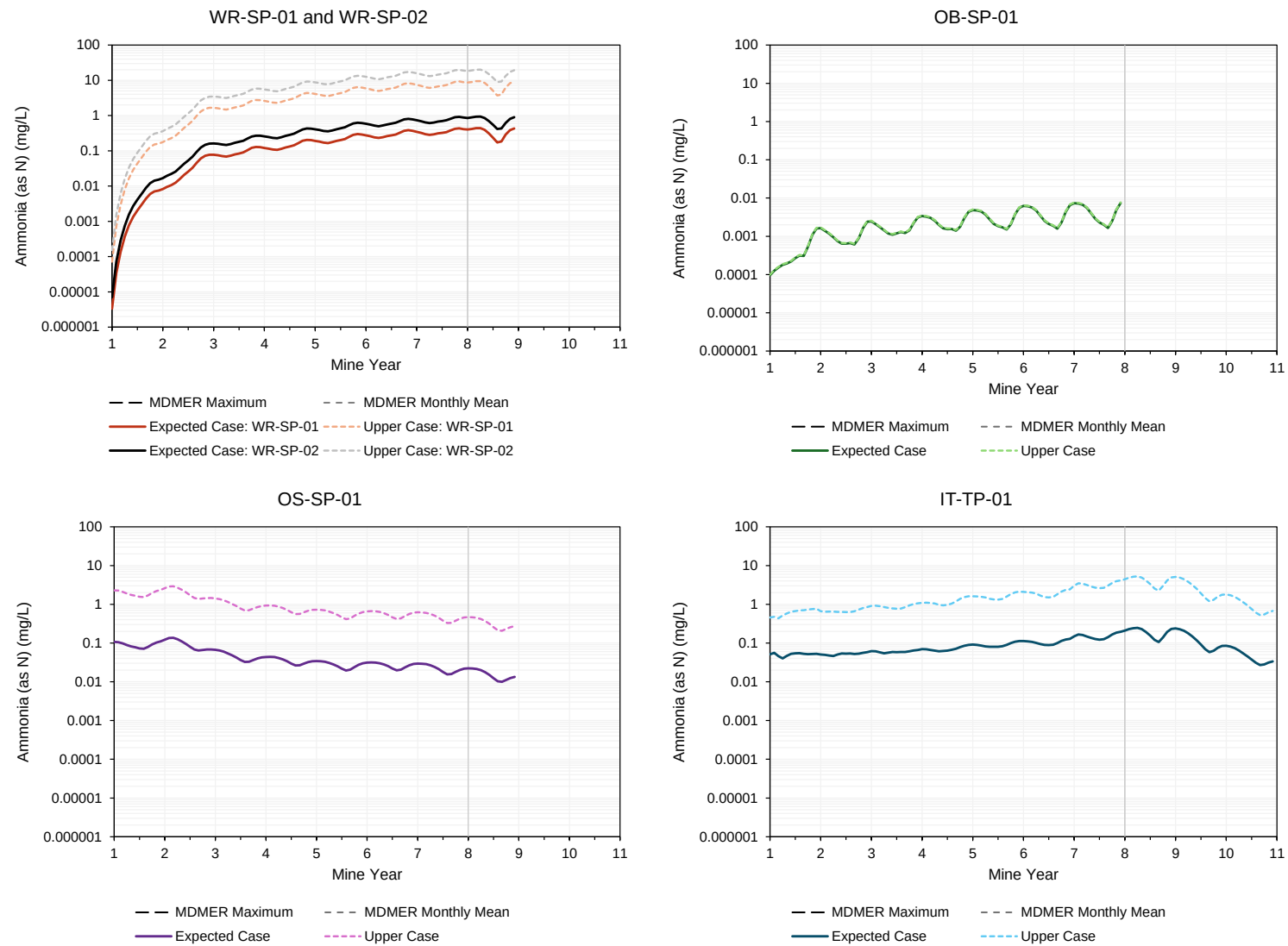




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.4 Water Management Pond Water Quality Time-Series Plots for Phosphorus (mg/L) Under Climate Normal Conditions

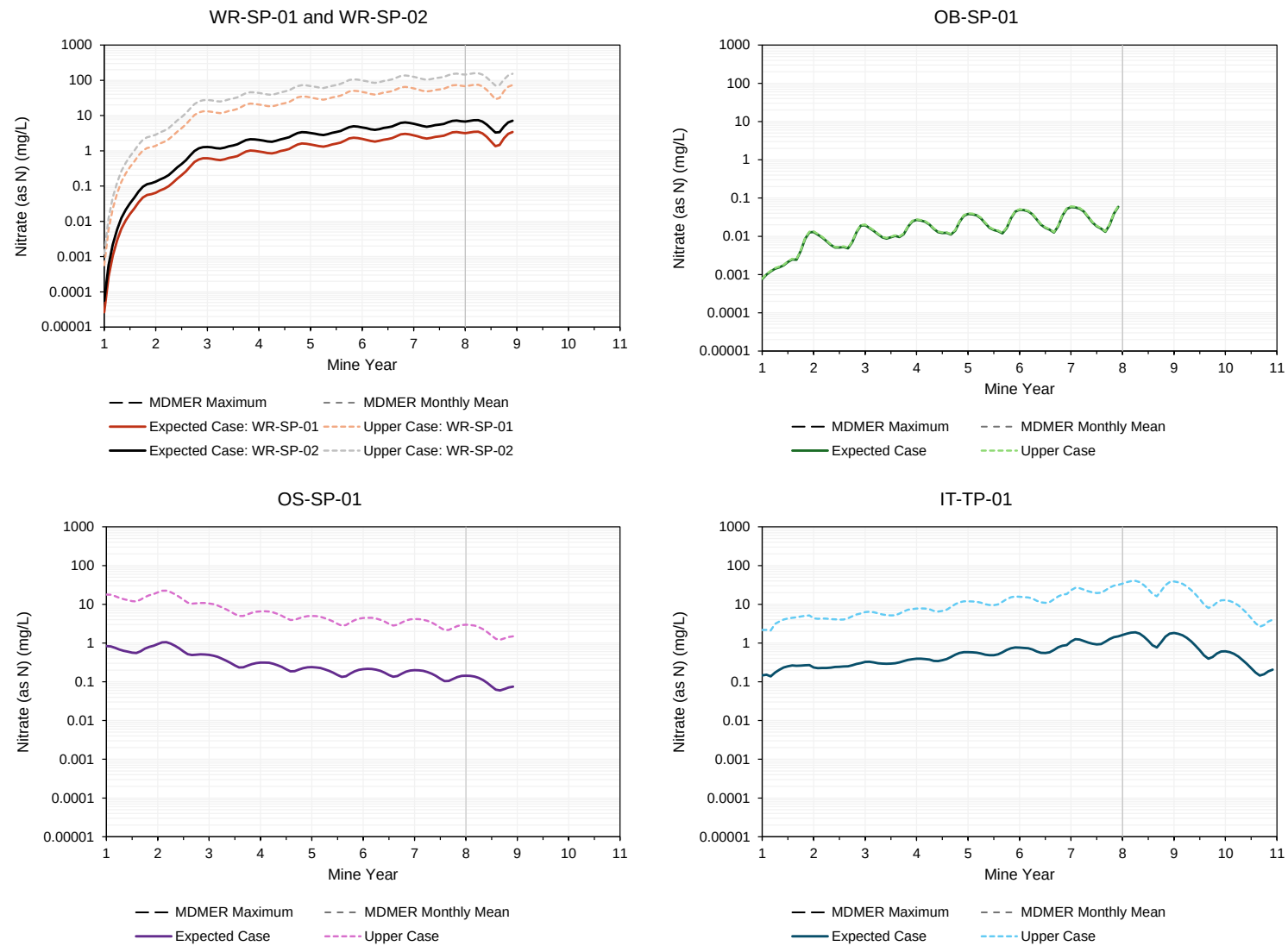




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.5 Water Management Pond Water Quality Time-Series Plots for Ammonia (as N) (mg/L) Under Climate Normal Conditions

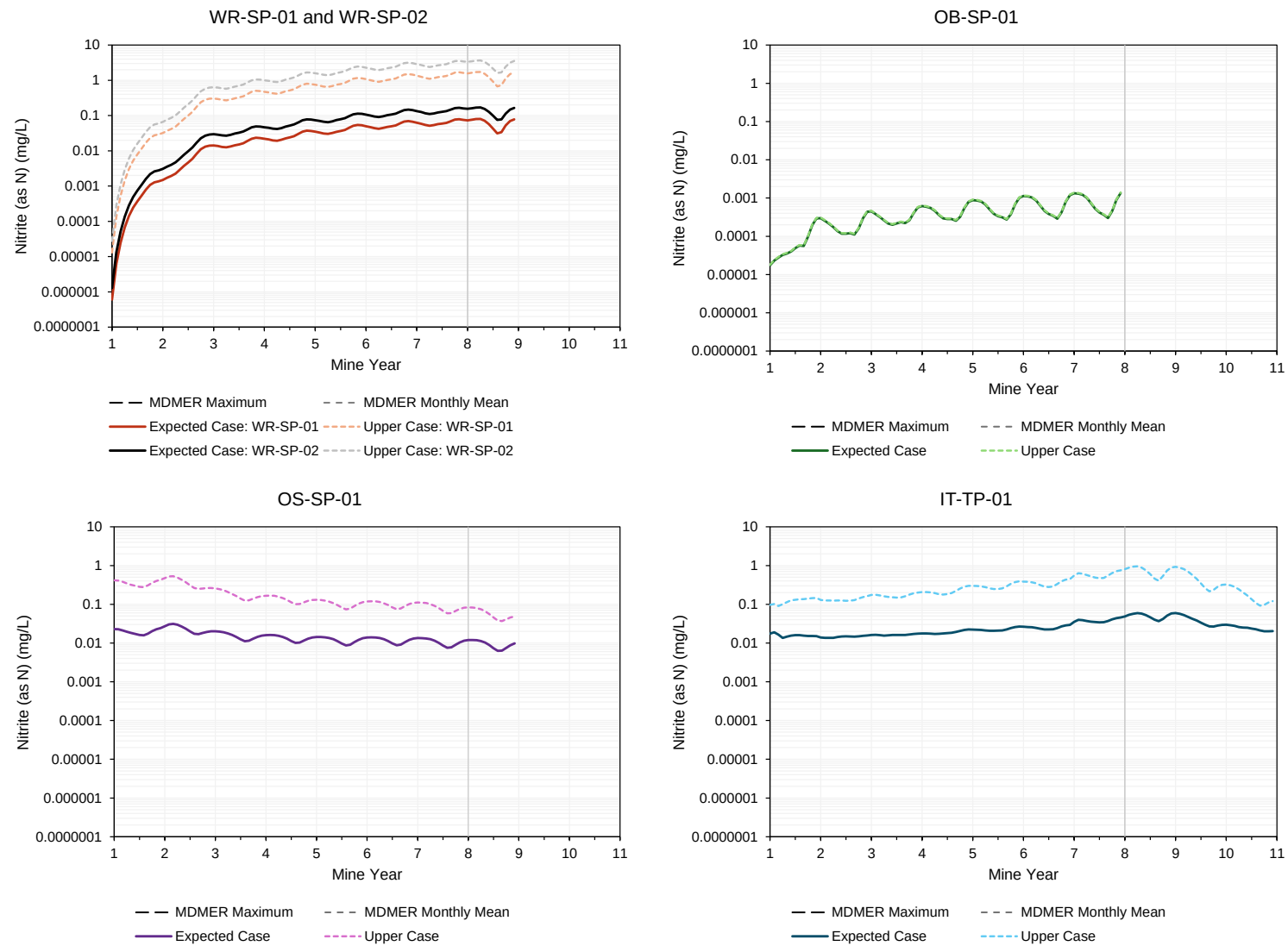




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.6 Water Management Pond Water Quality Time-Series Plots for Nitrate (as N) (mg/L) Under Climate Normal Conditions

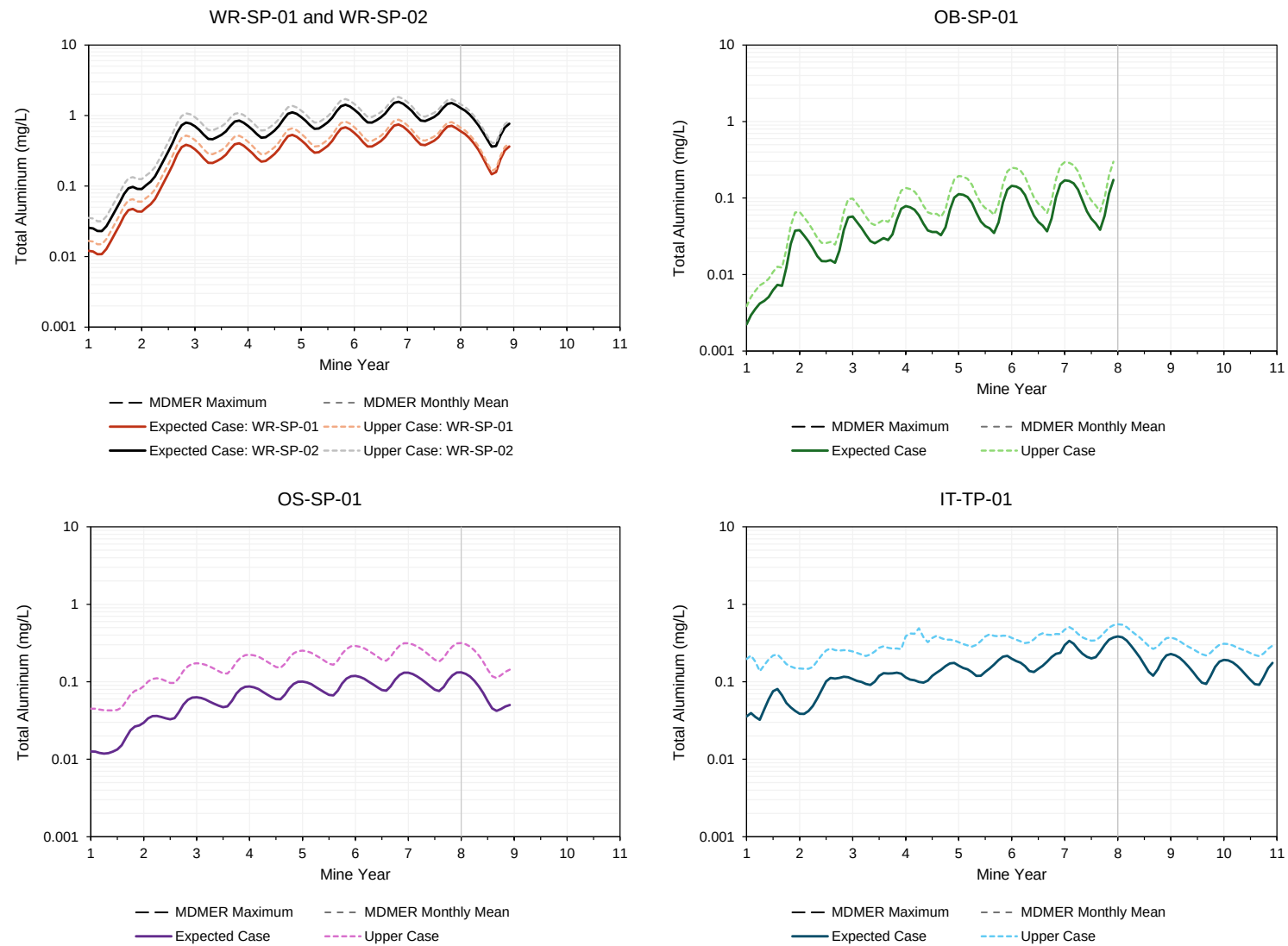




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.7 Water Management Pond Water Quality Time-Series Plots for Nitrite (as N) (mg/L) Under Climate Normal Conditions

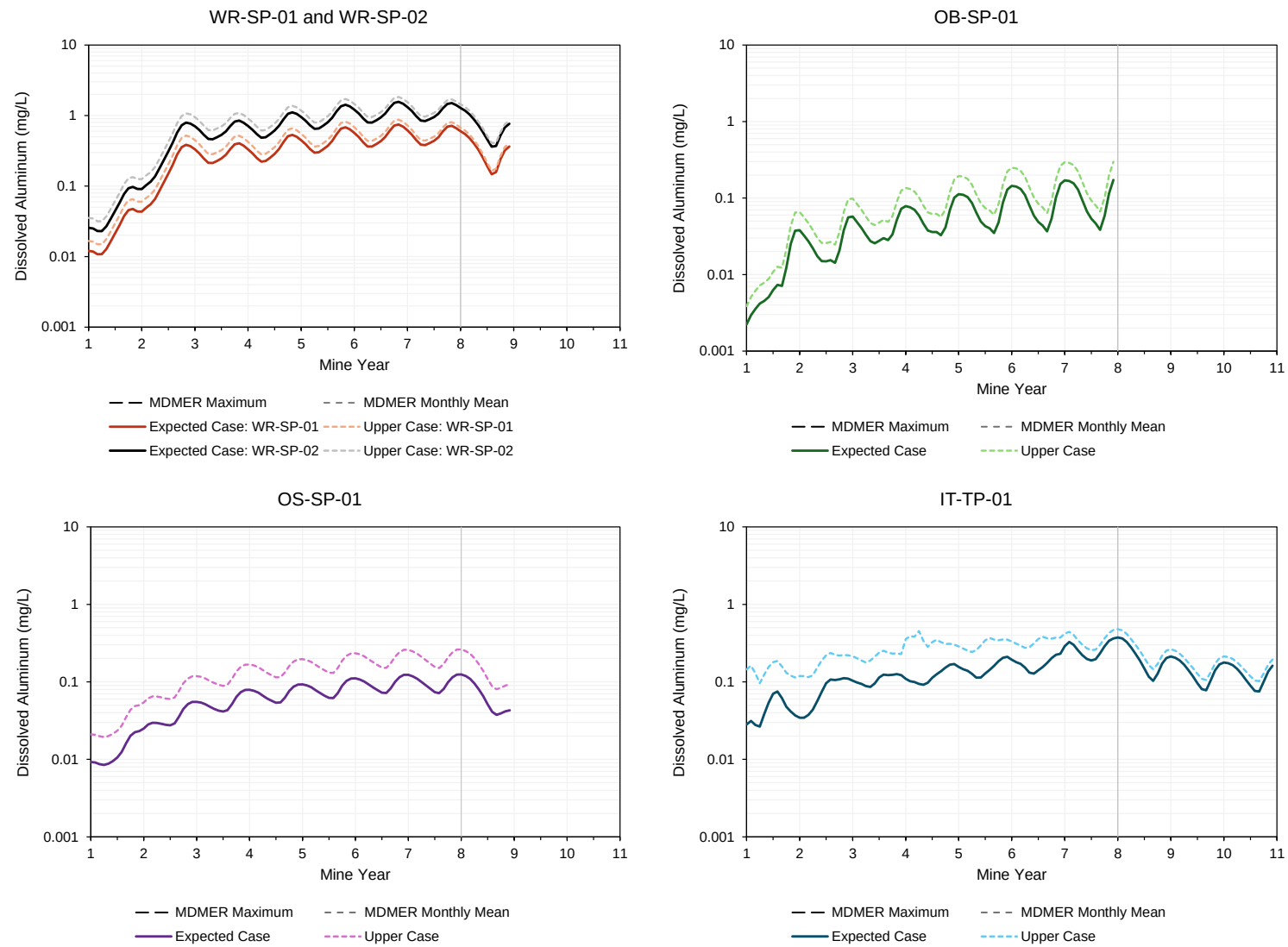




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.8 Water Management Pond Water Quality Time-Series Plots for Total Aluminum (mg/L) Under Climate Normal Conditions





Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.9 Water Management Pond Water Quality Time-Series Plots for Dissolved Aluminum (mg/L) Under Climate Normal Conditions



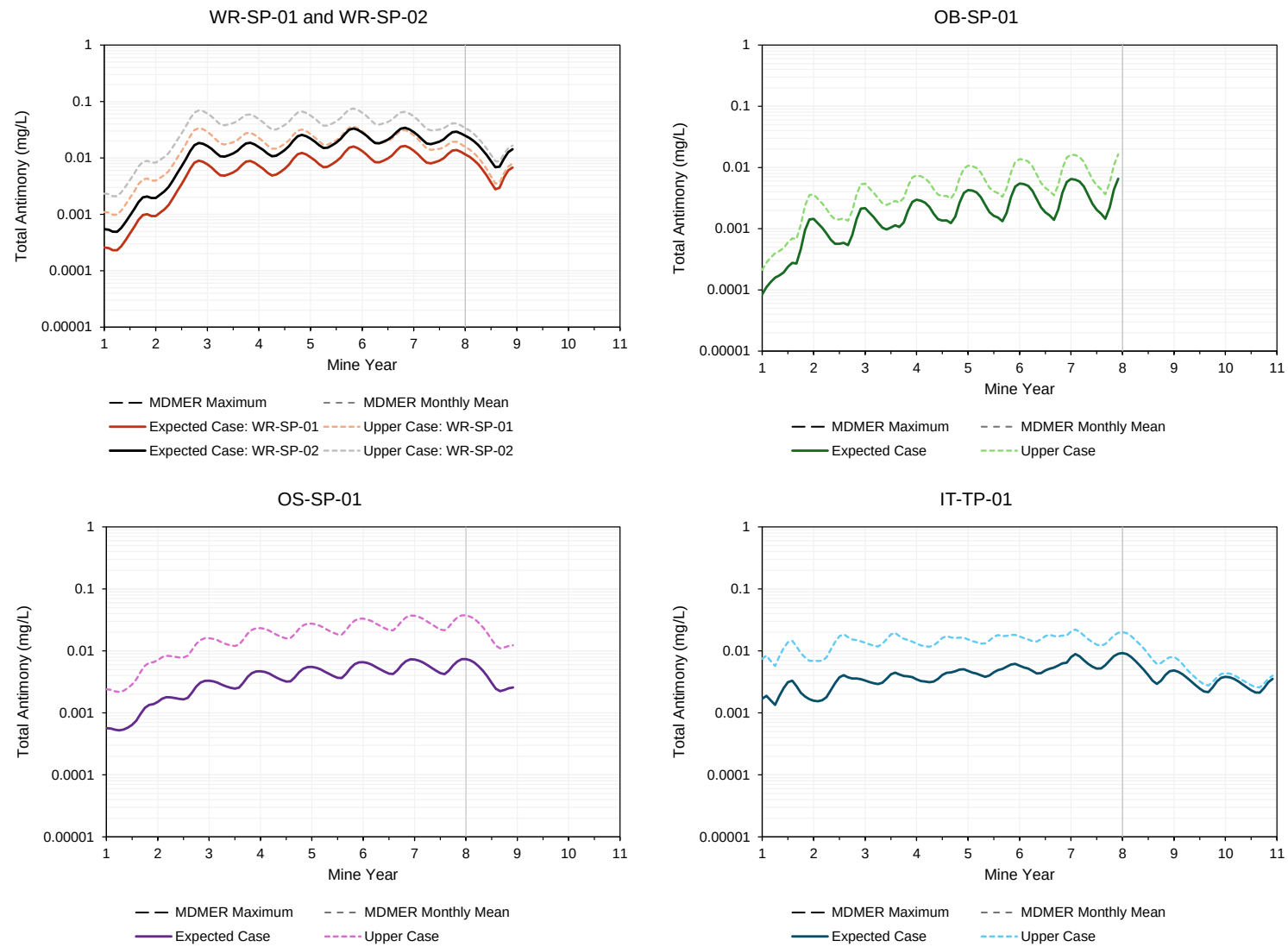
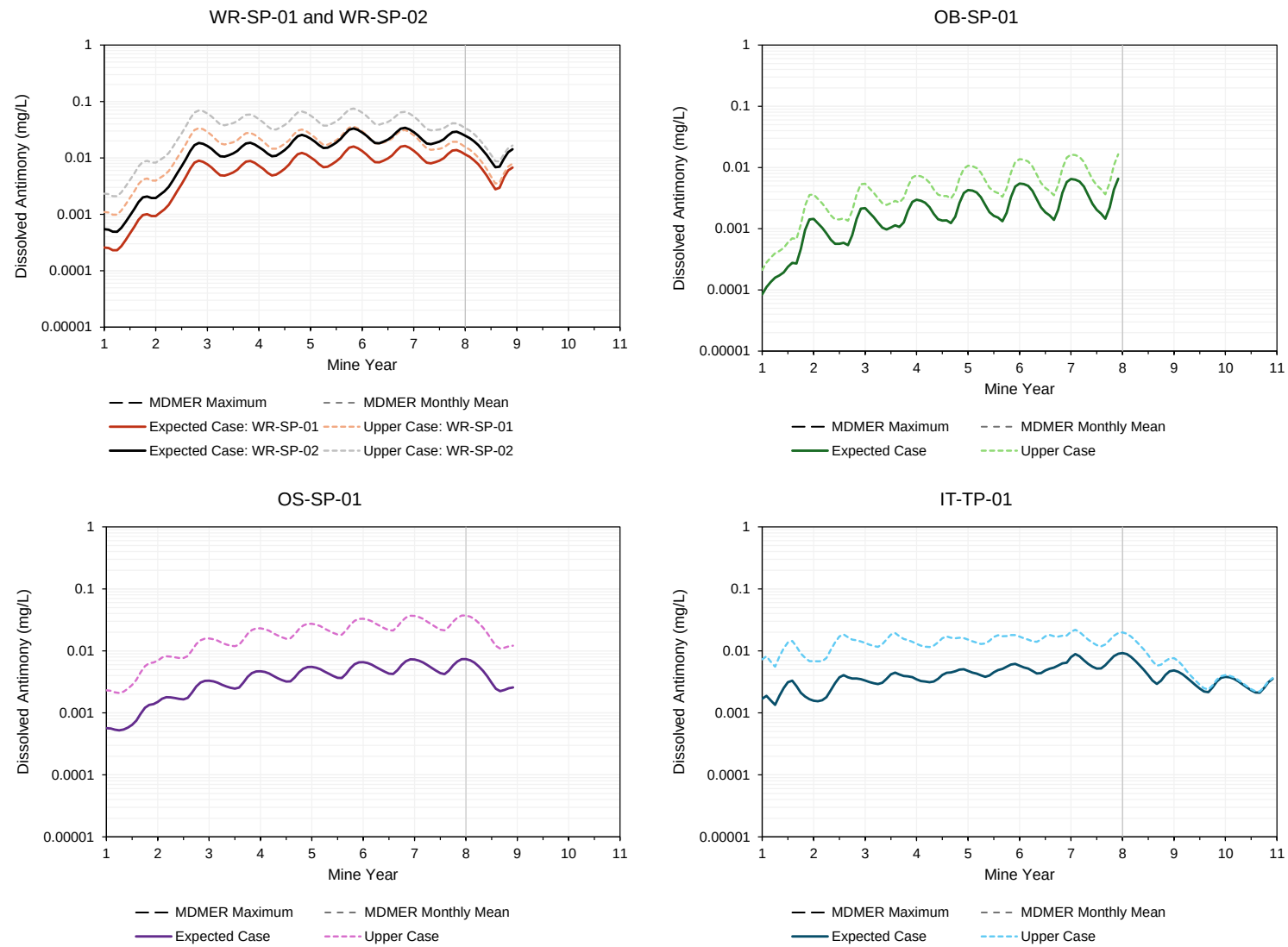


Figure G.10 Water Management Pond Water Quality Time-Series Plots for Total Antimony (mg/L) Under Climate Normal Conditions

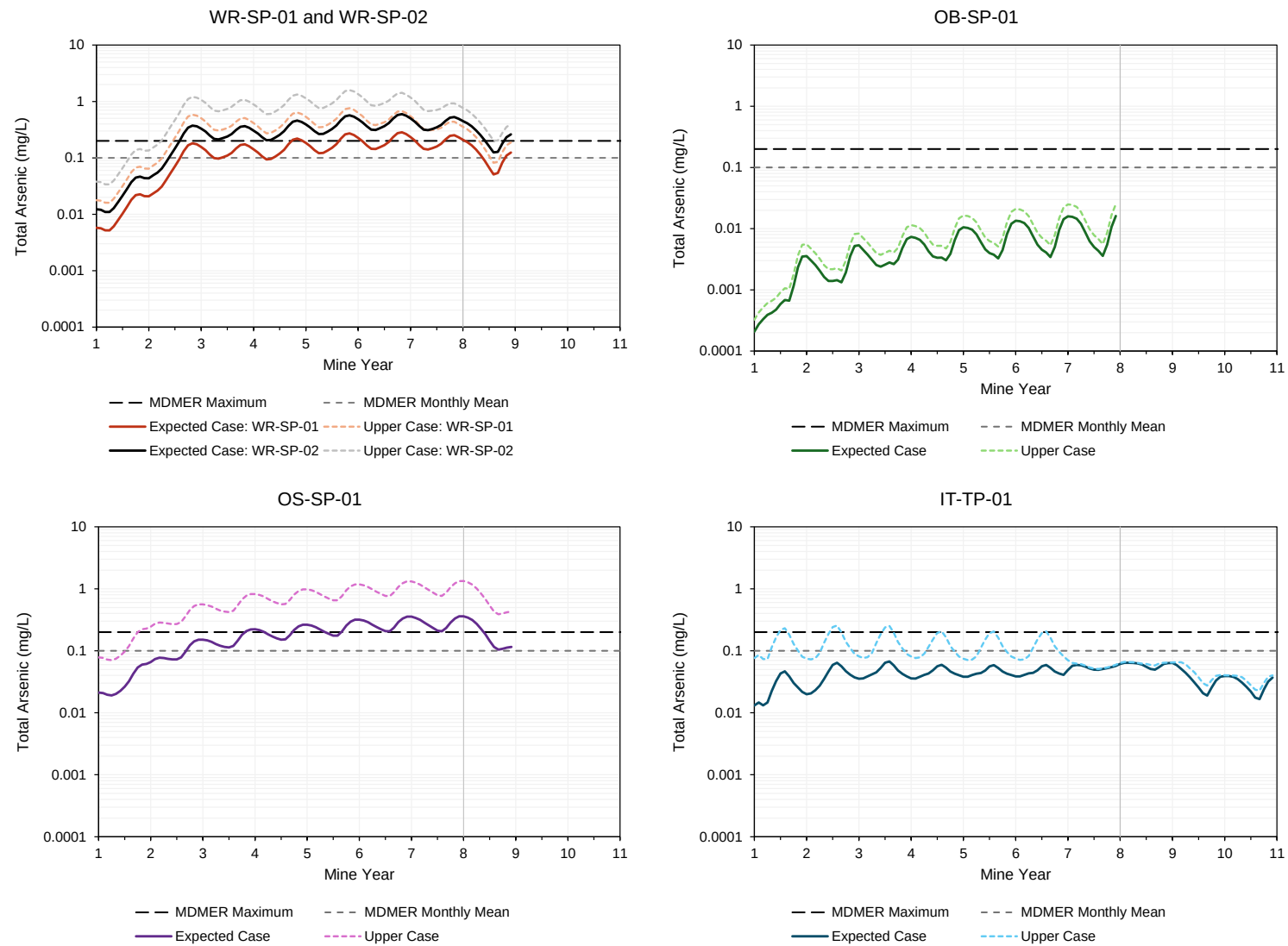




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.11 Water Management Pond Water Quality Time-Series Plots for Dissolved Antimony (mg/L) Under Climate Normal Conditions

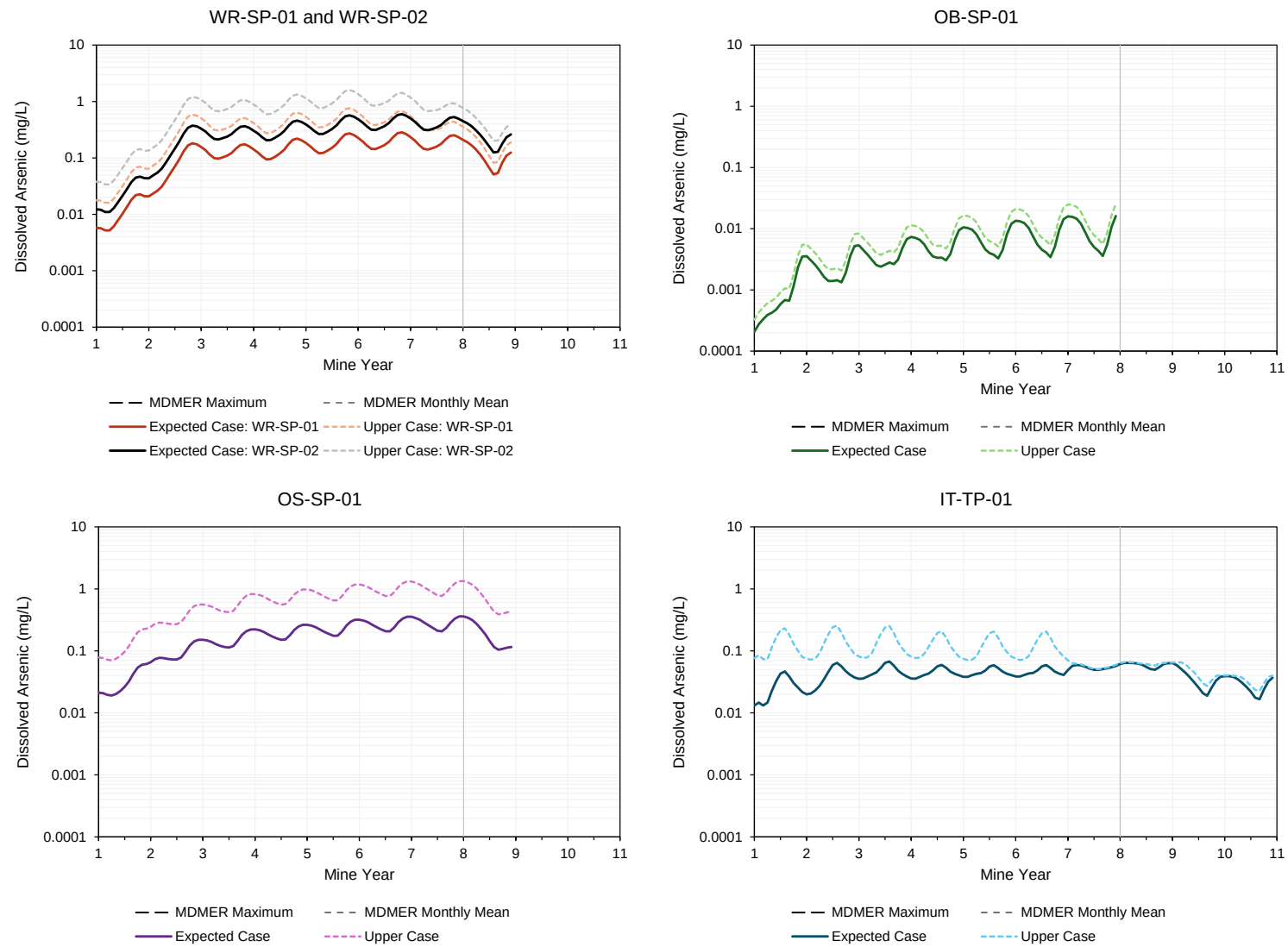




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.12 Water Management Pond Water Quality Time-Series Plots for Total Arsenic (mg/L) Under Climate Normal Conditions

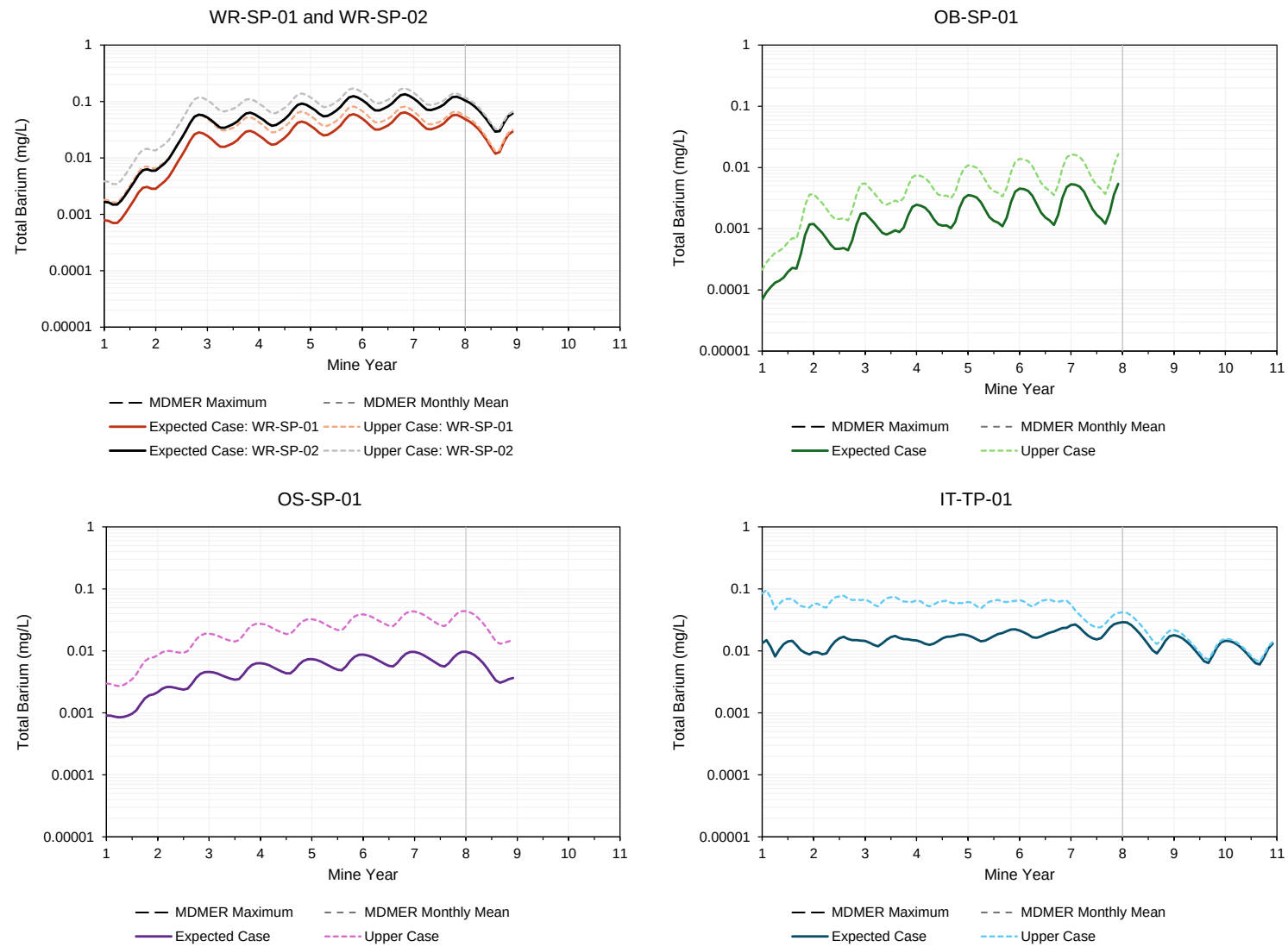




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.13 Water Management Pond Water Quality Time-Series Plots for Dissolved Arsenic (mg/L) Under Climate Normal Conditions

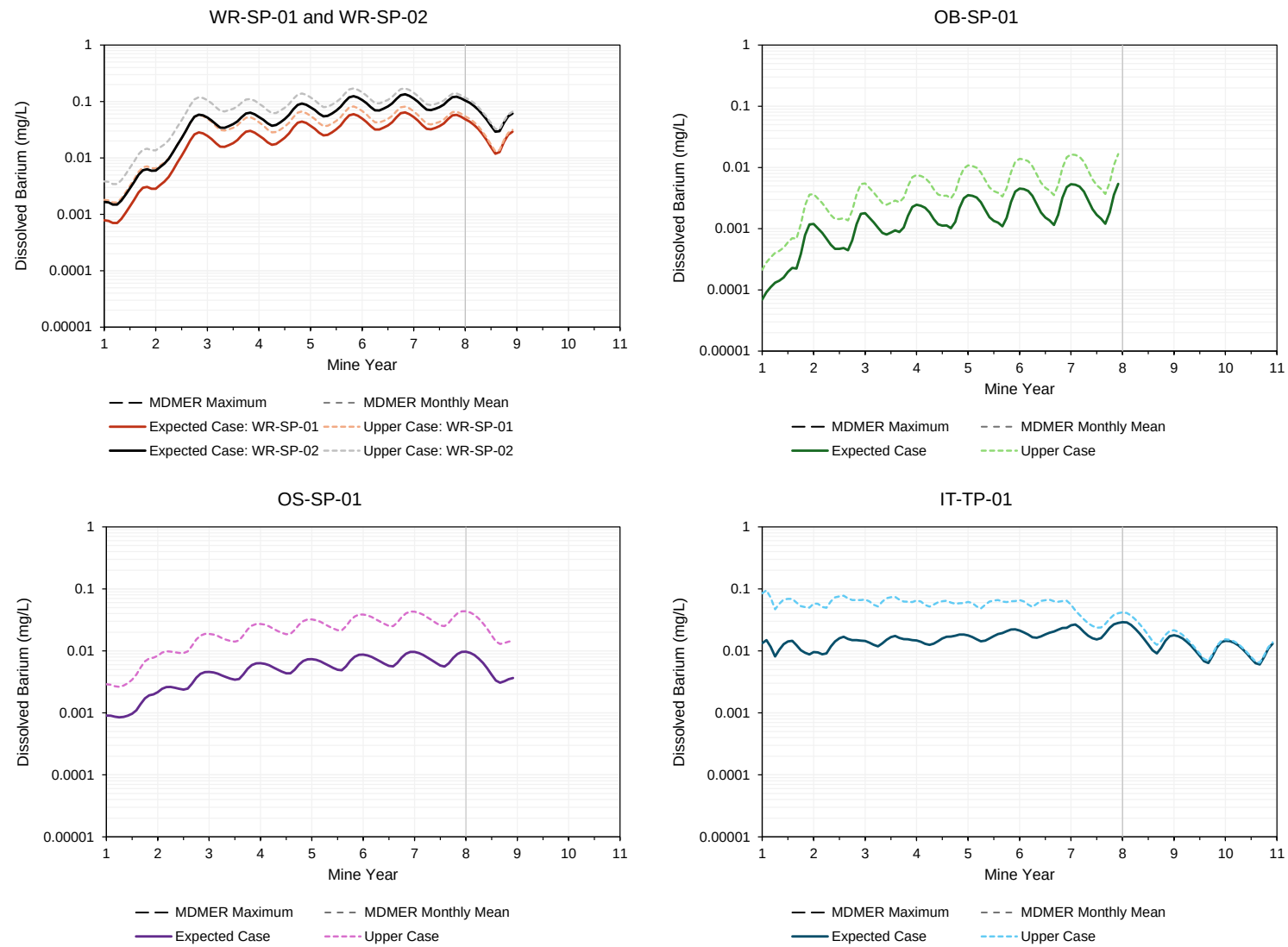




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.14 Water Management Pond Water Quality Time-Series Plots for Total Barium (mg/L) Under Climate Normal Conditions

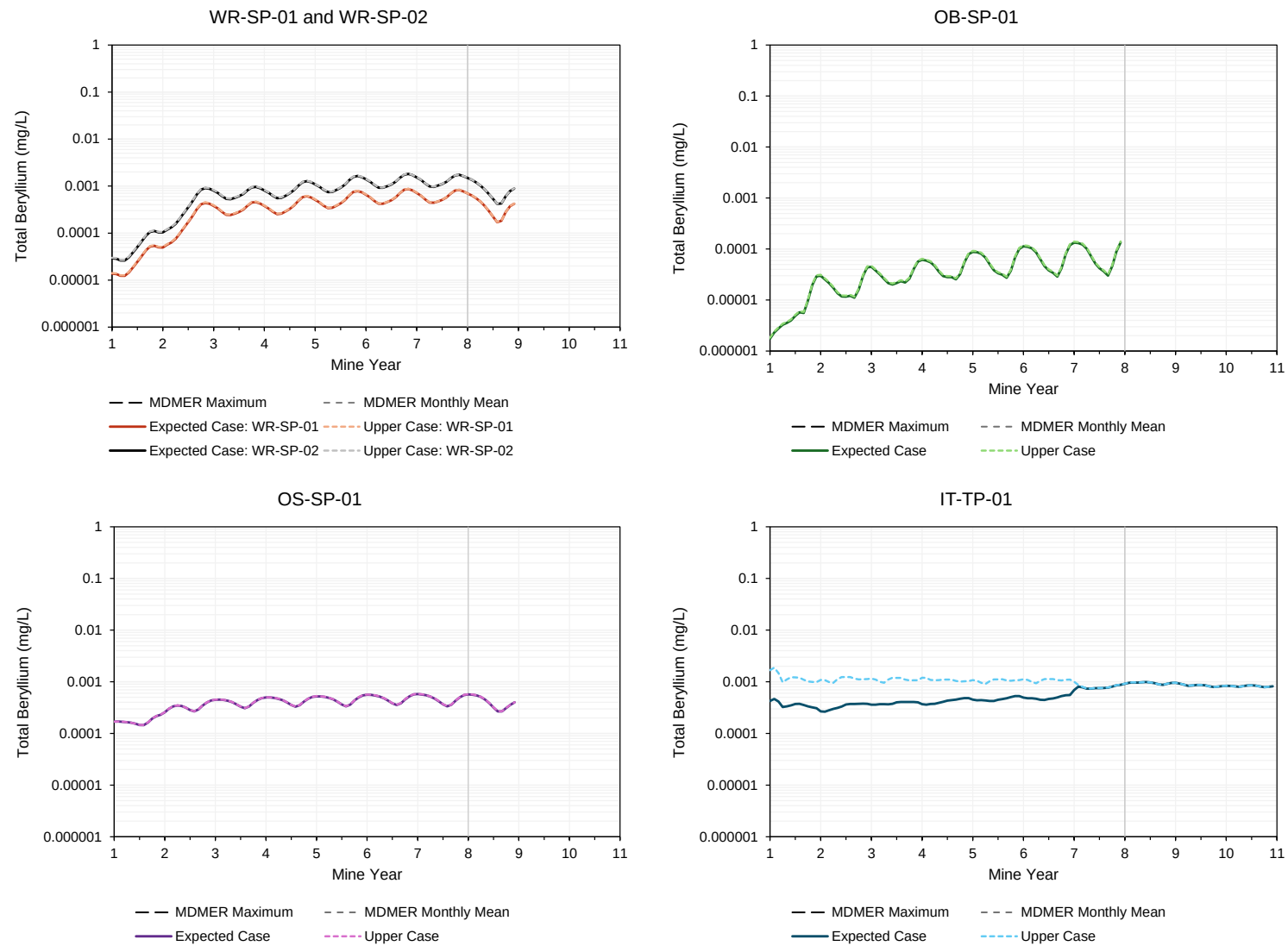




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.15 Water Management Pond Water Quality Time-Series Plots for Dissolved Barium (mg/L) Under Climate Normal Conditions

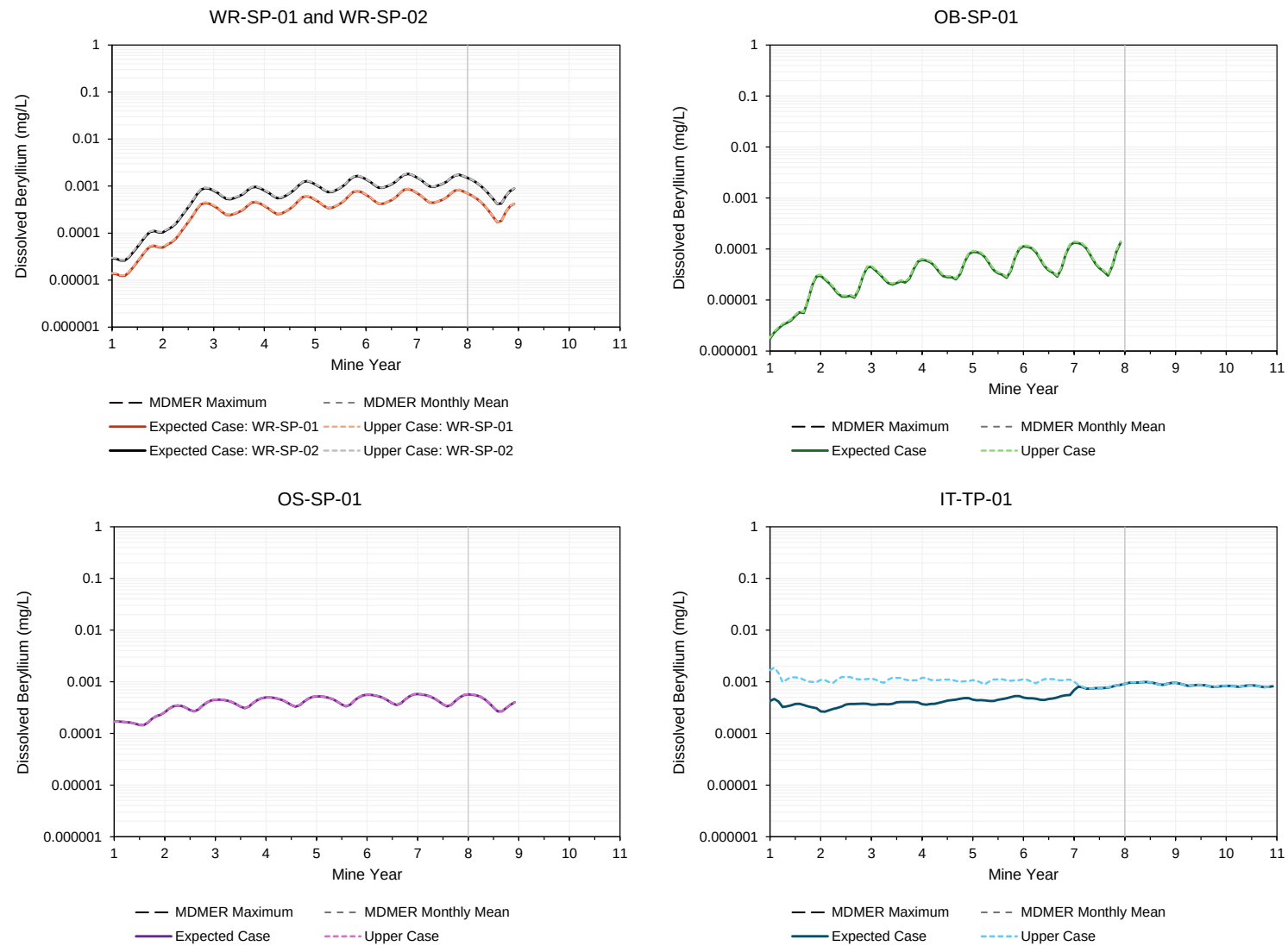




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.16 Water Management Pond Water Quality Time-Series Plots for Total Beryllium (mg/L) Under Climate Normal Conditions

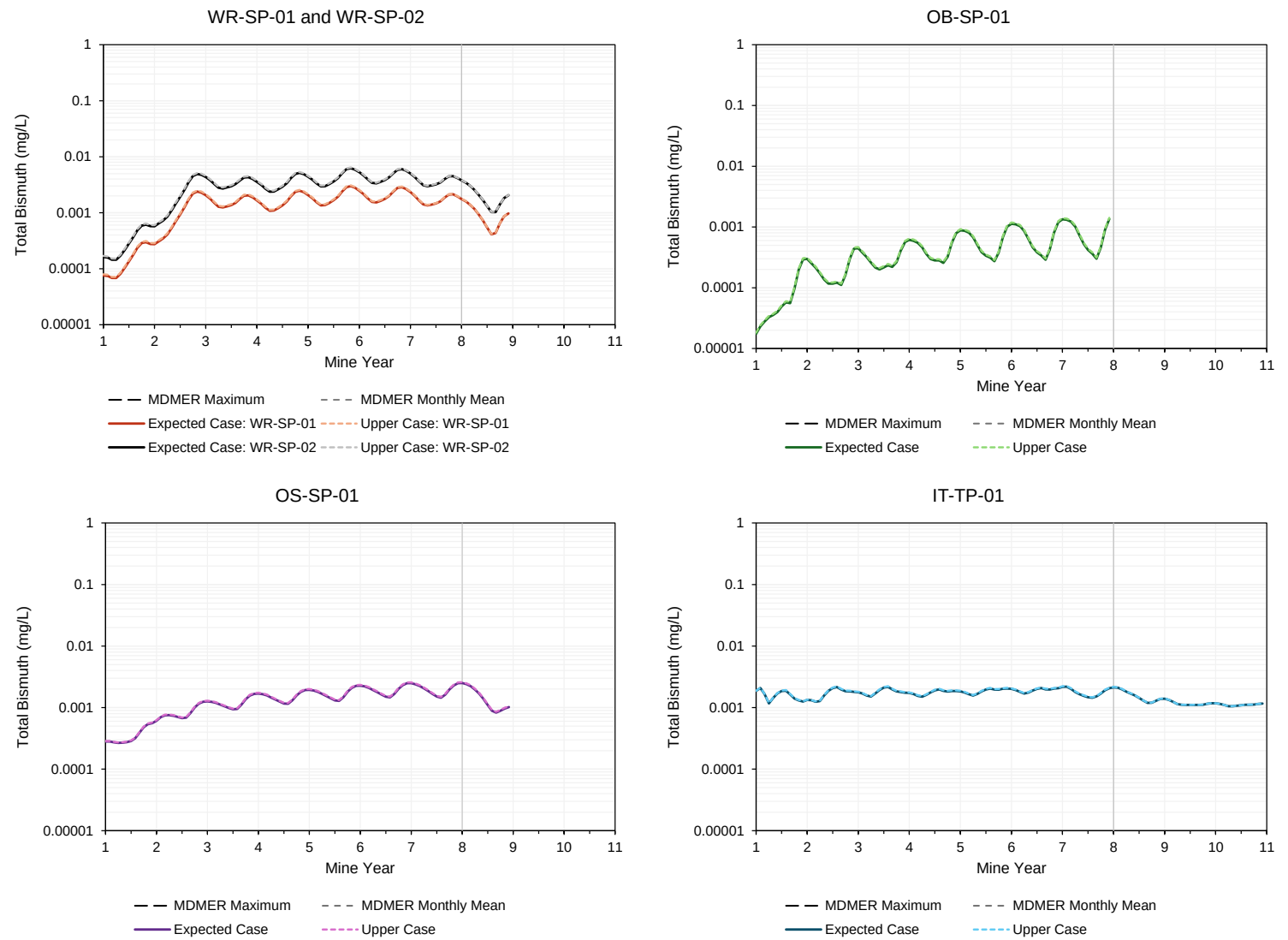




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.17 Water Management Pond Water Quality Time-Series Plots for Dissolved Beryllium (mg/L) Under Climate Normal Conditions

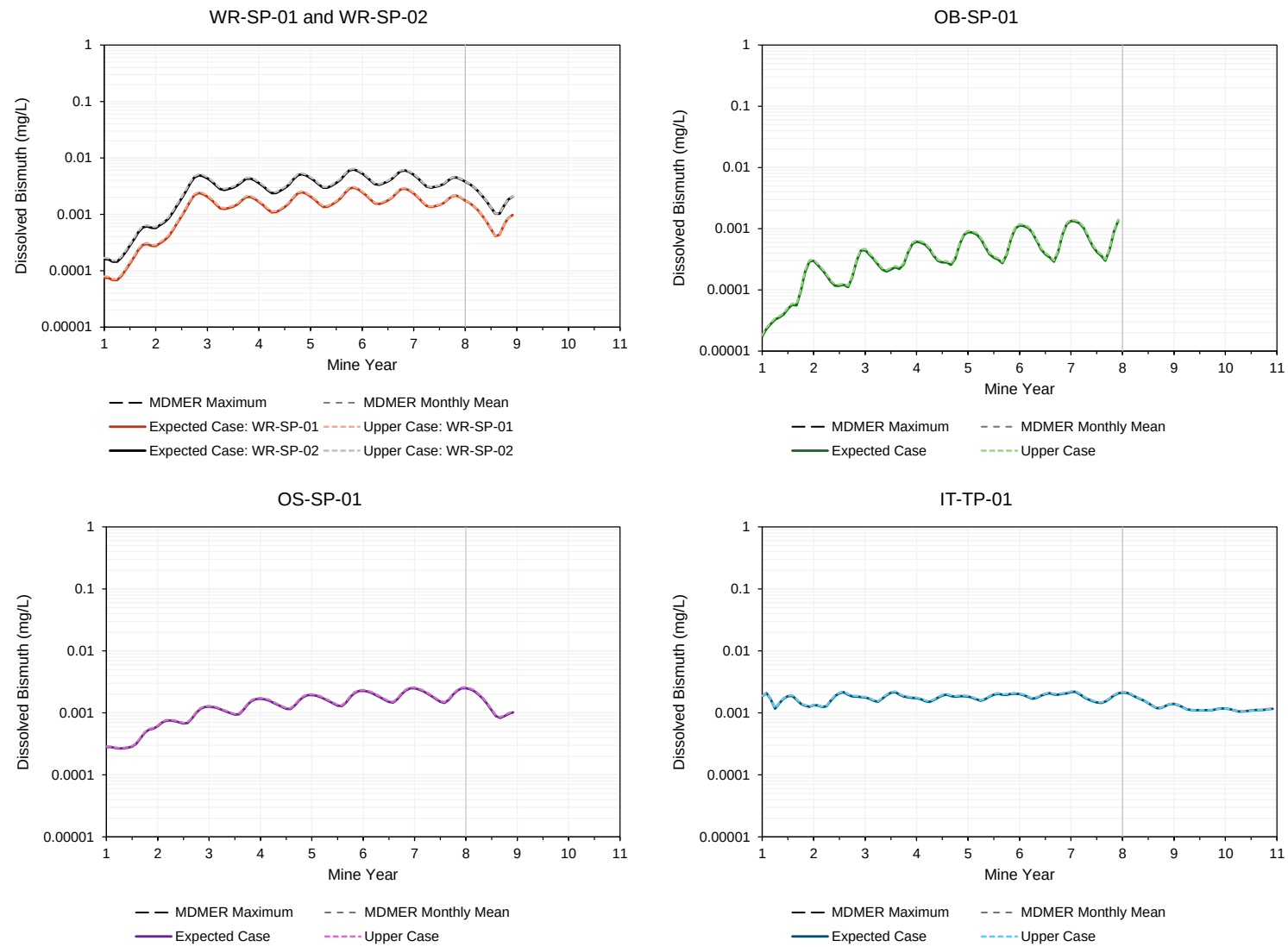




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.18 Water Management Pond Water Quality Time-Series Plots for Total Bismuth (mg/L) Under Climate Normal Conditions

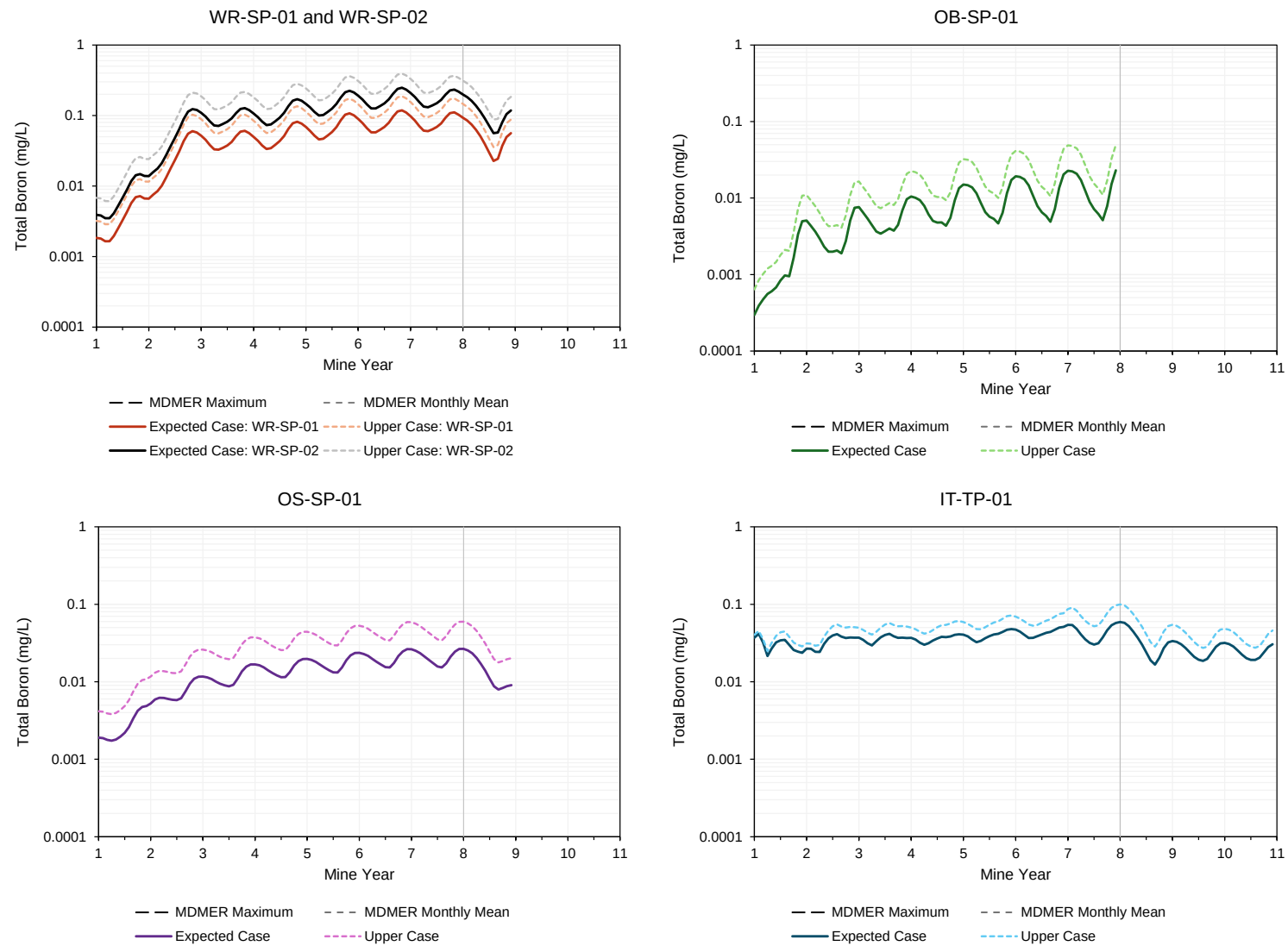




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.19 Water Management Pond Water Quality Time-Series Plots for Dissolved Bismuth (mg/L) Under Climate Normal Conditions

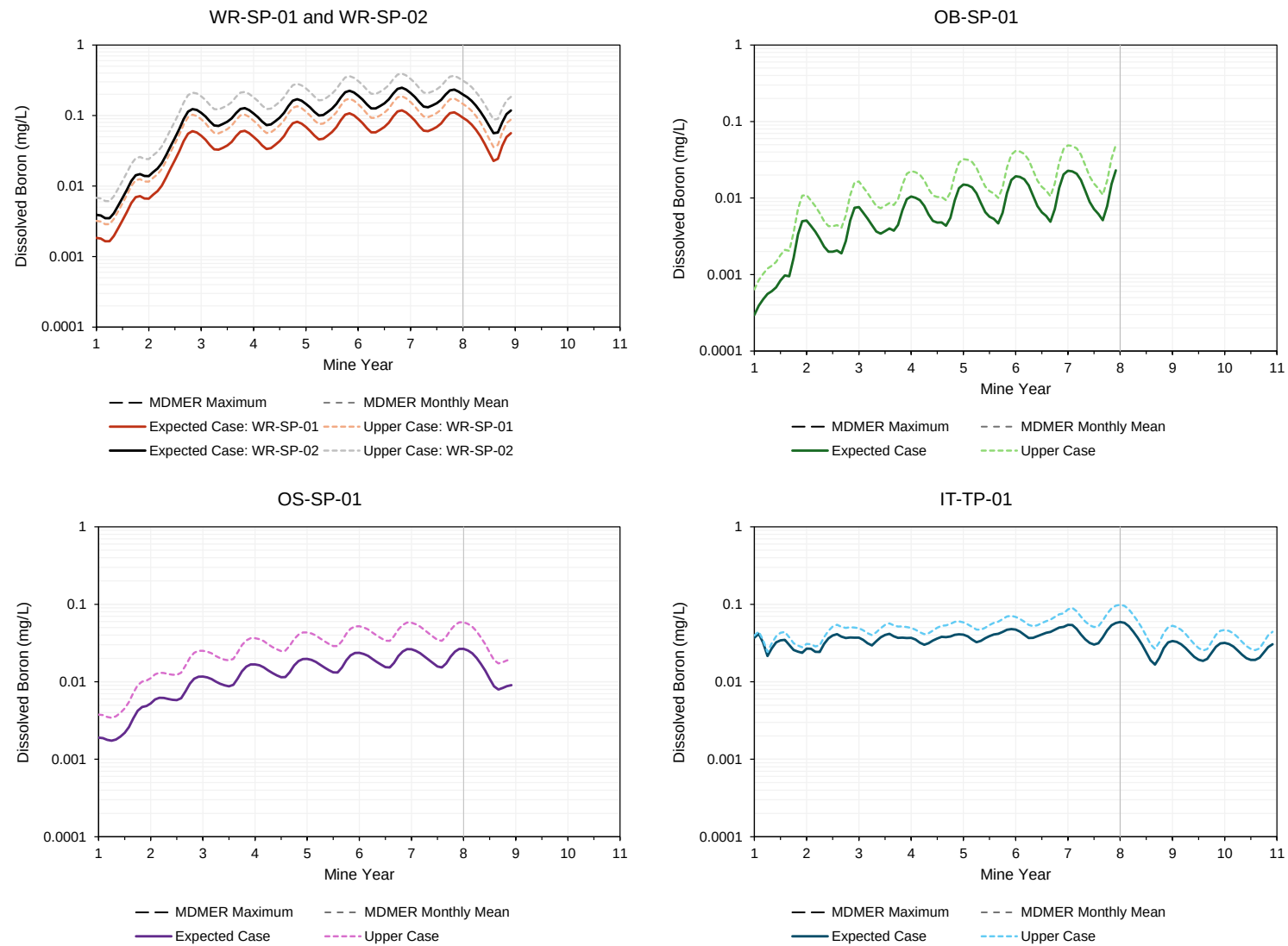




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.20 Water Management Pond Water Quality Time-Series Plots for Total Boron (mg/L) Under Climate Normal Conditions

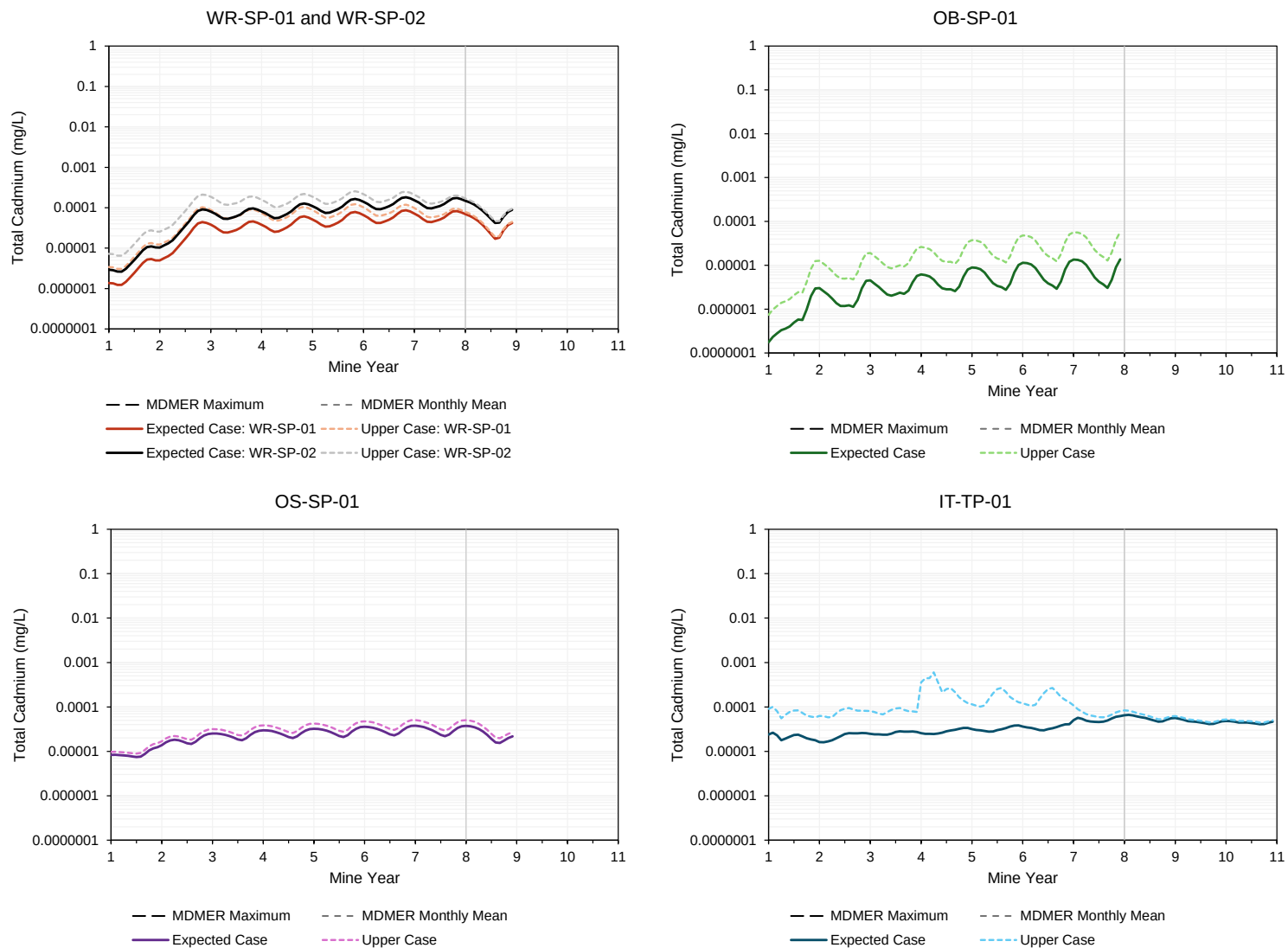




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.21 Water Management Pond Water Quality Time-Series Plots for Dissolved Boron (mg/L) Under Climate Normal Conditions

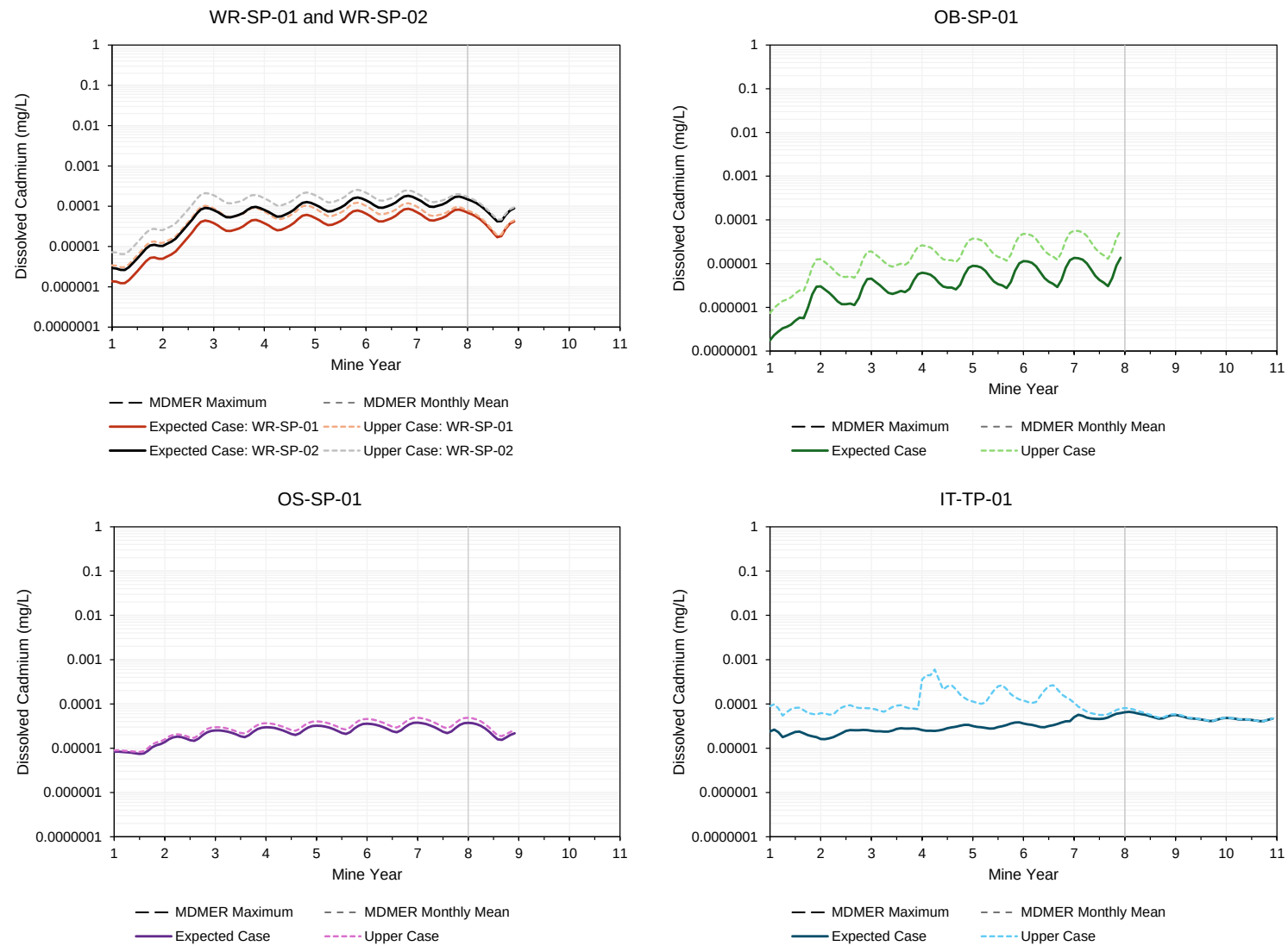




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.22 Water Management Pond Water Quality Time-Series Plots for Total Cadmium (mg/L) Under Climate Normal Conditions

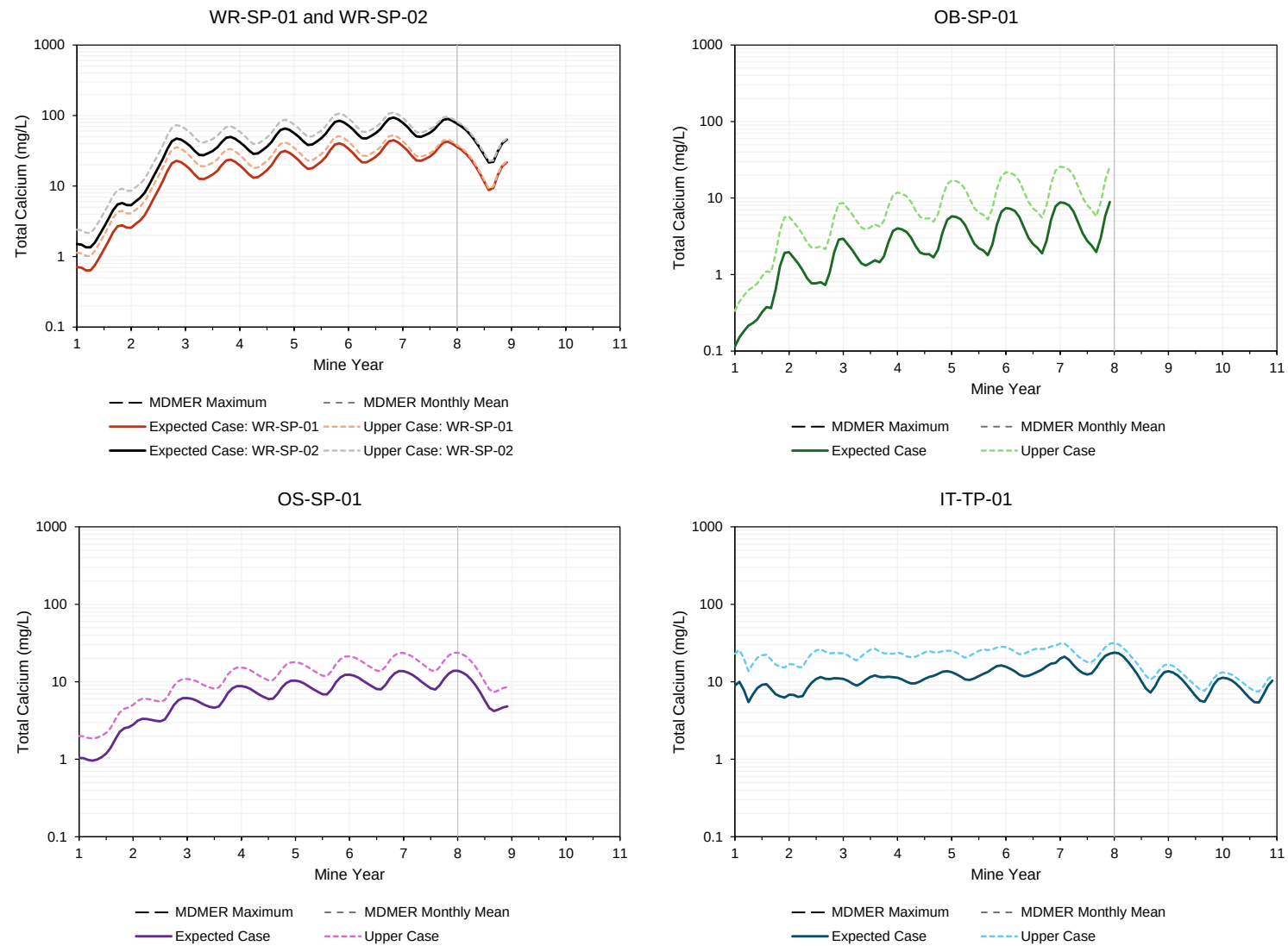




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.23 Water Management Pond Water Quality Time-Series Plots for Dissolved Cadmium (mg/L) Under Climate Normal Conditions

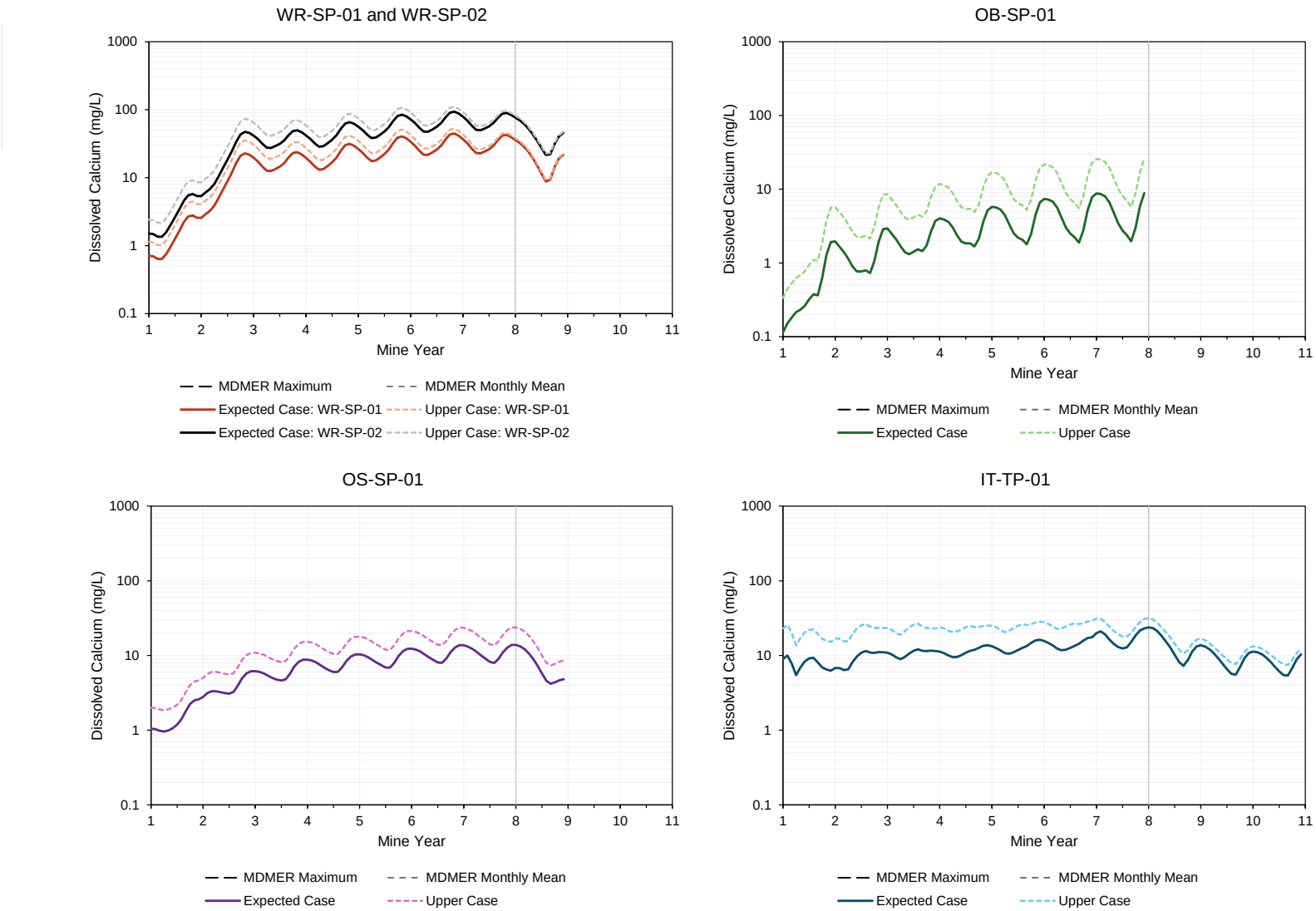




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.24 Water Management Pond Water Quality Time-Series Plots for Total Calcium (mg/L) Under Climate Normal Conditions

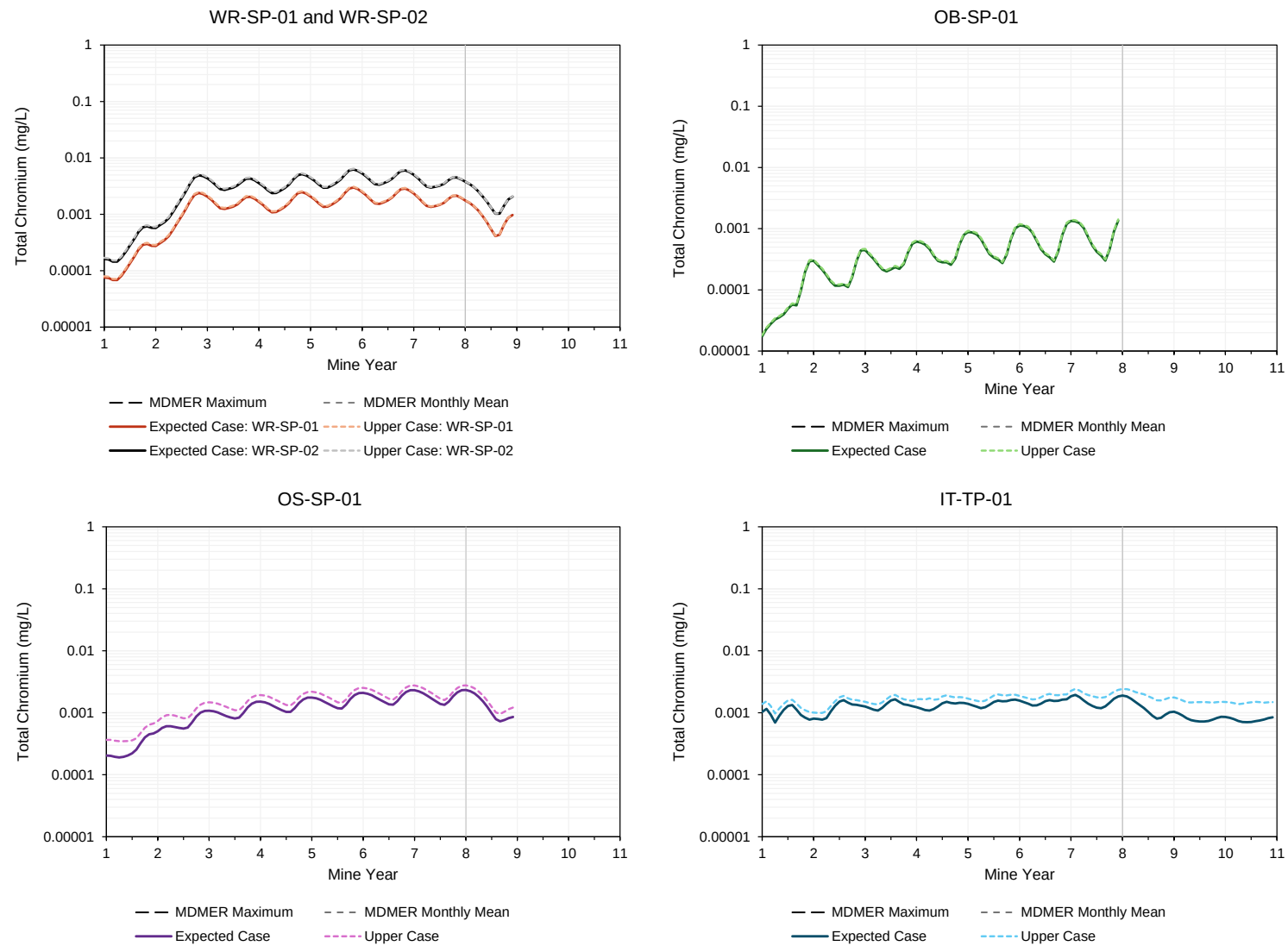




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.25 Water Management Pond Water Quality Time-Series Plots for Dissolved Calcium (mg/L) Under Climate Normal Conditions

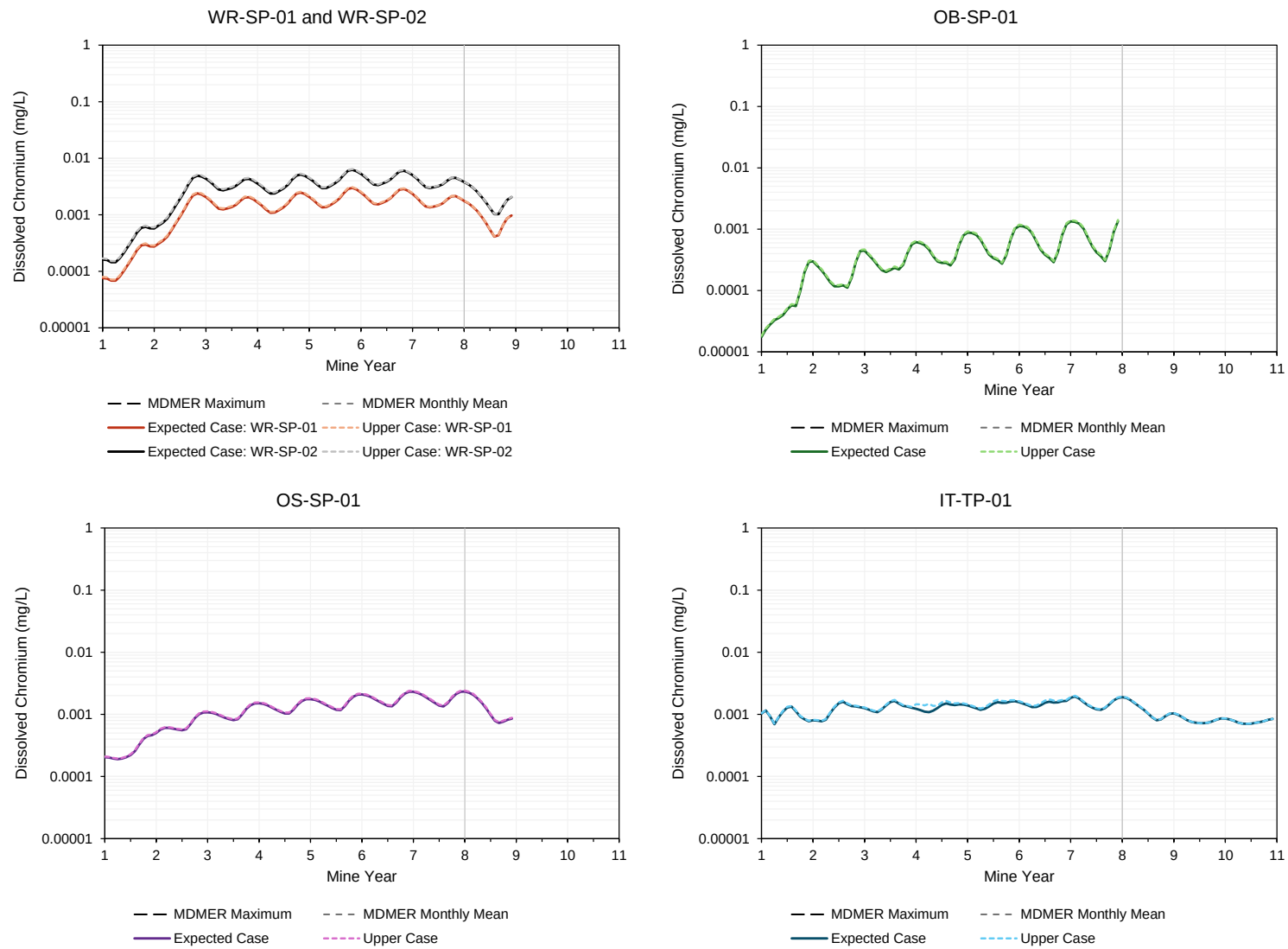




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.26 Water Management Pond Water Quality Time-Series Plots for Total Chromium (mg/L) Under Climate Normal Conditions

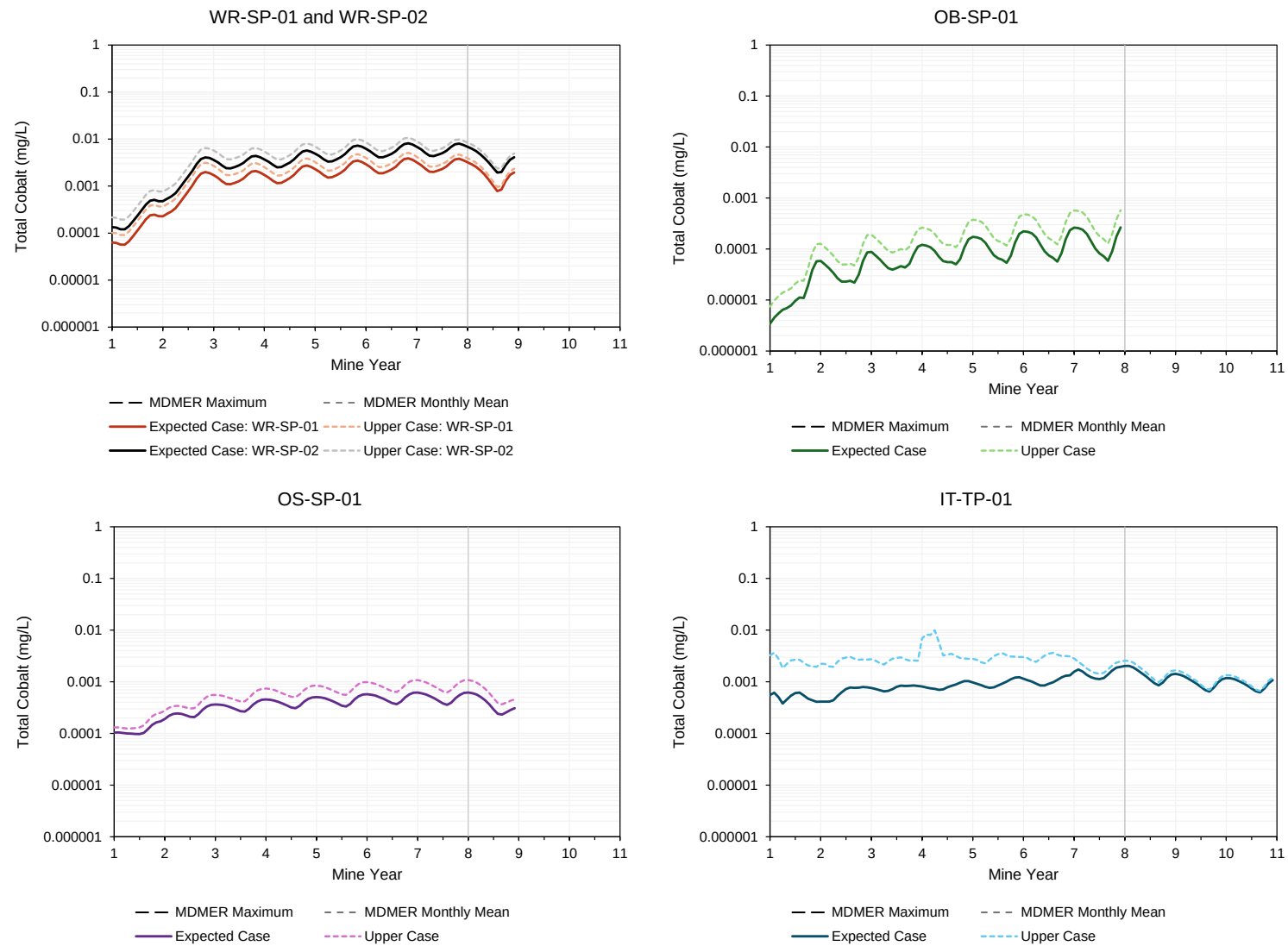




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.27 Water Management Pond Water Quality Time-Series Plots for Dissolved Chromium (mg/L) Under Climate Normal Conditions

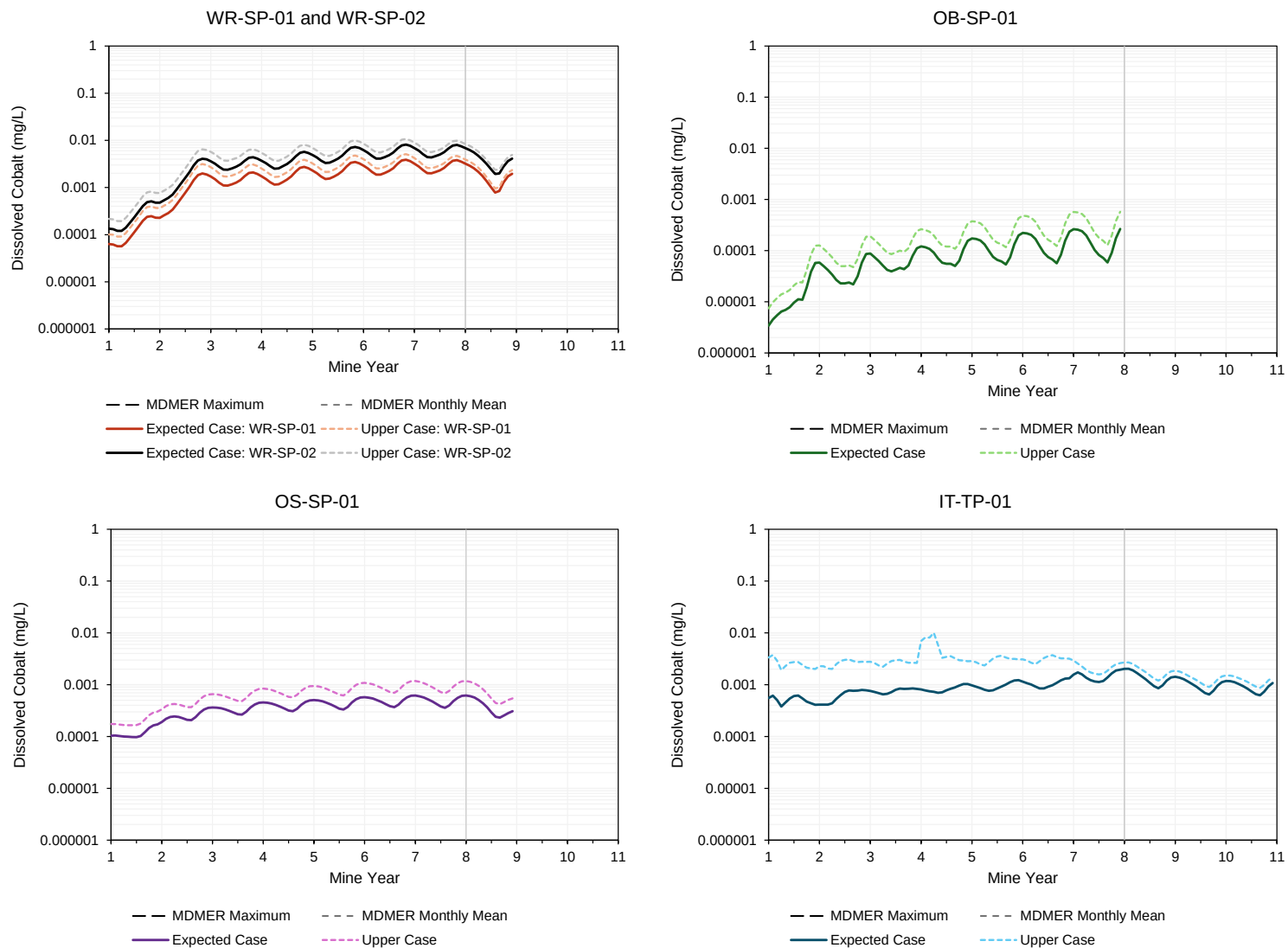




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.28 Water Management Pond Water Quality Time-Series Plots for Total Cobalt (mg/L) Under Climate Normal Conditions



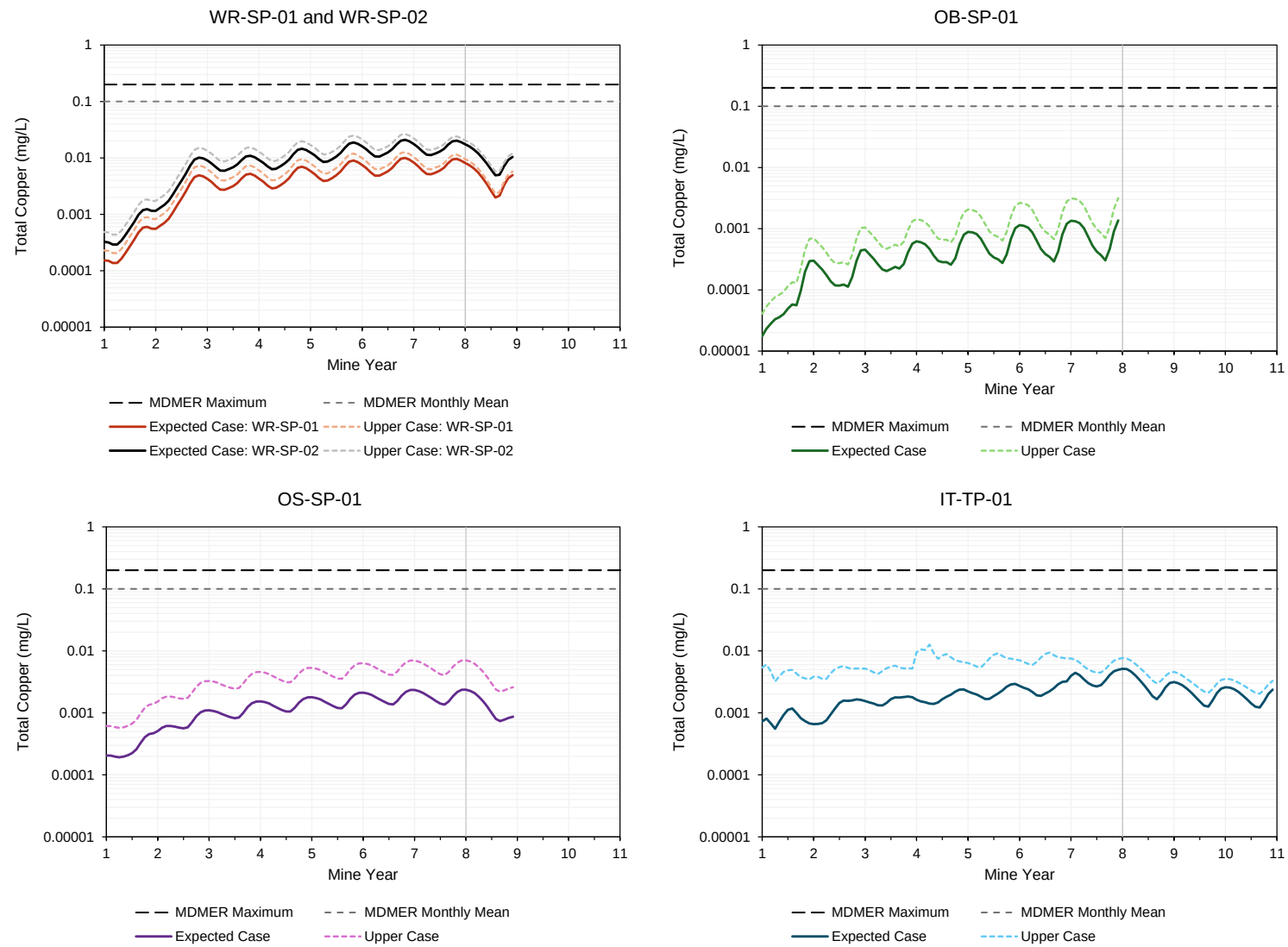


Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.29 Water Management Pond Water Quality Time-Series Plots for Dissolved Cobalt (mg/L) Under Climate Normal Conditions

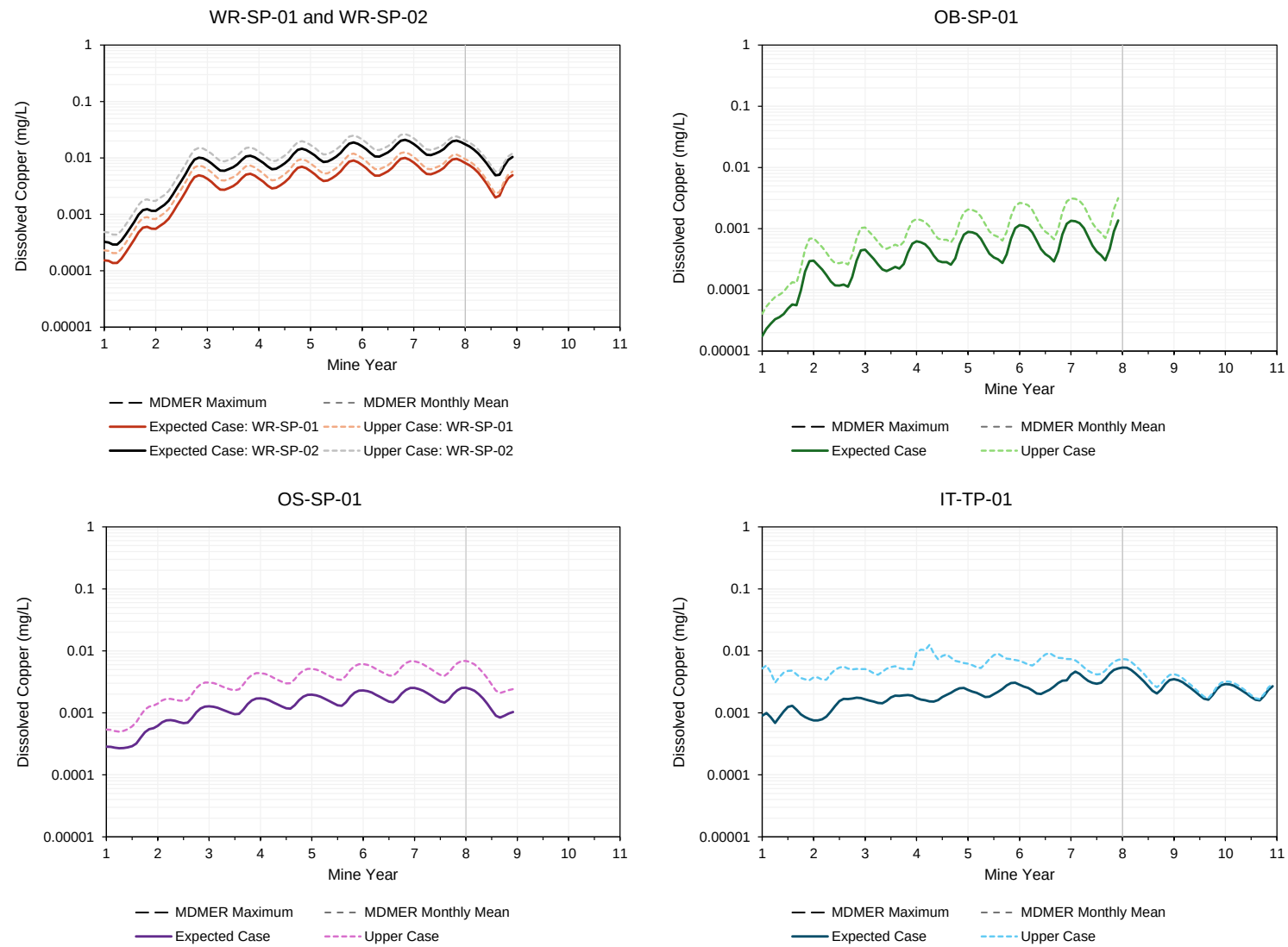




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.30 Water Management Pond Water Quality Time-Series Plots for Total Copper (mg/L) Under Climate Normal Conditions

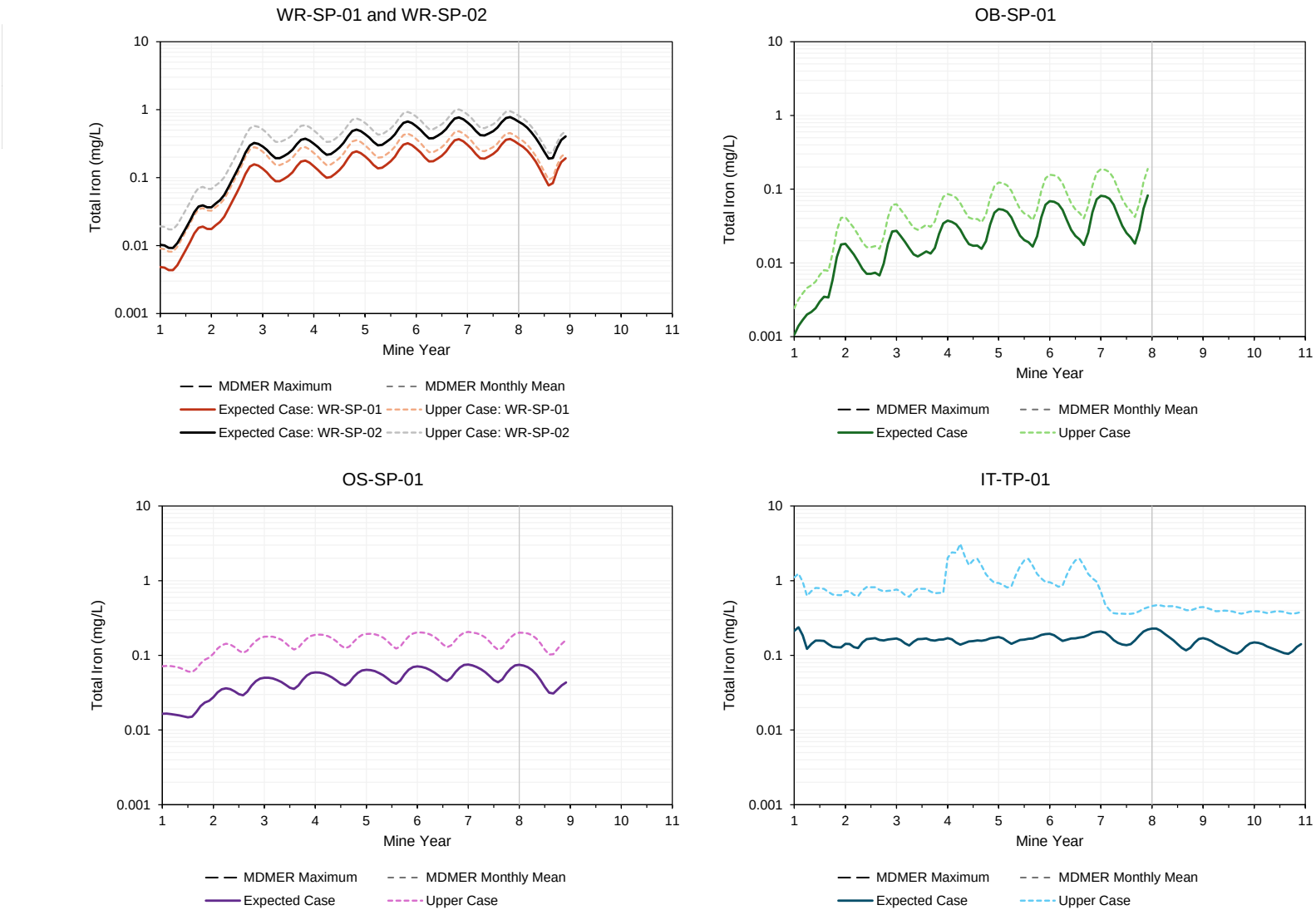




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.31 Water Management Pond Water Quality Time-Series Plots for Dissolved Copper (mg/L) Under Climate Normal Conditions

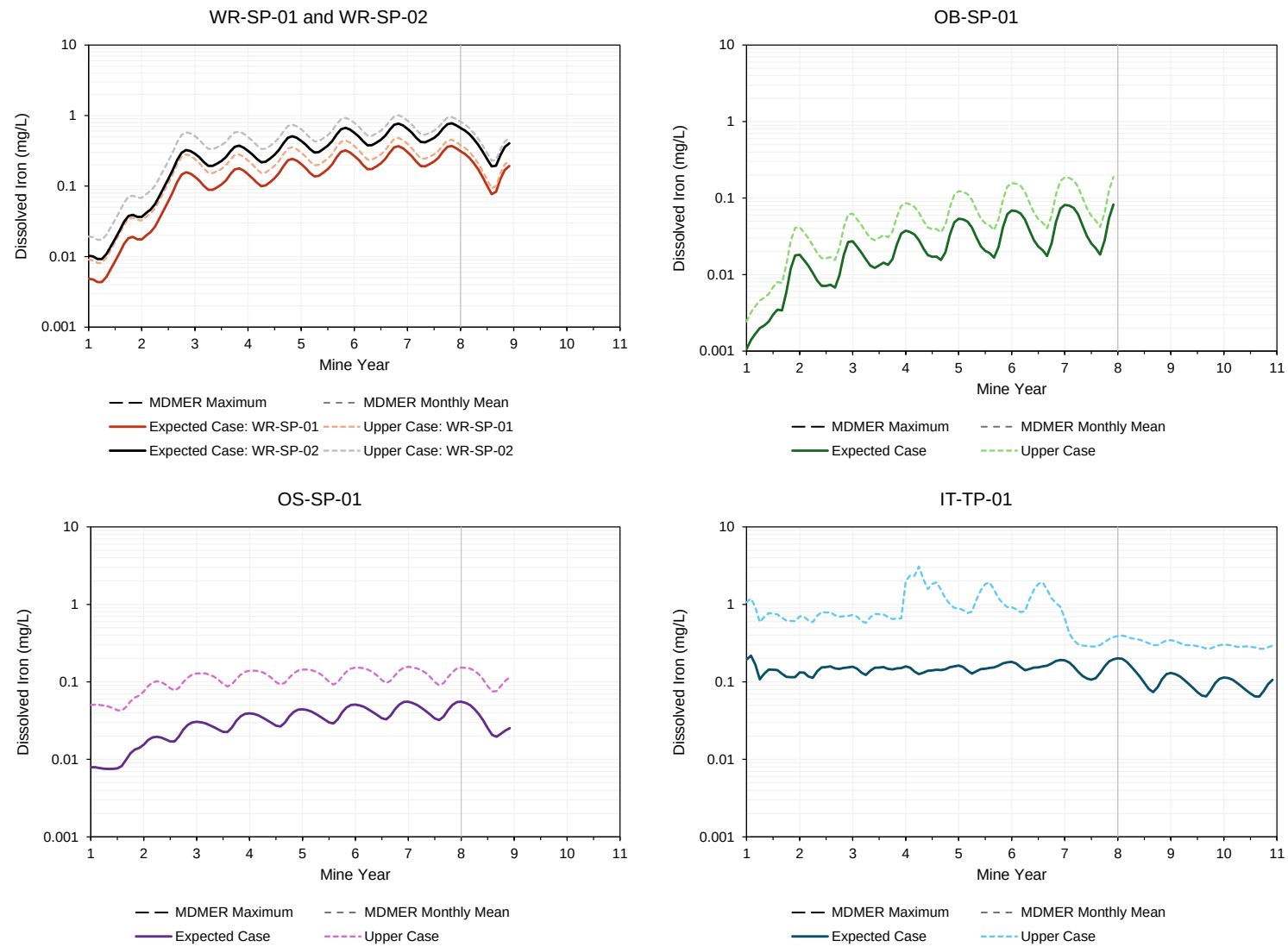




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.32 Water Management Pond Water Quality Time-Series Plots for Total Iron (mg/L) Under Climate Normal Conditions

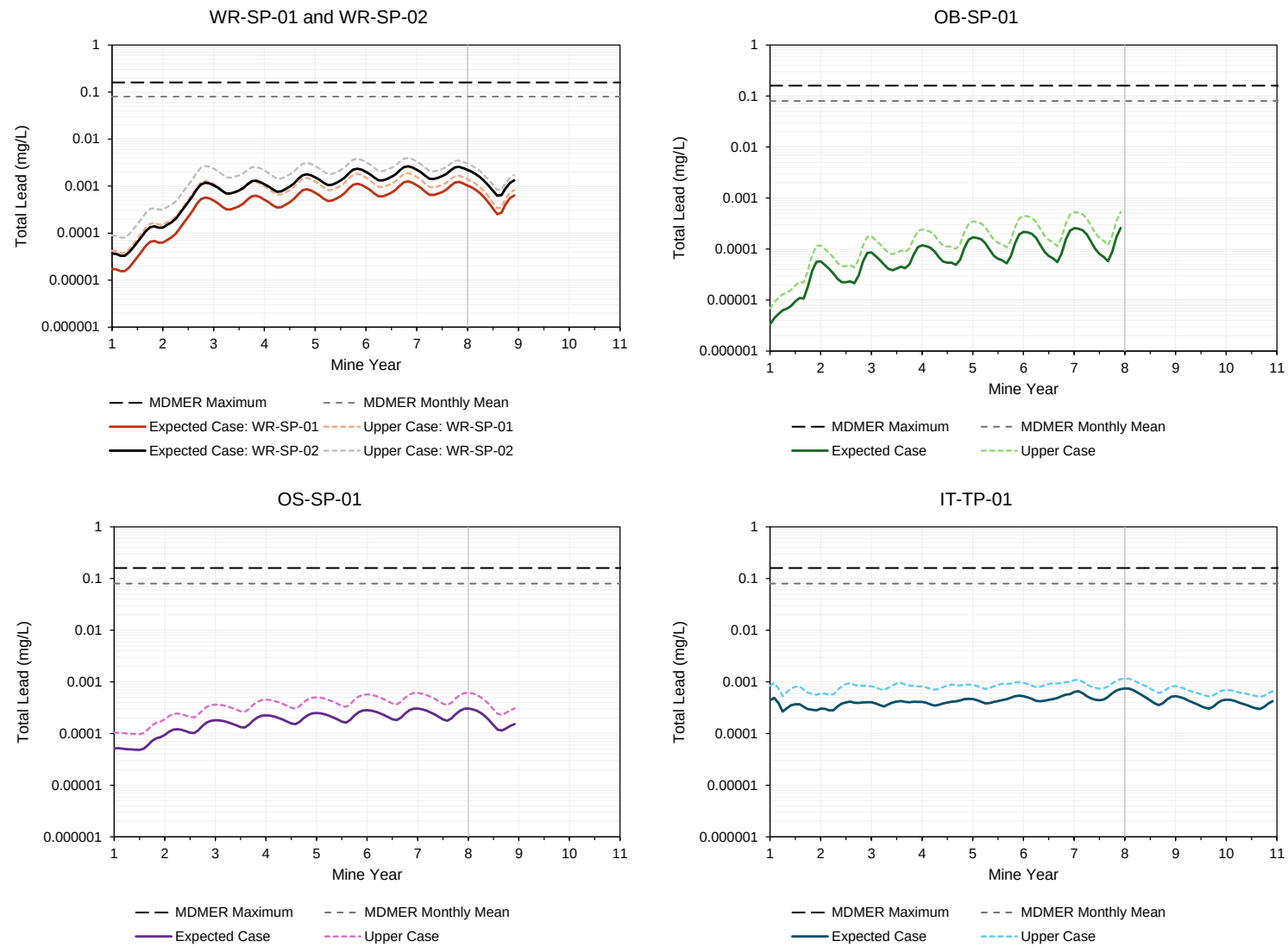




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.33 Water Management Pond Water Quality Time-Series Plots for Dissolved Iron (mg/L) Under Climate Normal Conditions

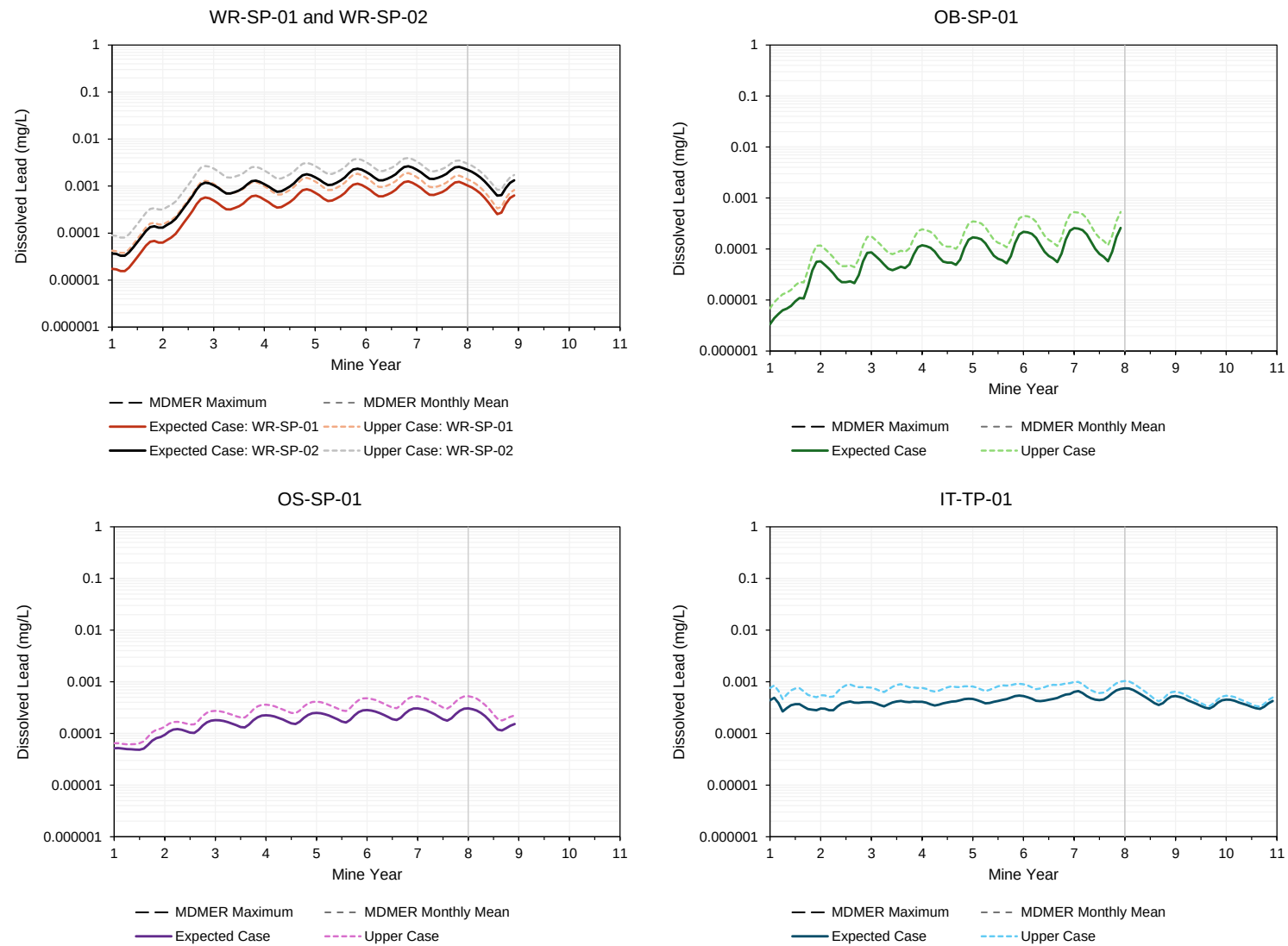




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.34 Water Management Pond Water Quality Time-Series Plots for Total Lead (mg/L) Under Climate Normal Conditions





Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.35 Water Management Pond Water Quality Time-Series Plots for Dissolved Lead (mg/L) Under Climate Normal Conditions



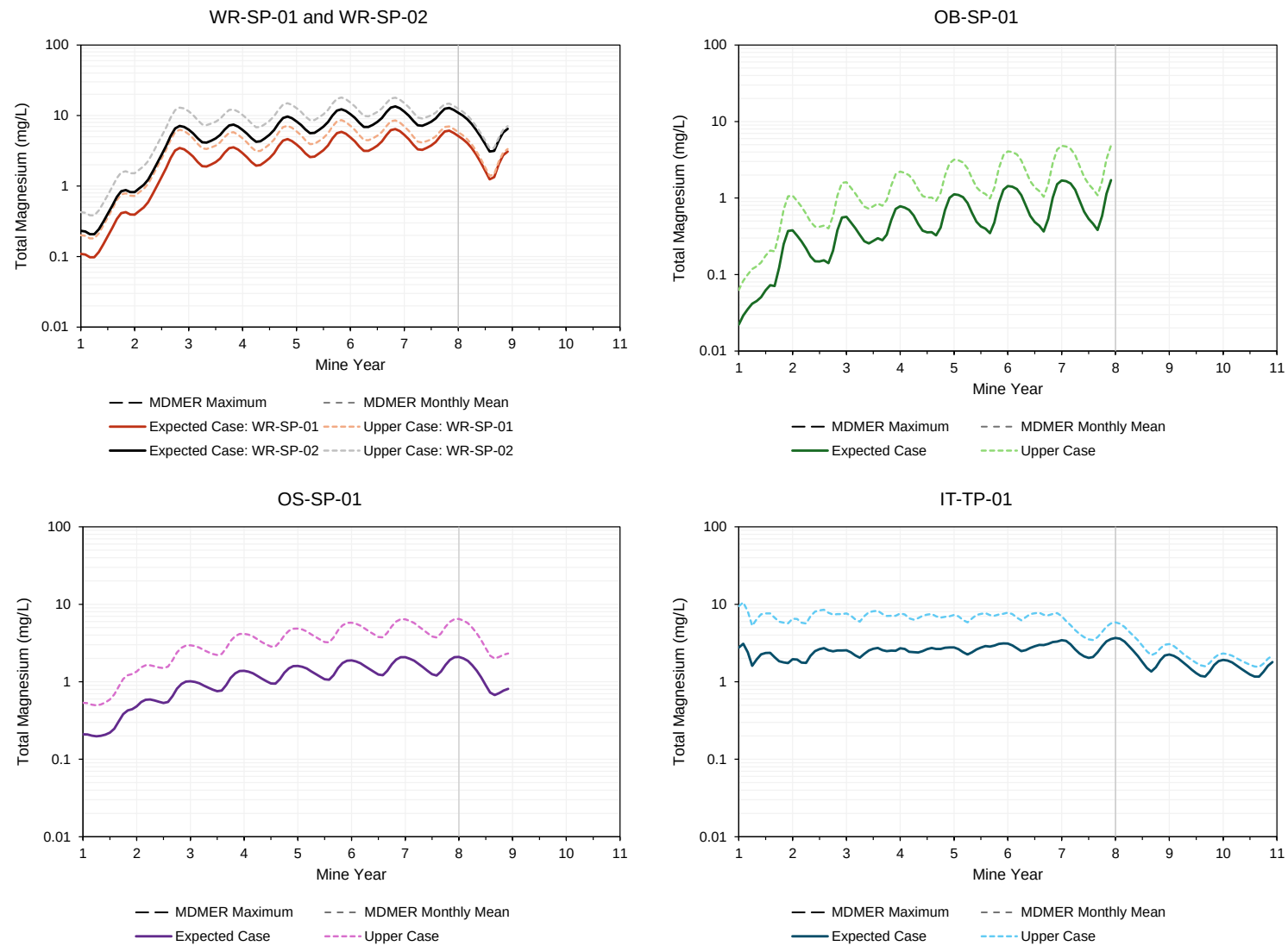


Figure G.36 Water Management Pond Water Quality Time-Series Plots for Total Magnesium (mg/L) Under Climate Normal Conditions



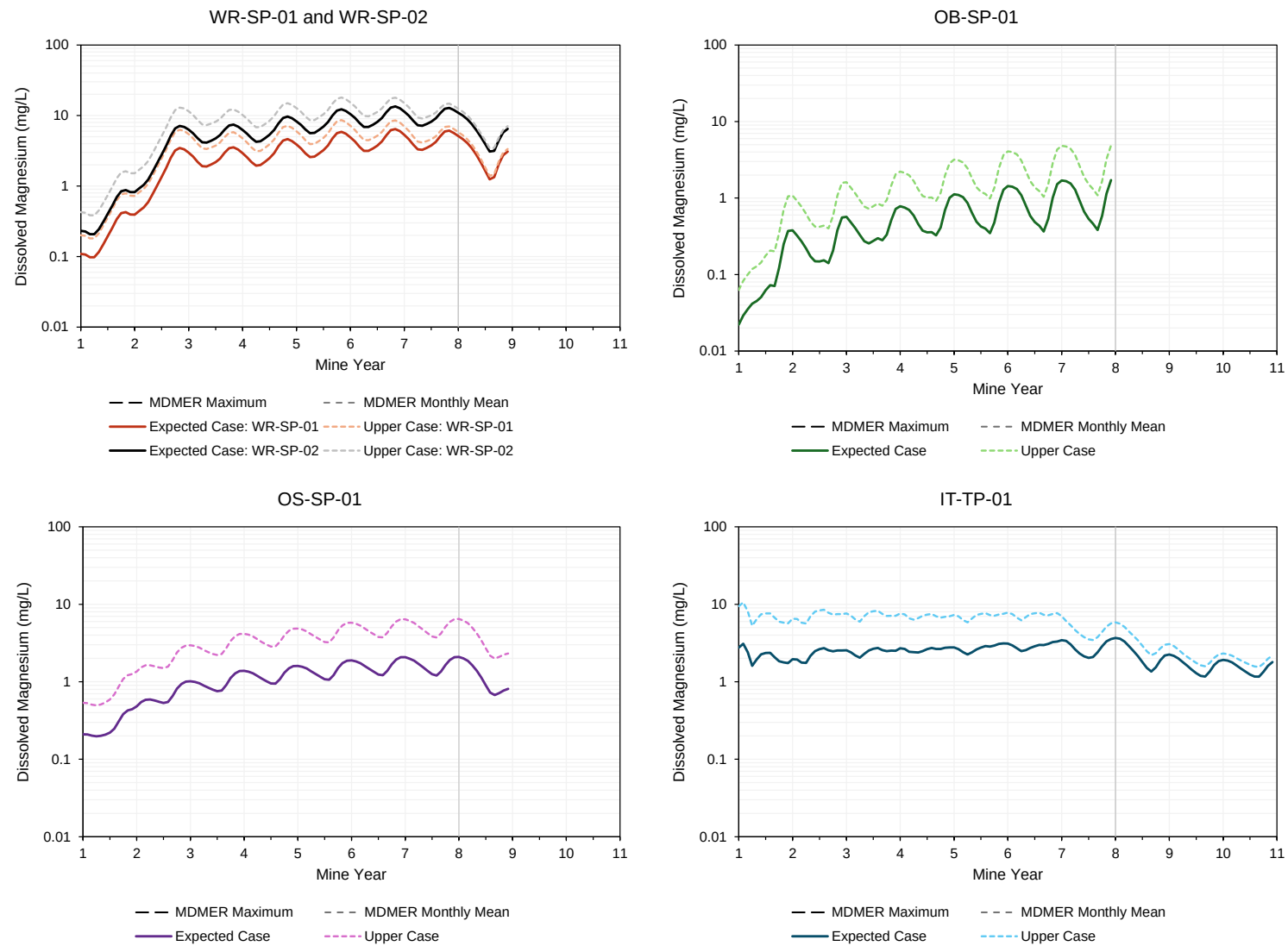
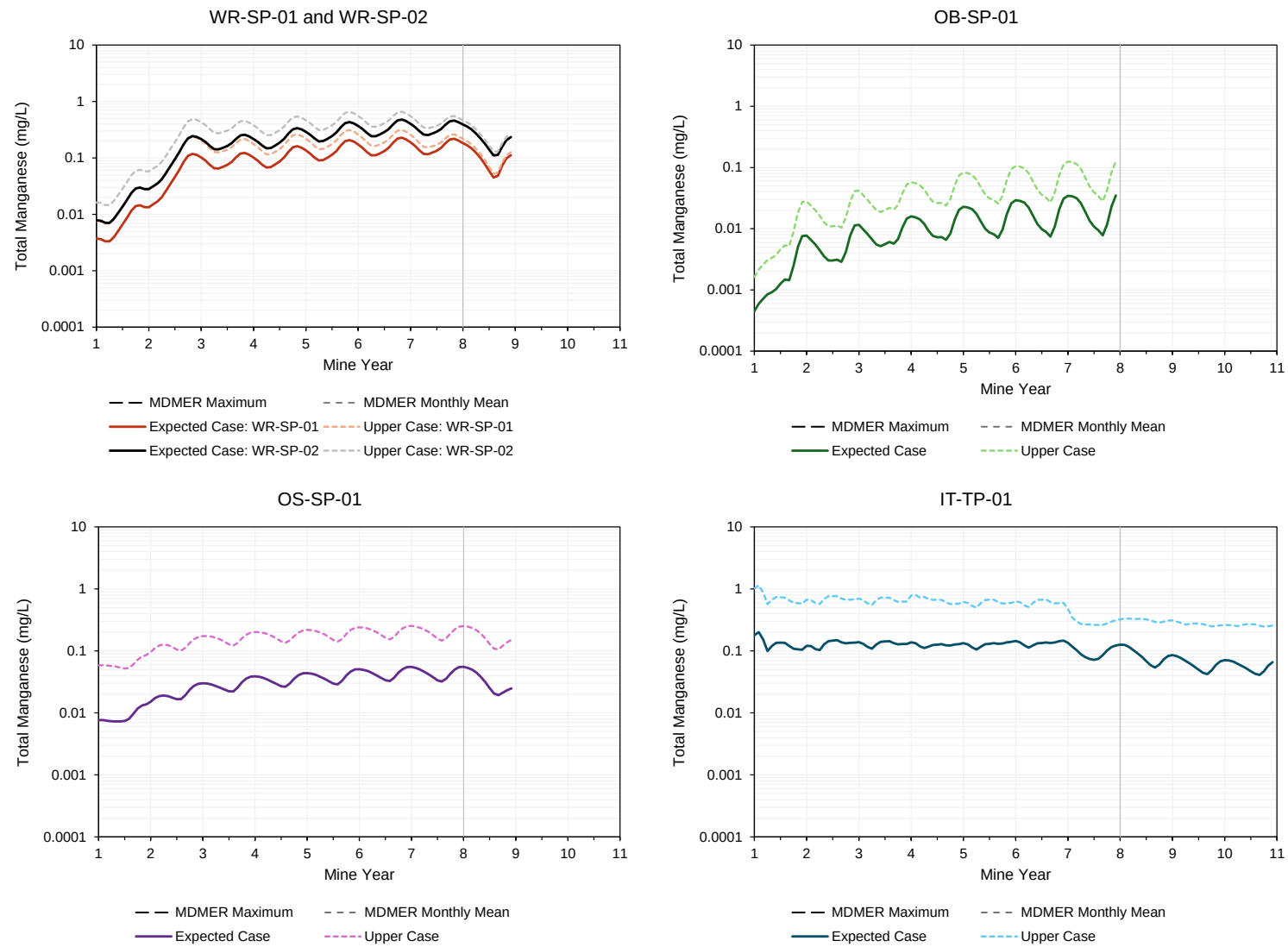


Figure G.37 Water Management Pond Water Quality Time-Series Plots for Dissolved Magnesium (mg/L) Under Climate Normal Conditions

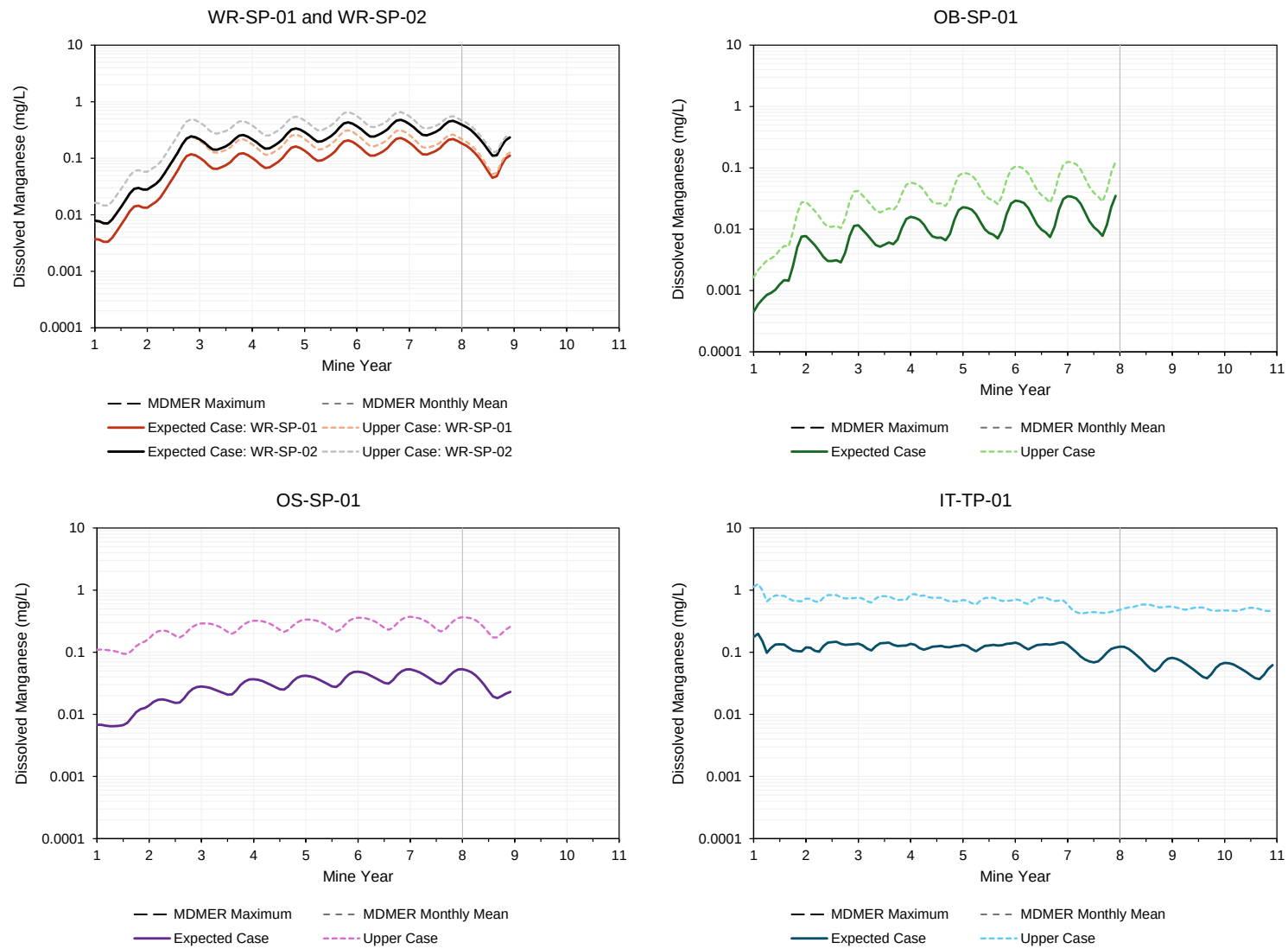




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.38 Water Management Pond Water Quality Time-Series Plots for Total Manganese (mg/L) Under Climate Normal Conditions

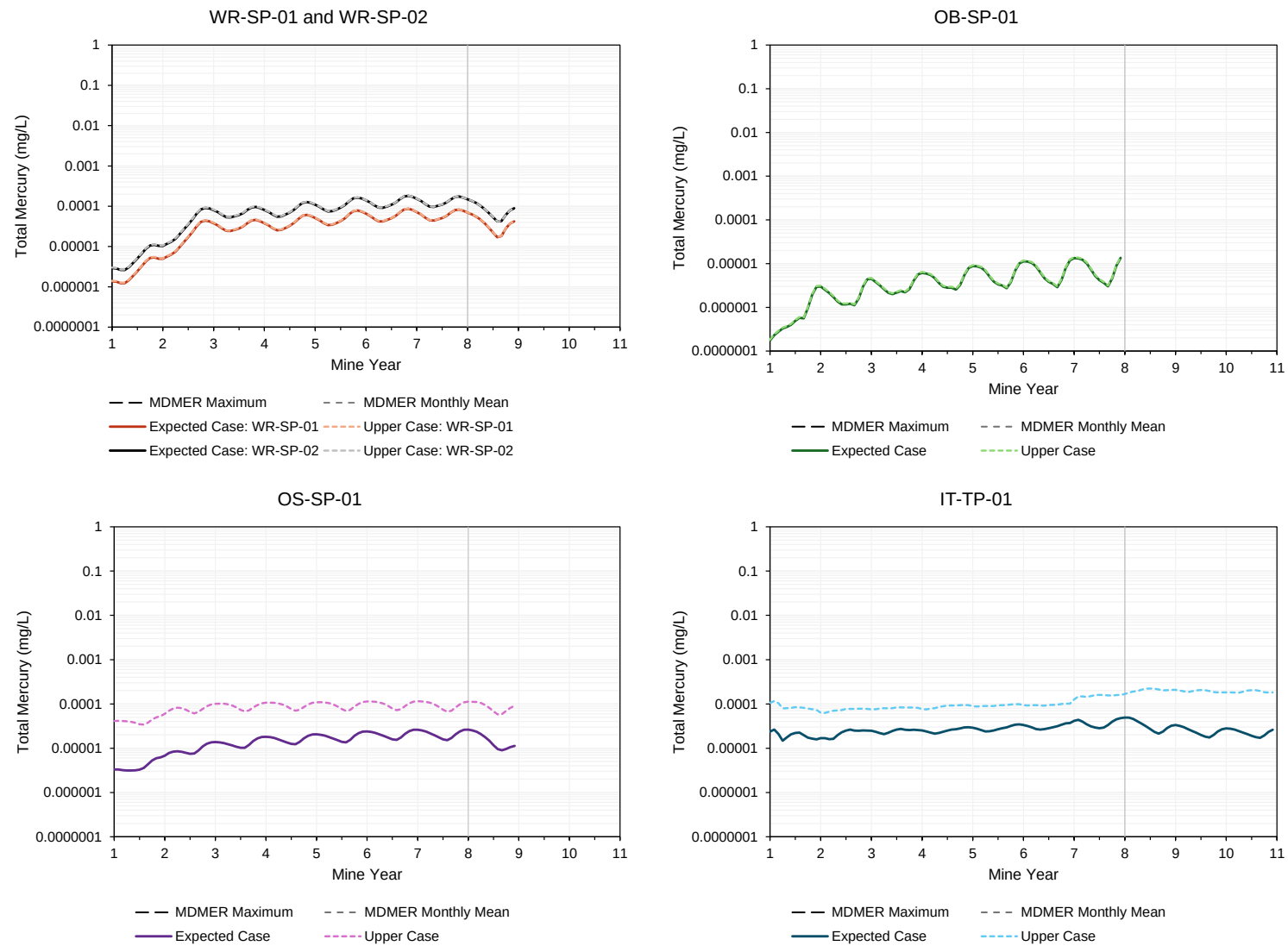




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.39 Water Management Pond Water Quality Time-Series Plots for Dissolved Manganese (mg/L) Under Climate Normal Conditions

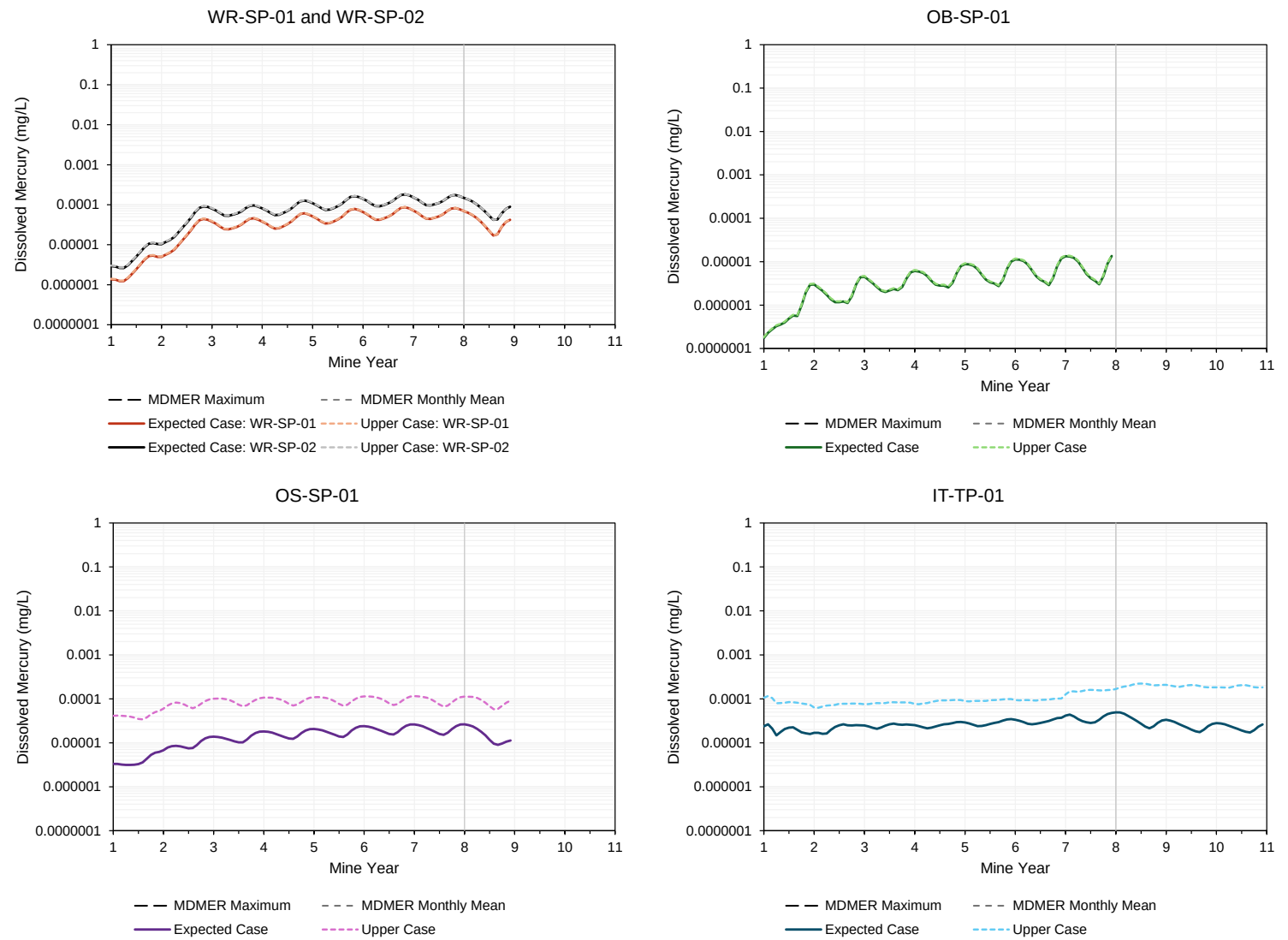




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.40 Water Management Pond Water Quality Time-Series Plots for Total Mercury (mg/L) Under Climate Normal Conditions

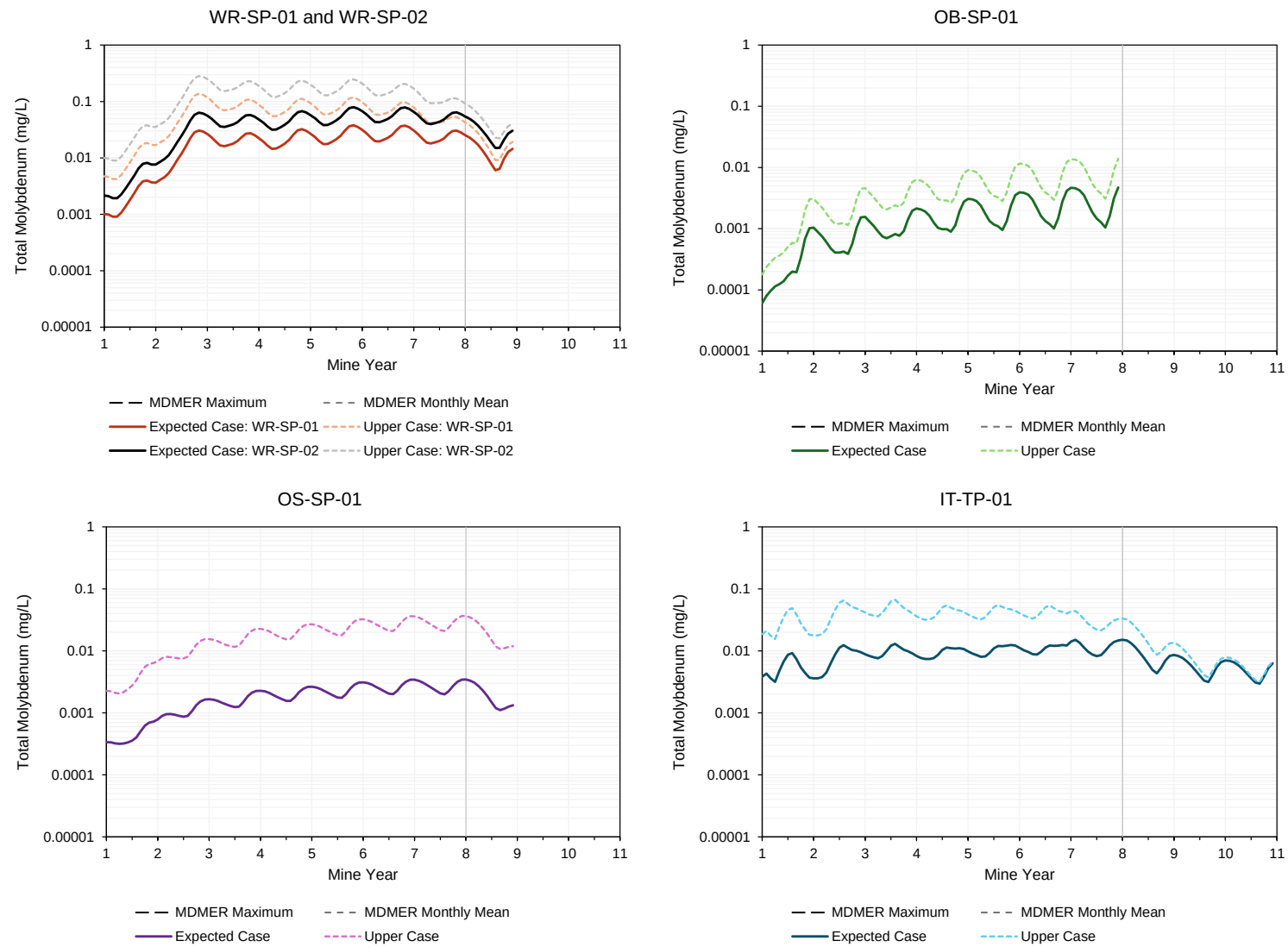




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.41 Water Management Pond Water Quality Time-Series Plots for Dissolved Mercury (mg/L) Under Climate Normal Conditions

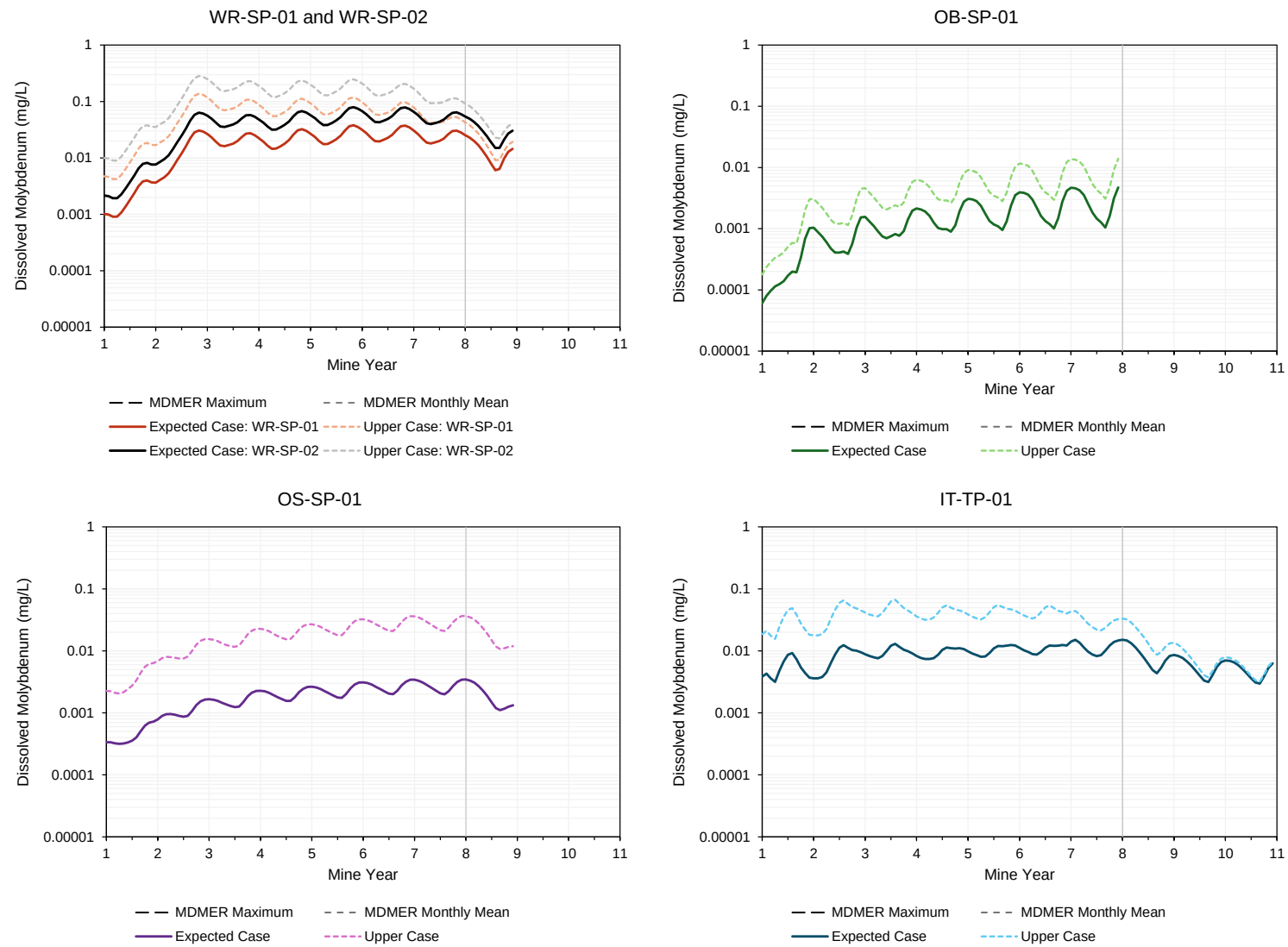




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.42 Water Management Pond Water Quality Time-Series Plots for Total Molybdenum (mg/L) Under Climate Normal Conditions

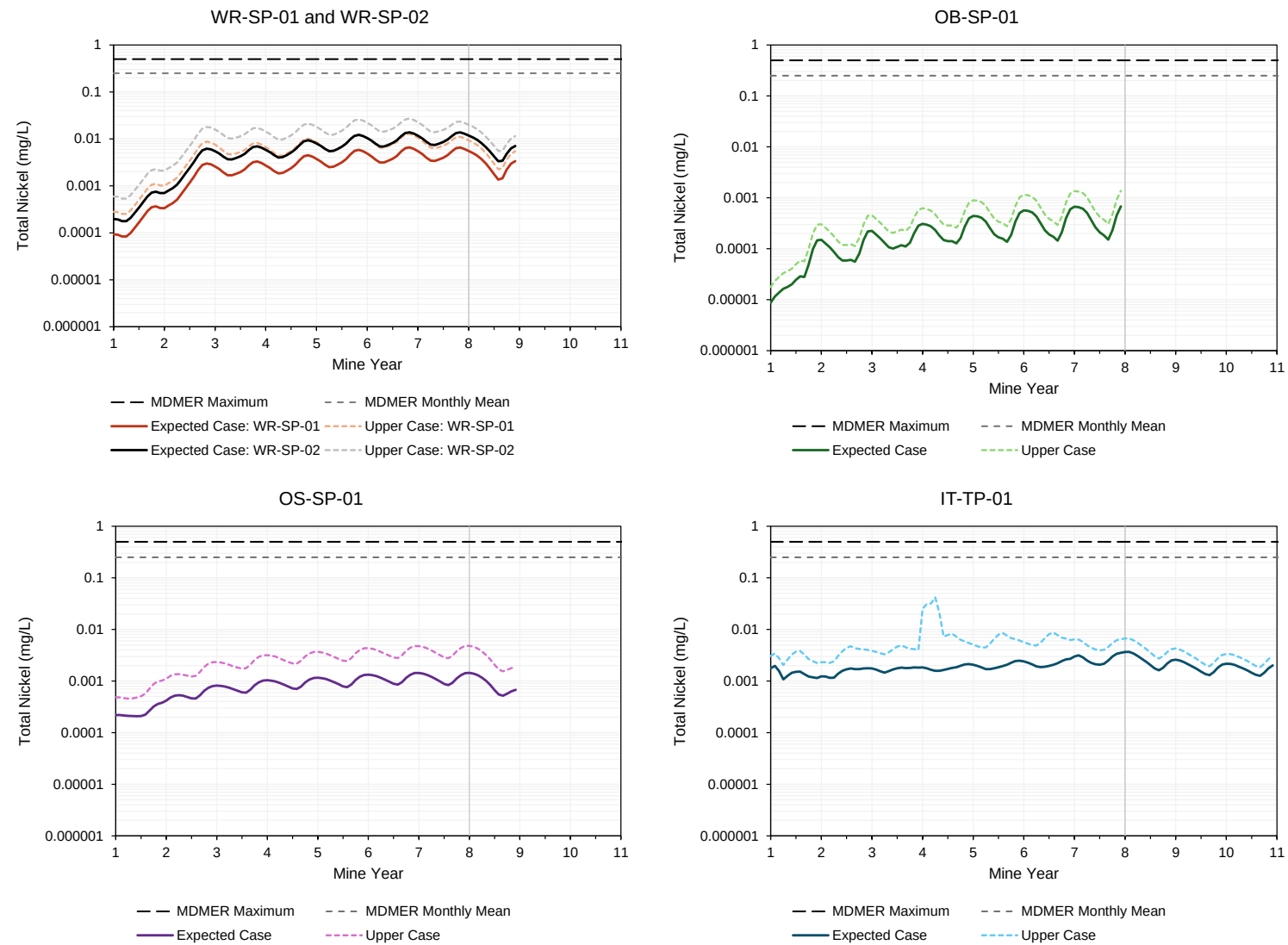




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.43 Water Management Pond Water Quality Time-Series Plots for Dissolved Molybdenum (mg/L) Under Climate Normal Conditions

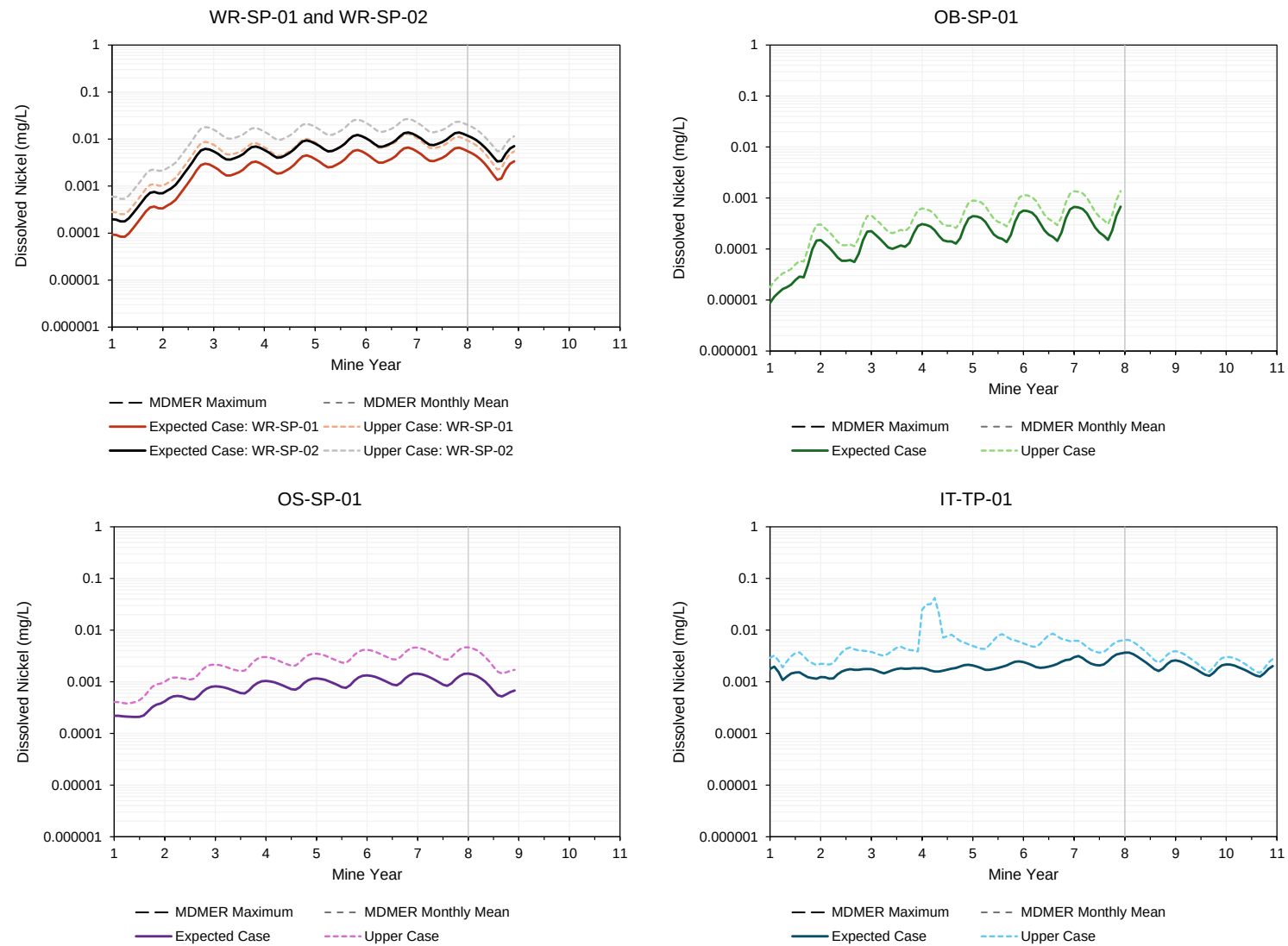




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.44 Water Management Pond Water Quality Time-Series Plots for Total Nickel (mg/L) Under Climate Normal Conditions

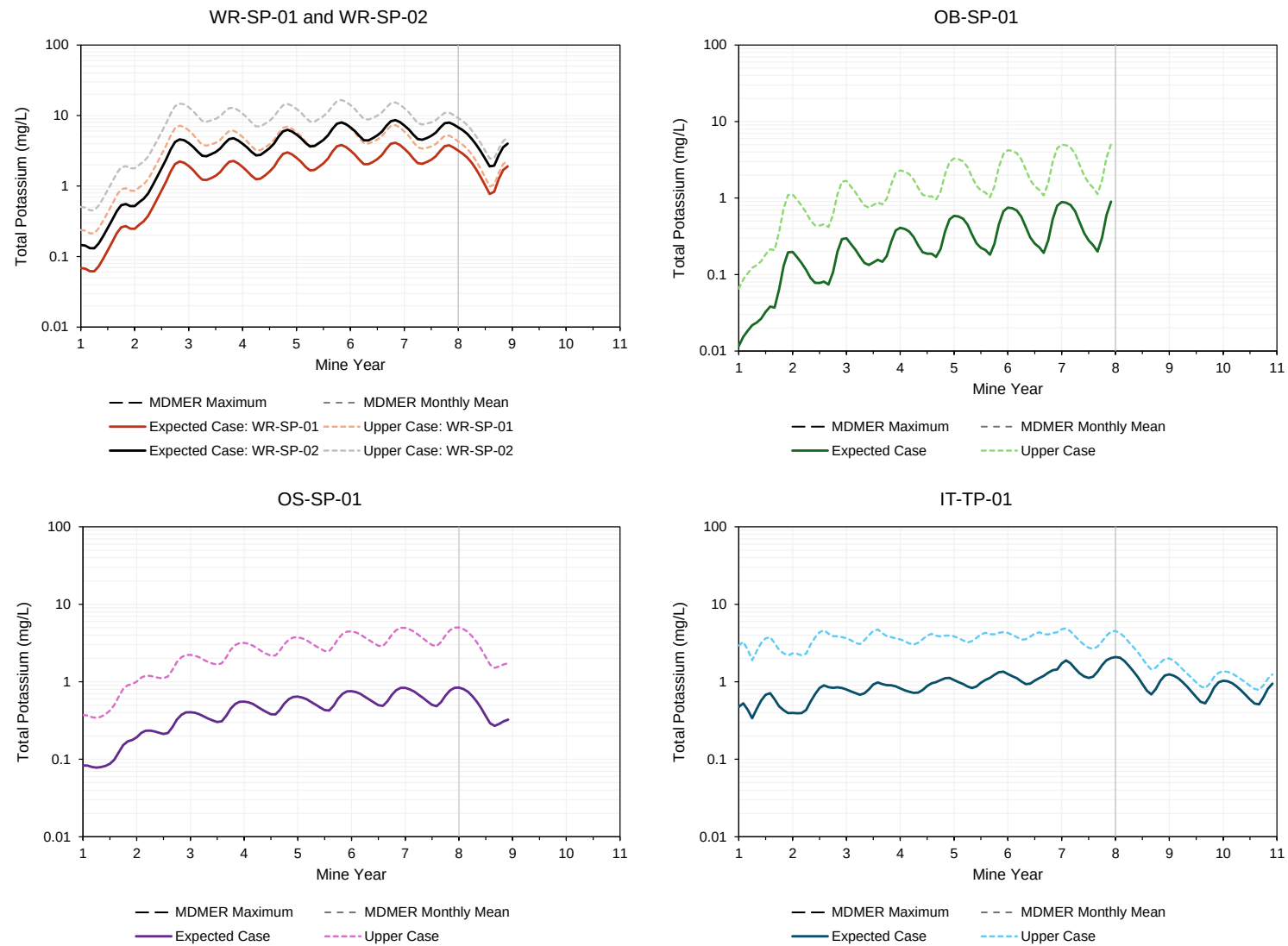




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.45 Water Management Pond Water Quality Time-Series Plots for Dissolved Nickel (mg/L) Under Climate Normal Conditions

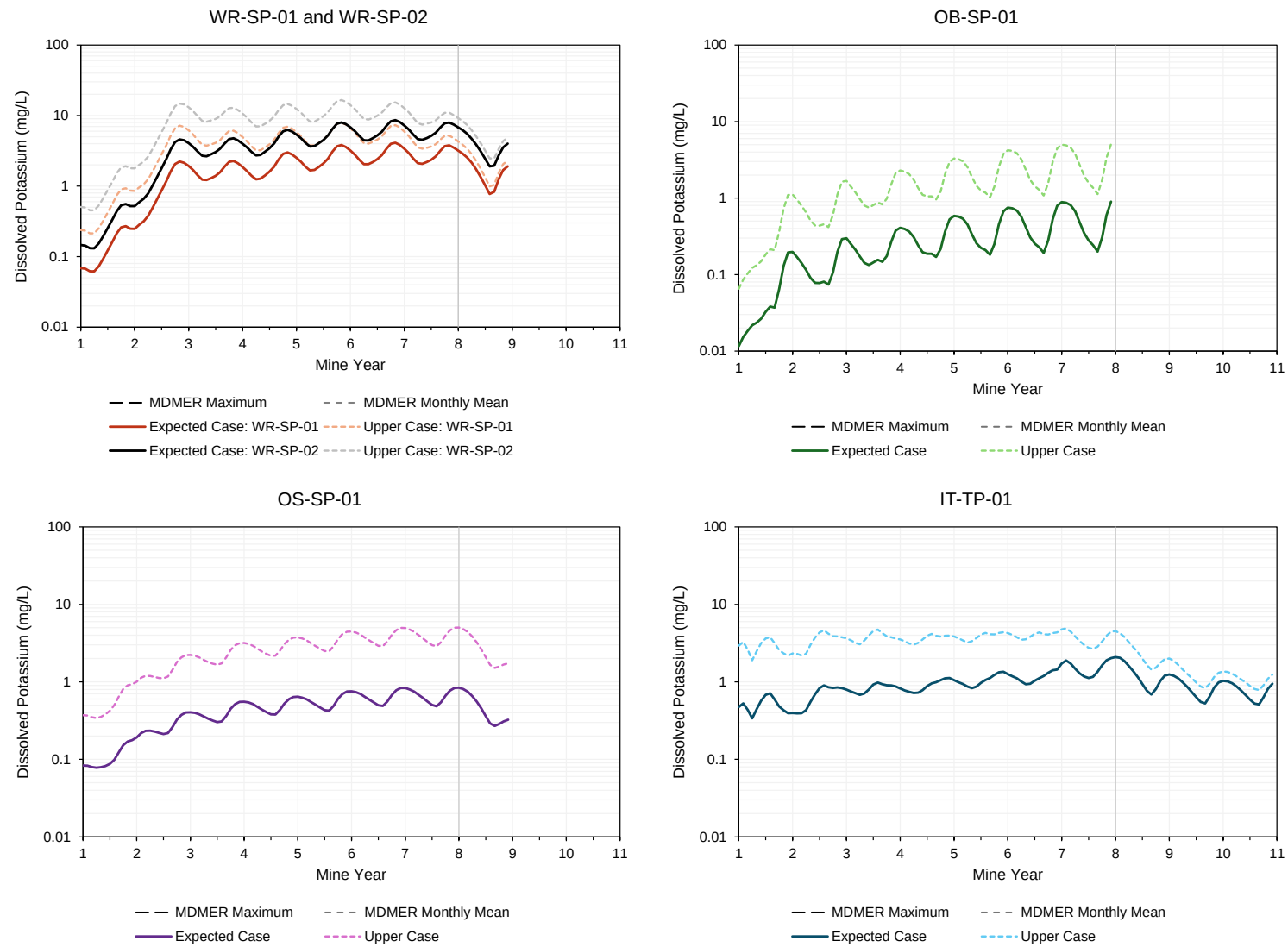




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.46 Water Management Pond Water Quality Time-Series Plots for Total Potassium (mg/L) Under Climate Normal Conditions

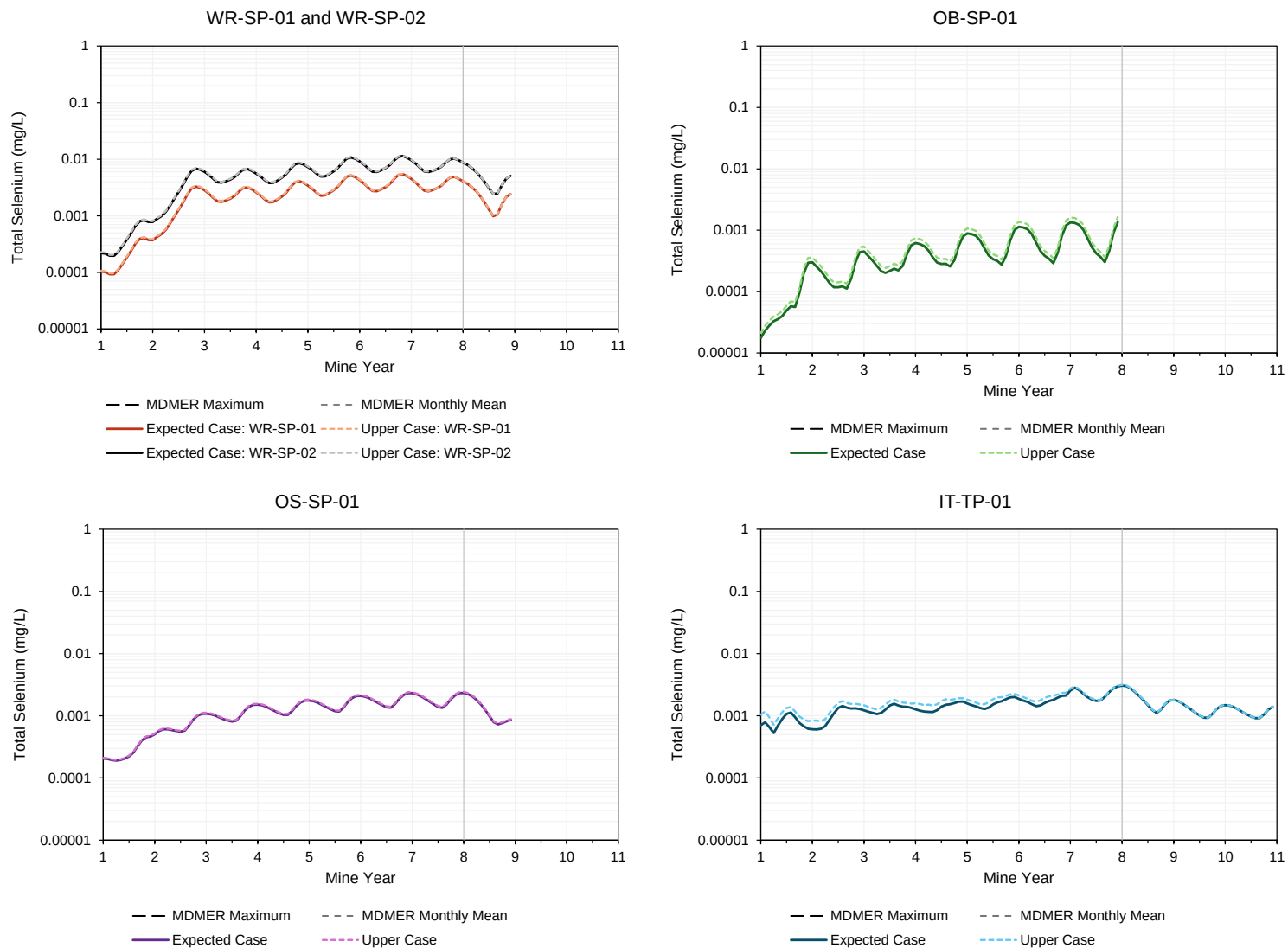




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.47 Water Management Pond Water Quality Time-Series Plots for Dissolved Potassium (mg/L) Under Climate Normal Conditions





Notes:

Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10). "MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters. mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.48 Water Management Pond Water Quality Time-Series Plots for Total Selenium (mg/L) Under Climate Normal Conditions



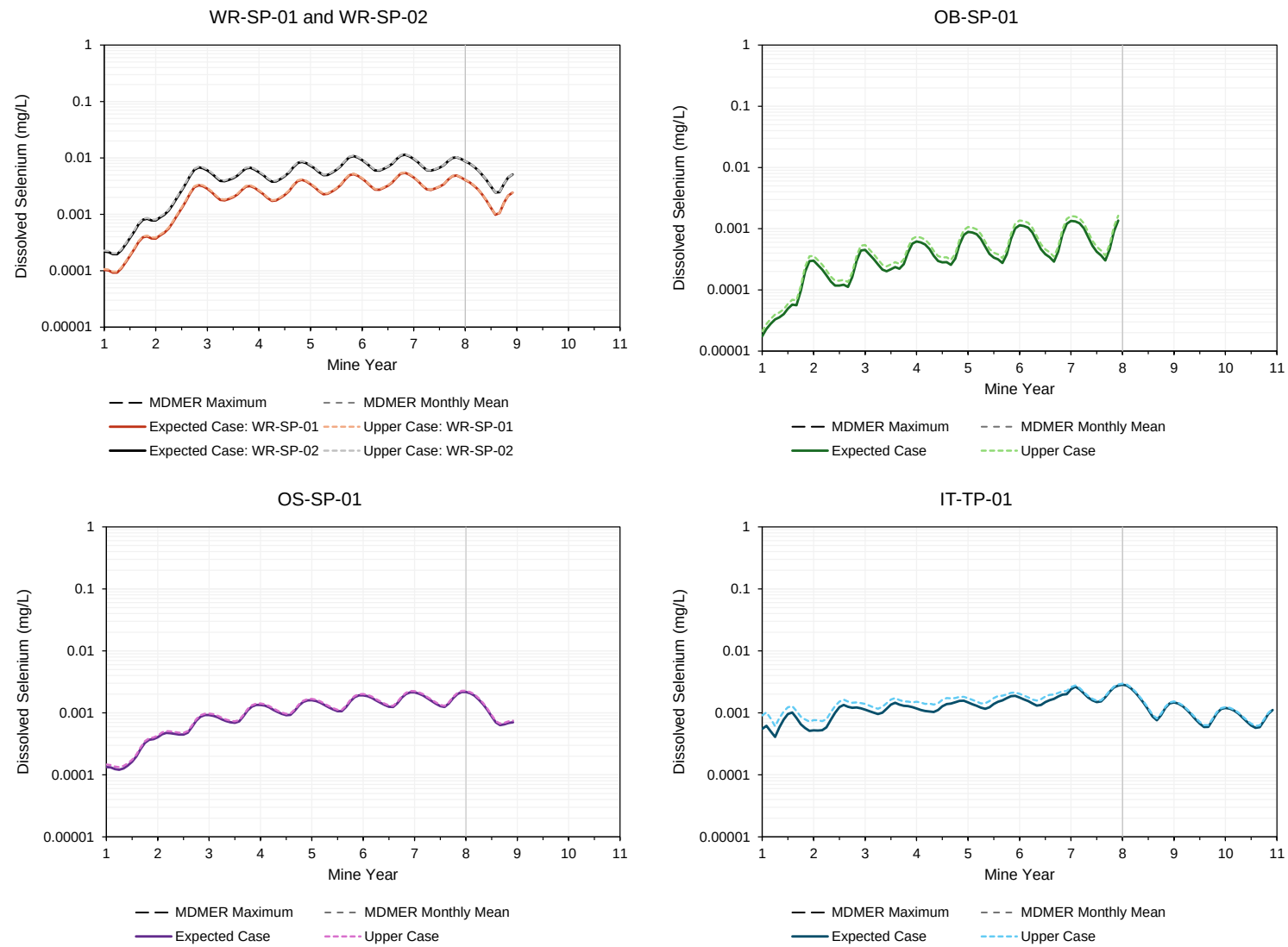
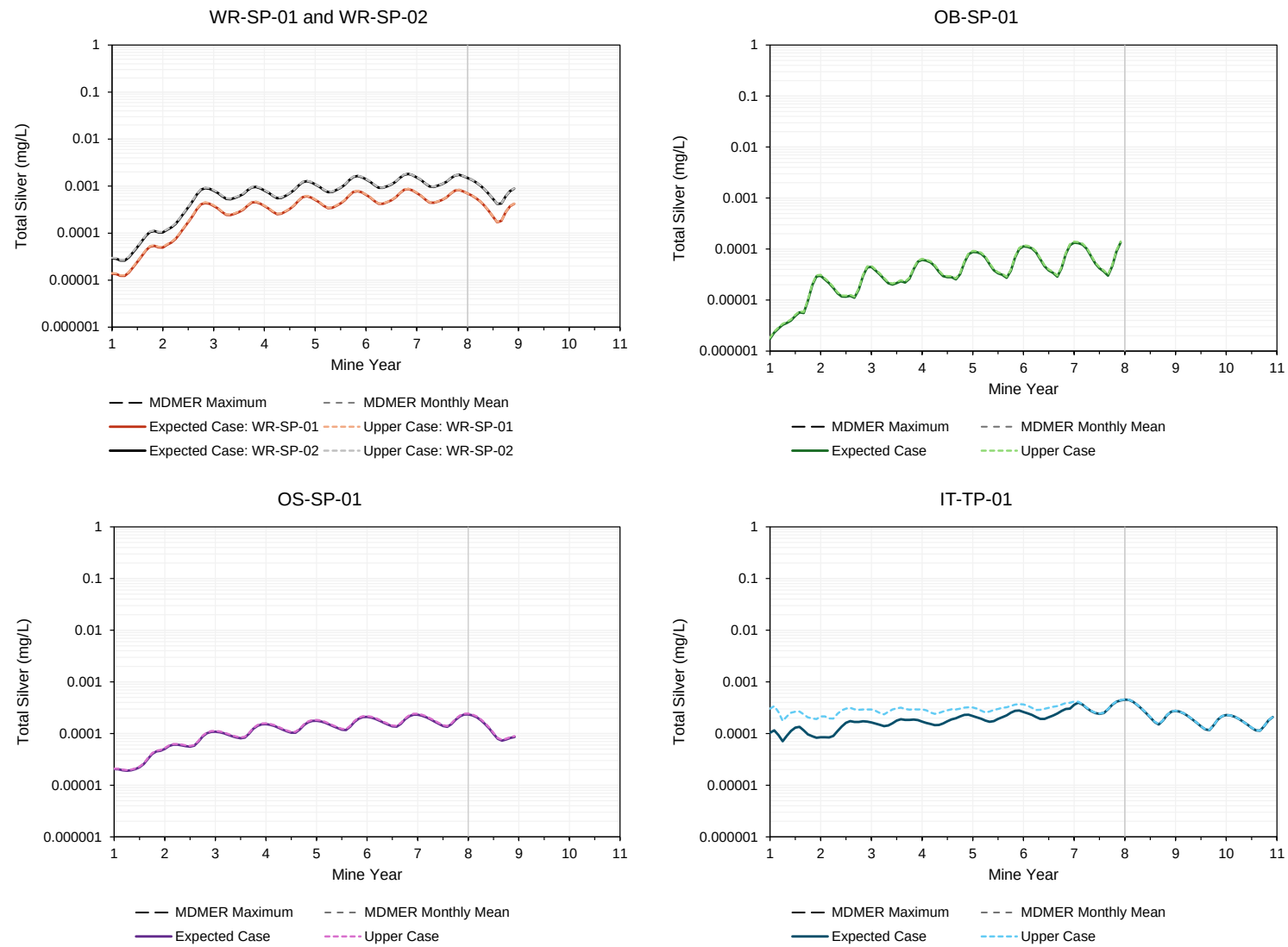


Figure G.49 Water Management Pond Water Quality Time-Series Plots for Dissolved Selenium (mg/L) Under Climate Normal Conditions

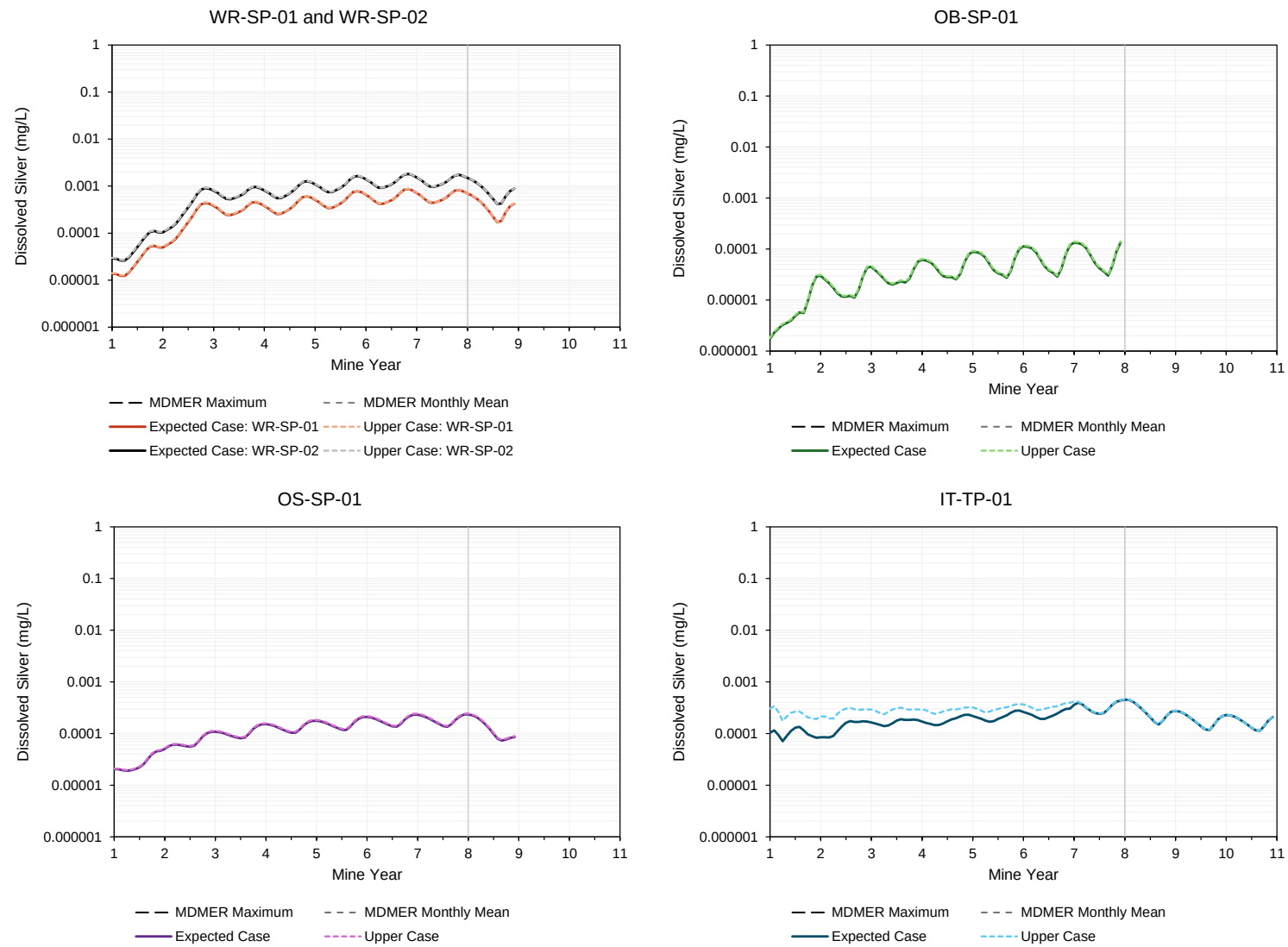




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.50 Water Management Pond Water Quality Time-Series Plots for Total Silver (mg/L) Under Climate Normal Conditions

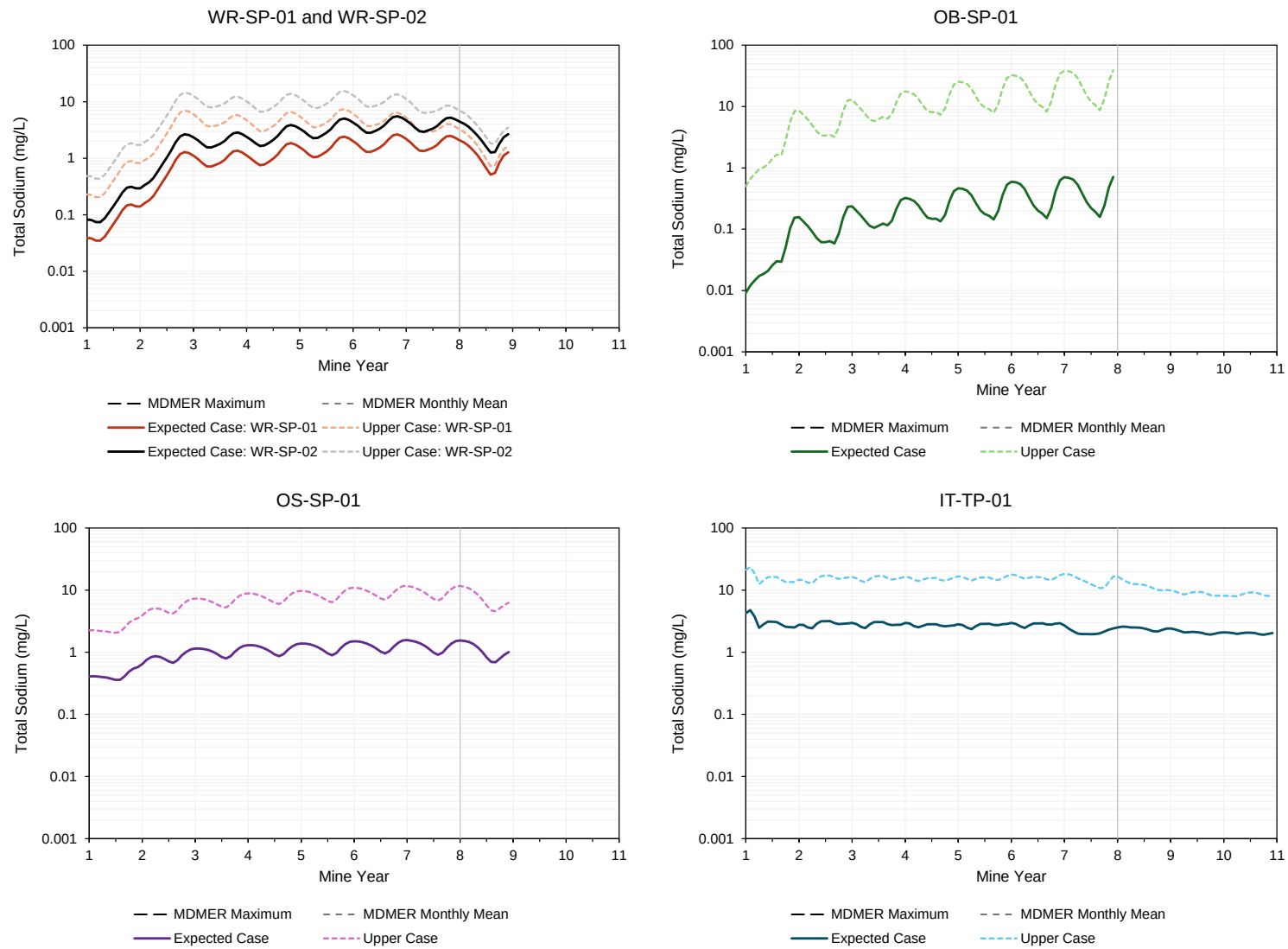




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.51 Water Management Pond Water Quality Time-Series Plots for Dissolved Silver (mg/L) Under Climate Normal Conditions

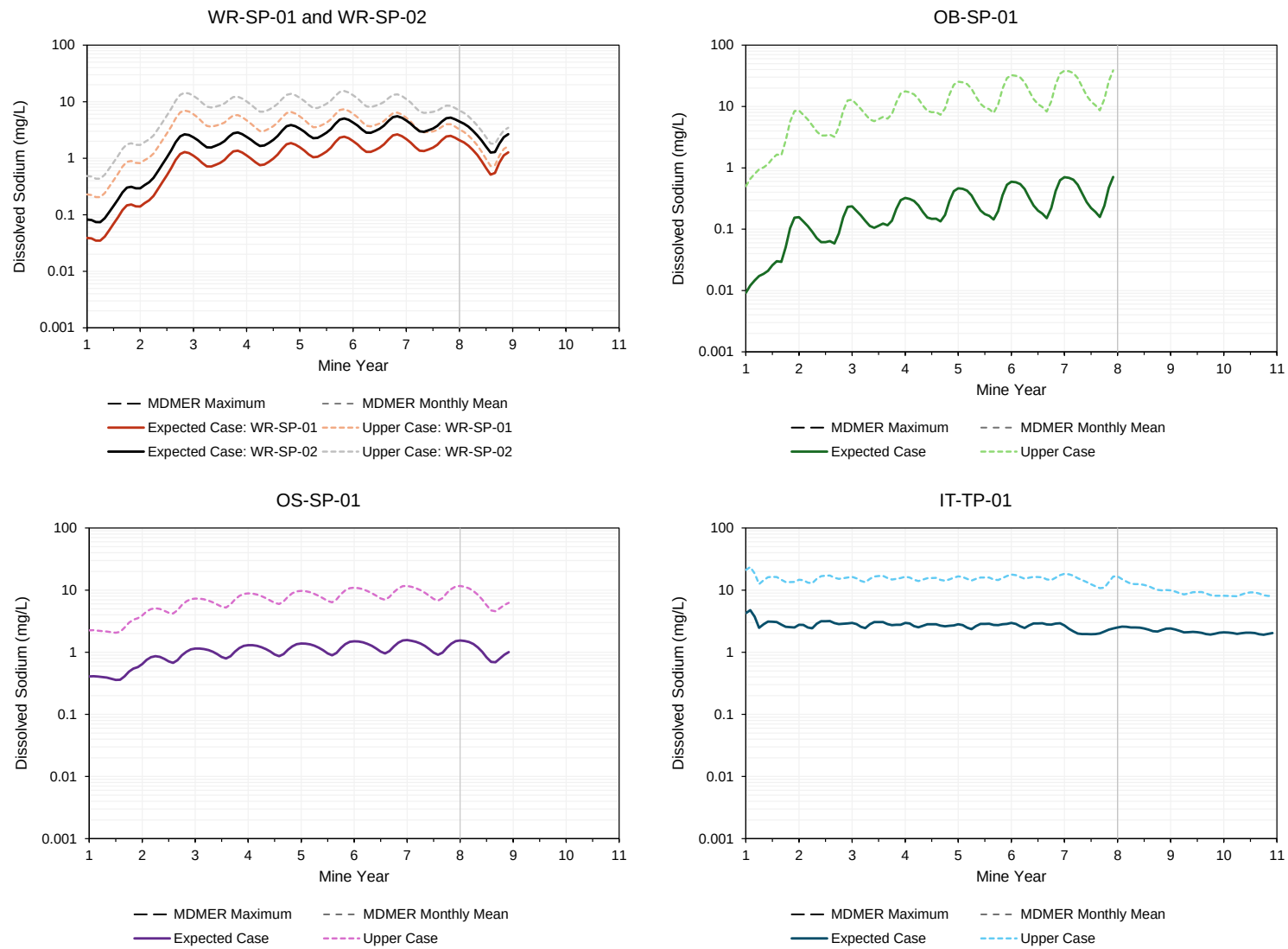




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.52 Water Management Pond Water Quality Time-Series Plots for Total Sodium (mg/L) Under Climate Normal Conditions

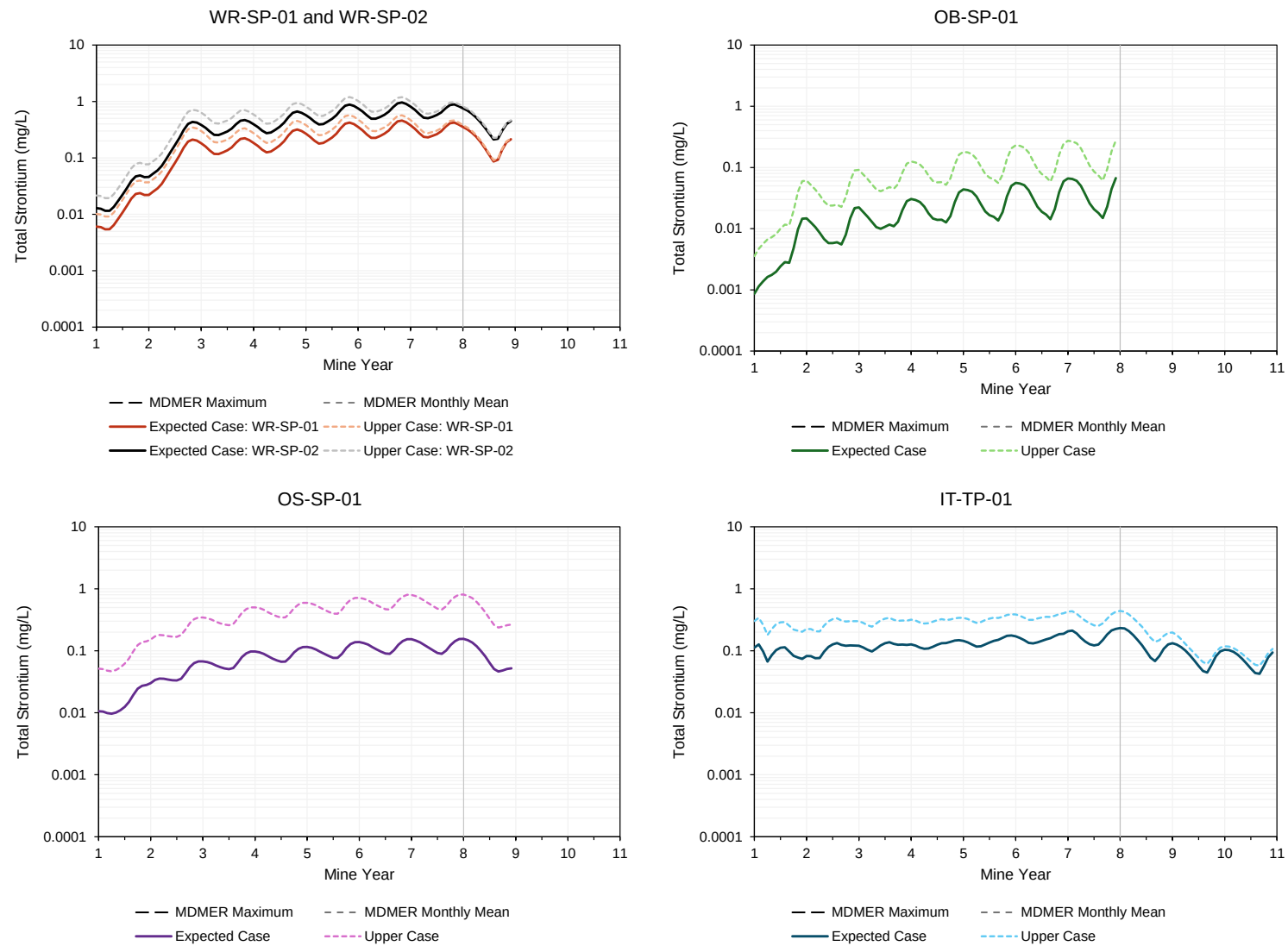




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.53 Water Management Pond Water Quality Time-Series Plots for Dissolved Sodium (mg/L) Under Climate Normal Conditions

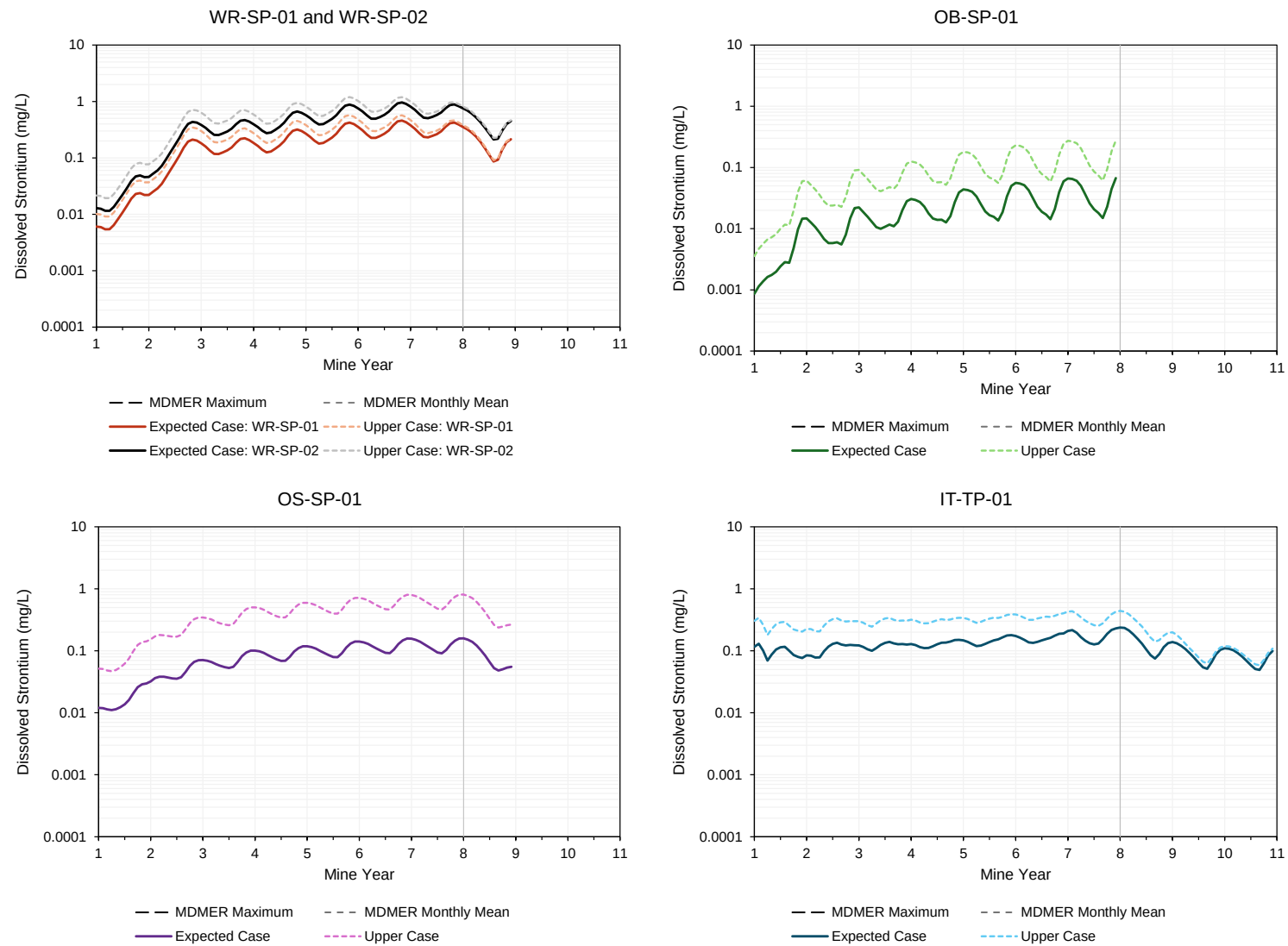




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.54 Water Management Pond Water Quality Time-Series Plots for Total Strontium (mg/L) Under Climate Normal Conditions

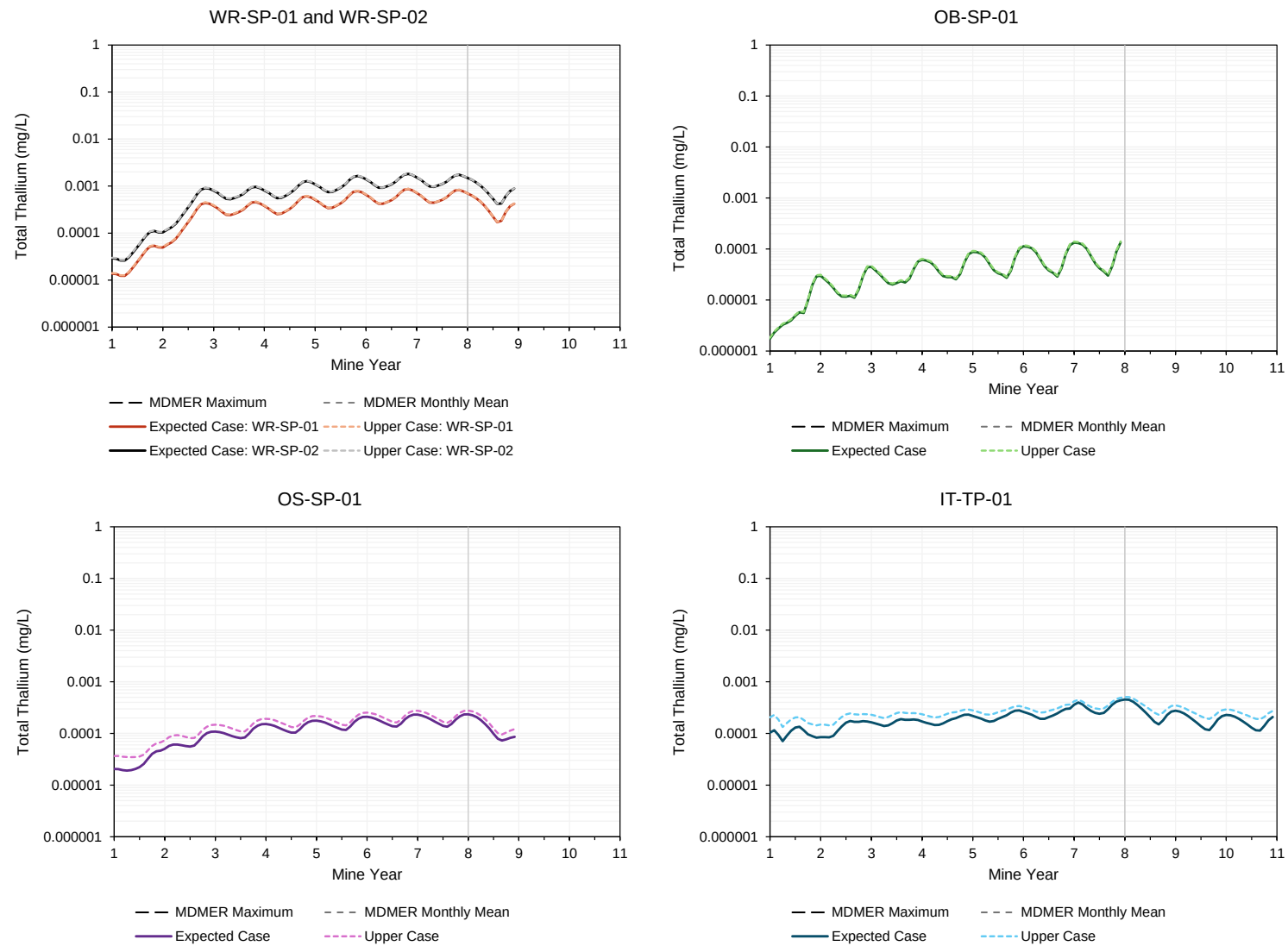




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.55 Water Management Pond Water Quality Time-Series Plots for Dissolved Strontium (mg/L) Under Climate Normal Conditions

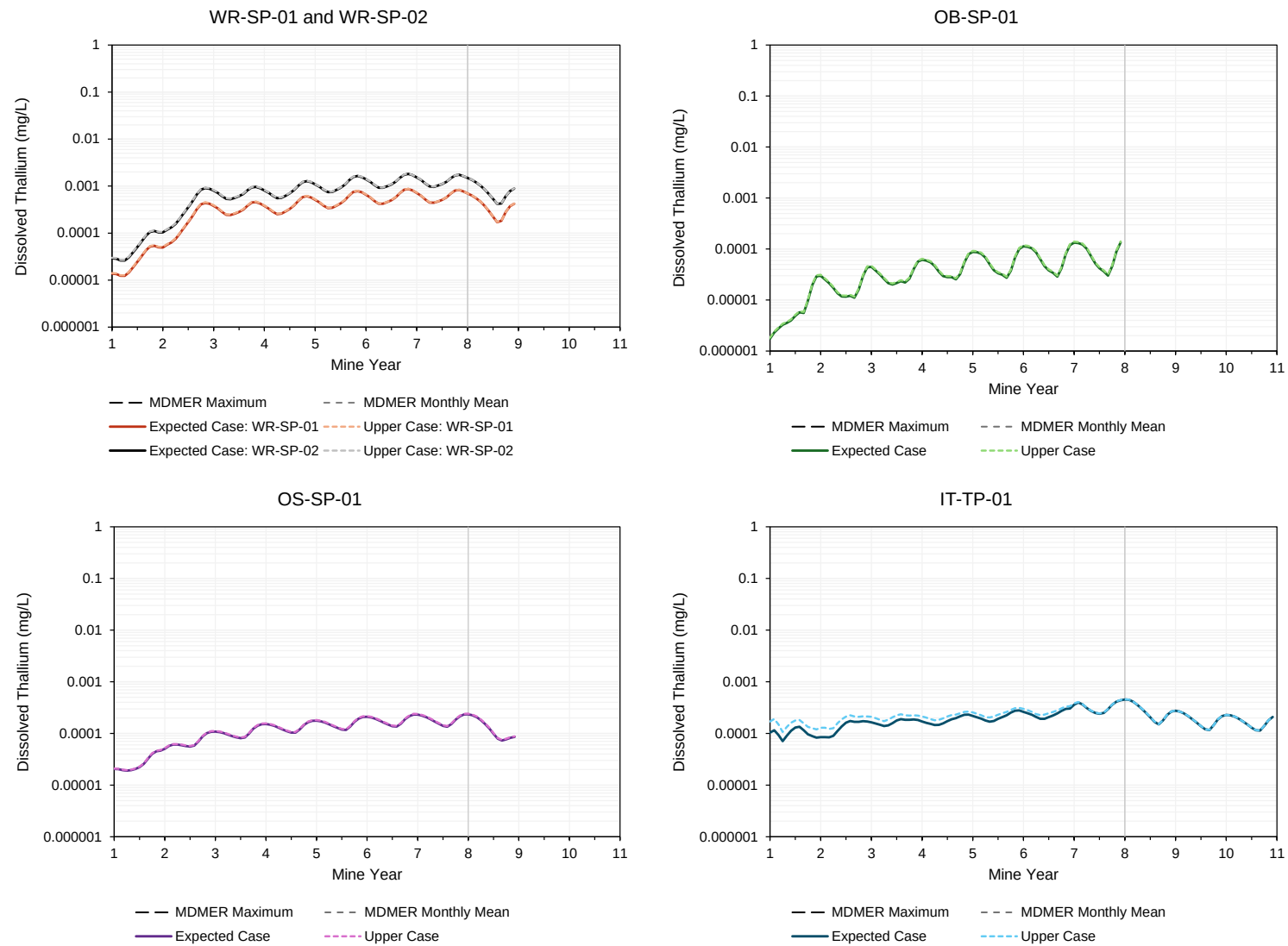




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.56 Water Management Pond Water Quality Time-Series Plots for Total Thallium (mg/L) Under Climate Normal Conditions





Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.57 Water Management Pond Water Quality Time-Series Plots for Dissolved Thallium (mg/L) Under Climate Normal Conditions



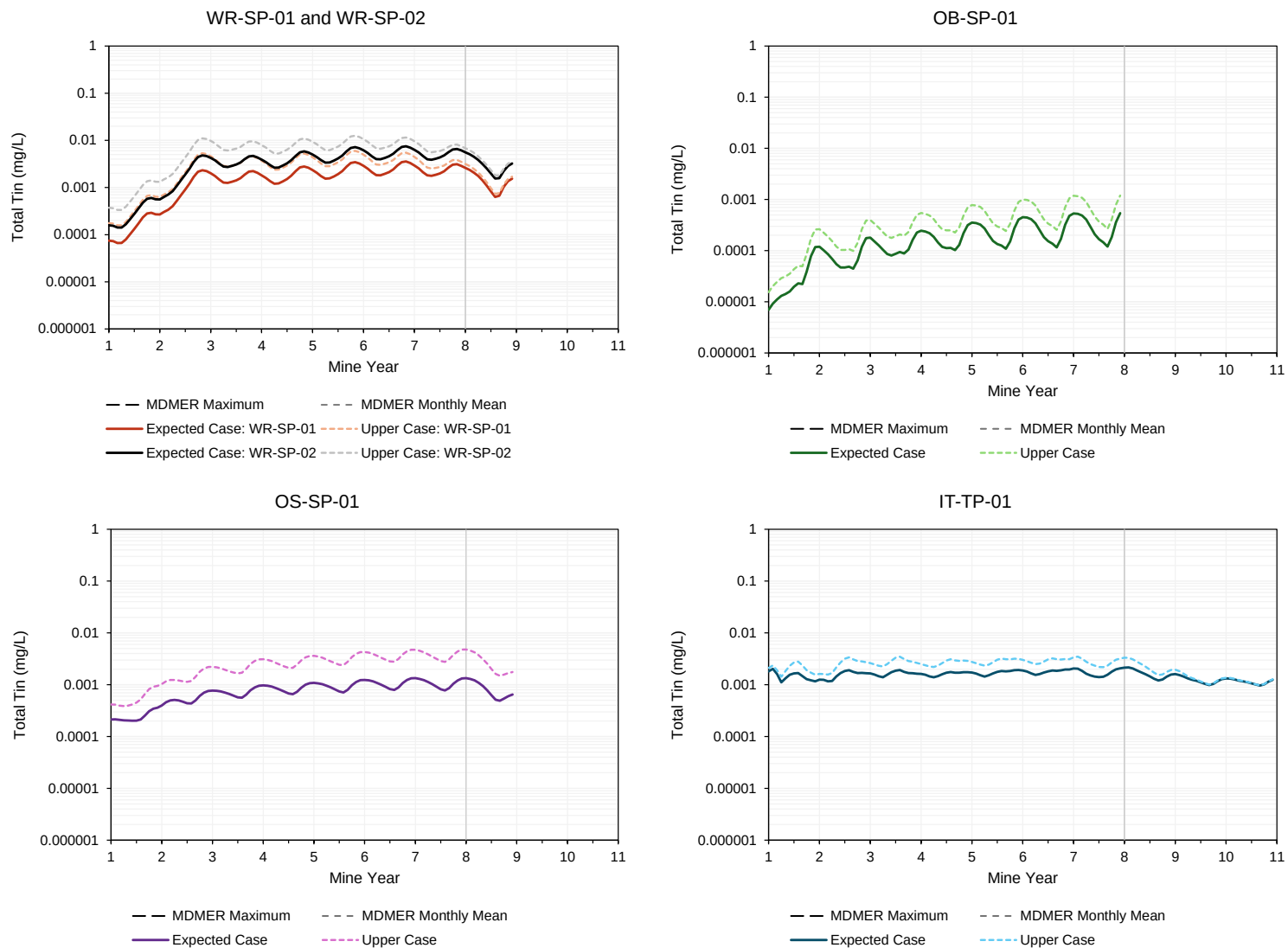
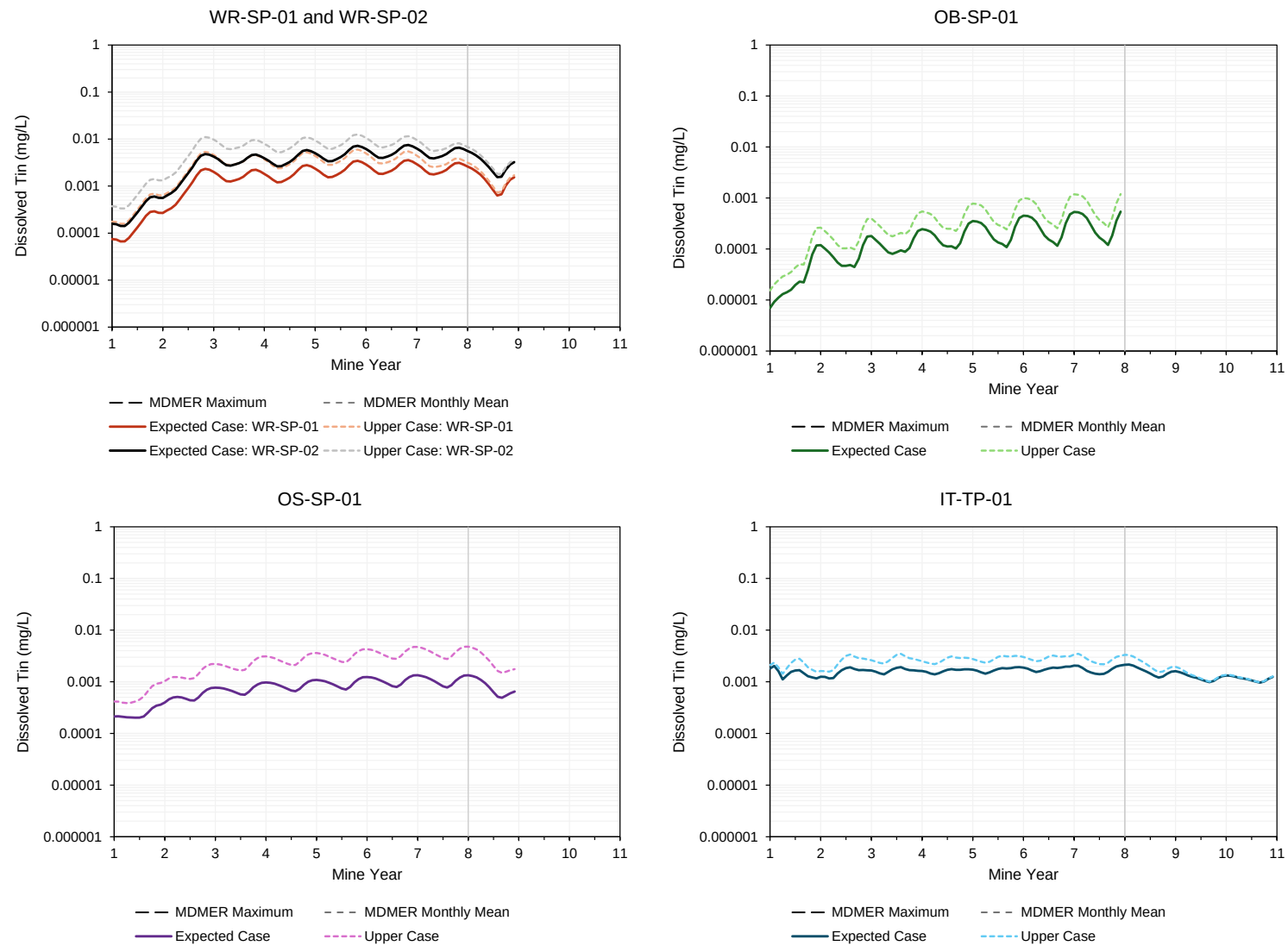


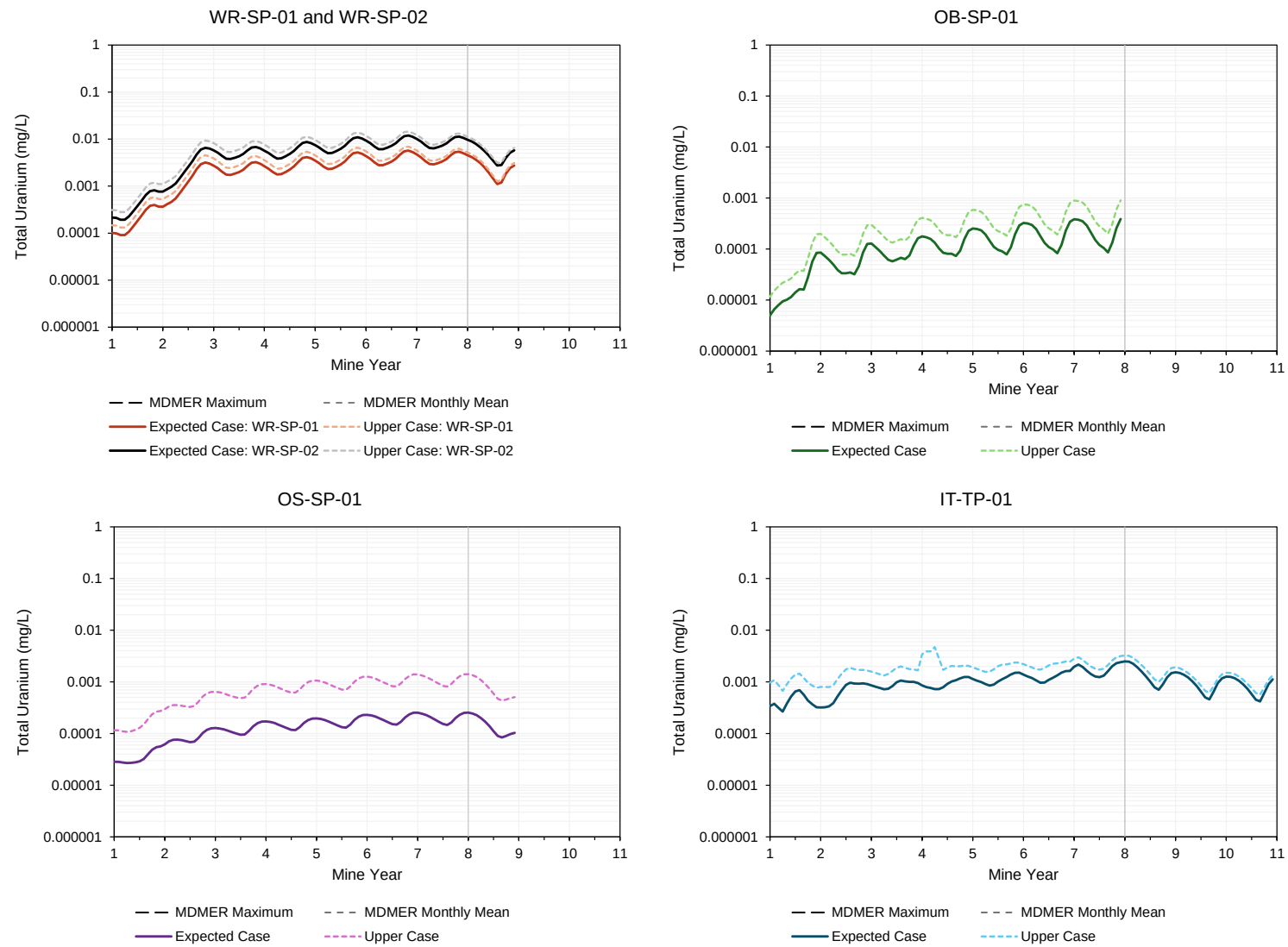
Figure G.58 Water Management Pond Water Quality Time-Series Plots for Total Tin (mg/L) Under Climate Normal Conditions



Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.59 Water Management Pond Water Quality Time-Series Plots for Dissolved Tin (mg/L) Under Climate Normal Conditions

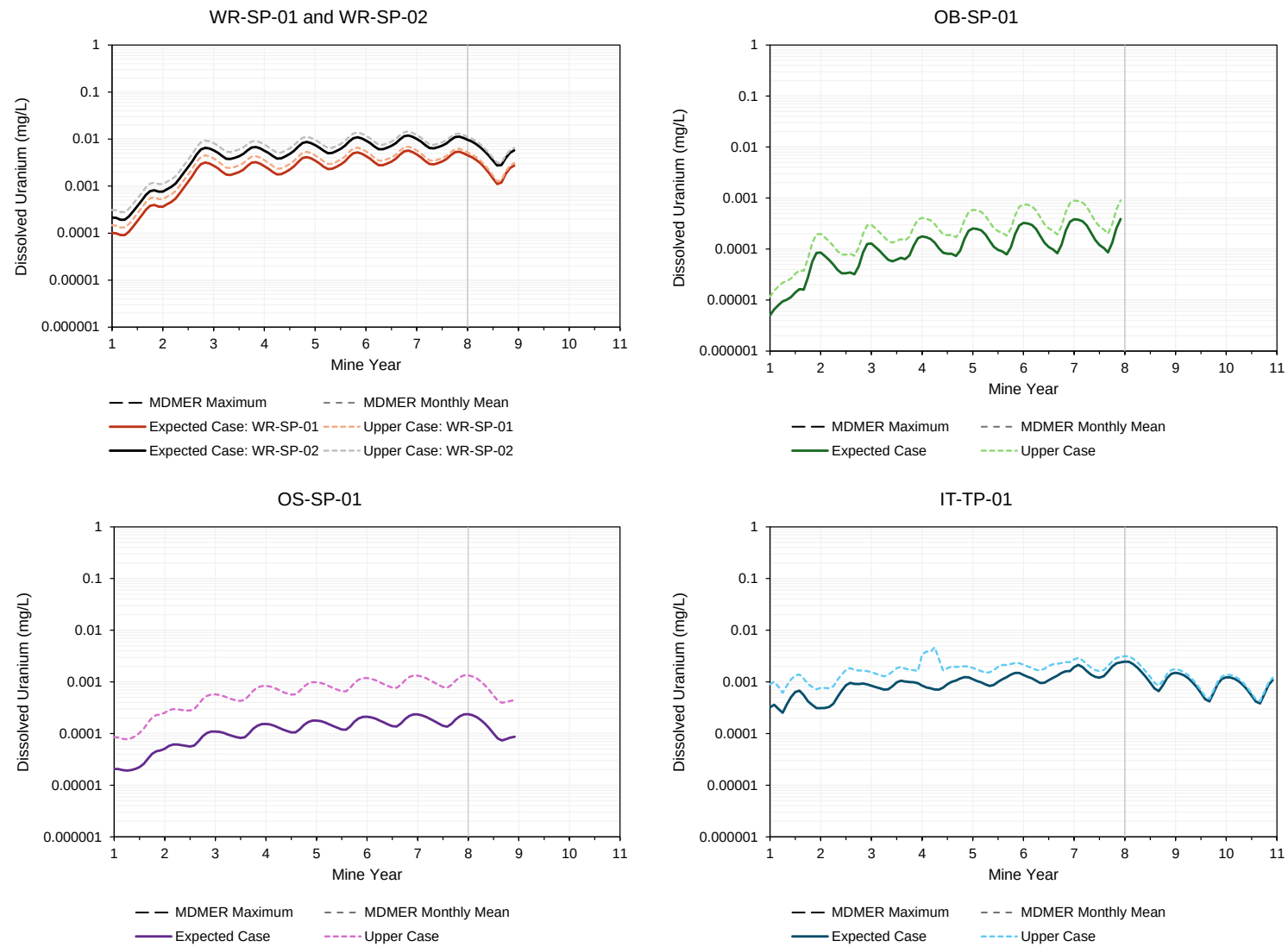




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.60 Water Management Pond Water Quality Time-Series Plots for Total Uranium (mg/L) Under Climate Normal Conditions

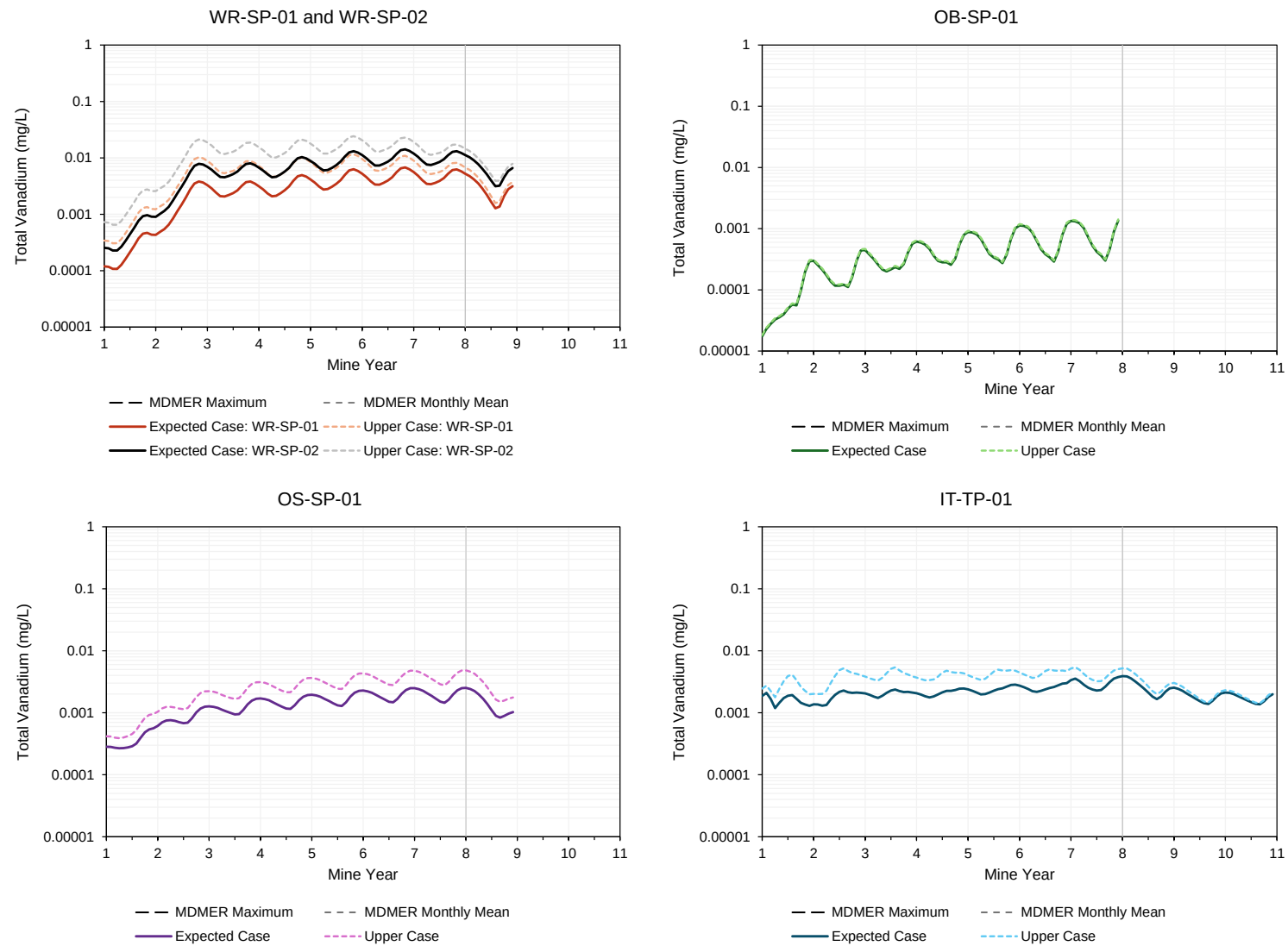




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.61 Water Management Pond Water Quality Time-Series Plots for Dissolved Uranium (mg/L) Under Climate Normal Conditions

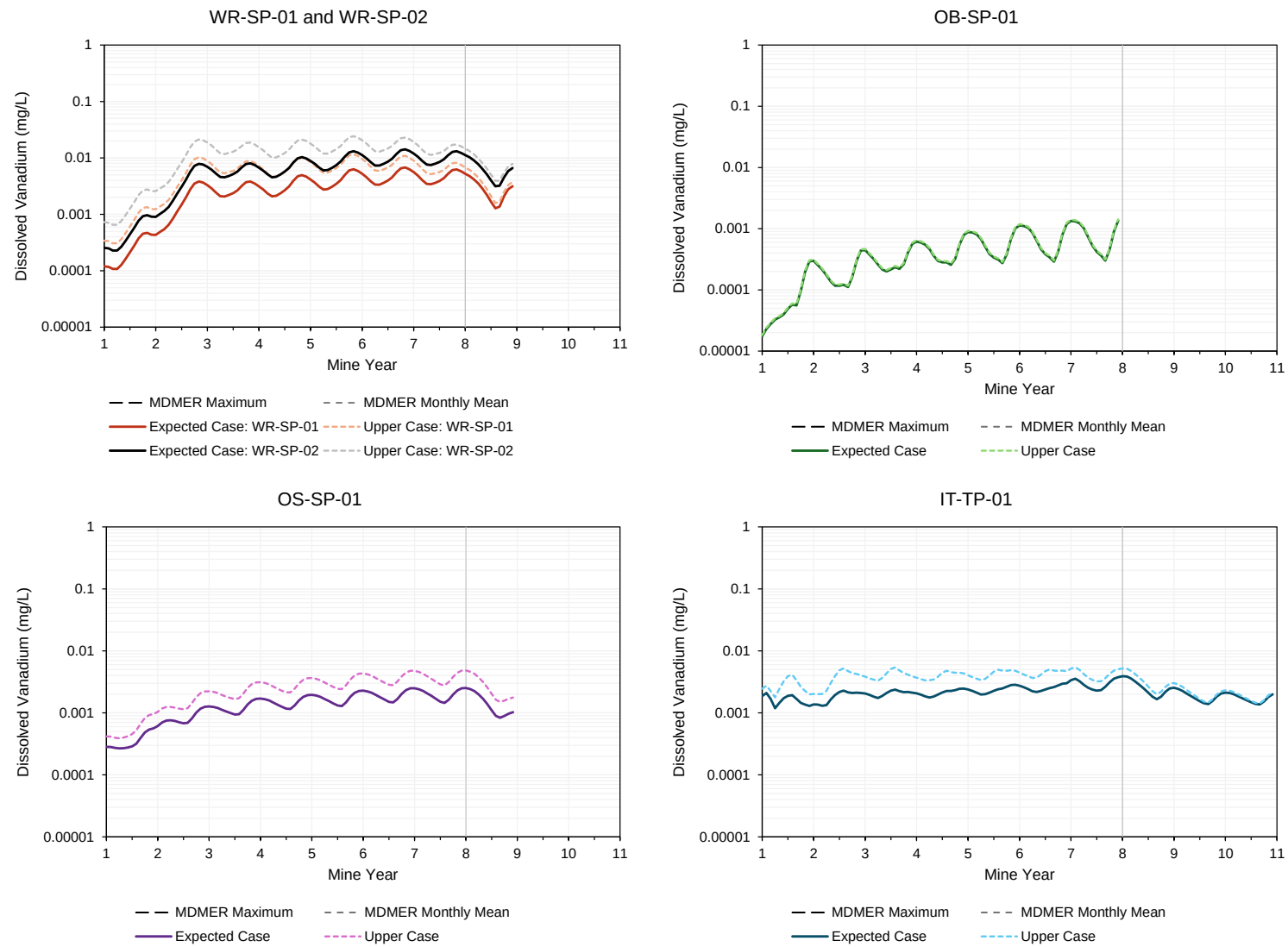




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
"MDMER Maximum" refers to the maximum concentration of any grab sample (mg/L) and "MDMER Monthly Mean" refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.62 Water Management Pond Water Quality Time-Series Plots for Total Vanadium (mg/L) Under Climate Normal Conditions

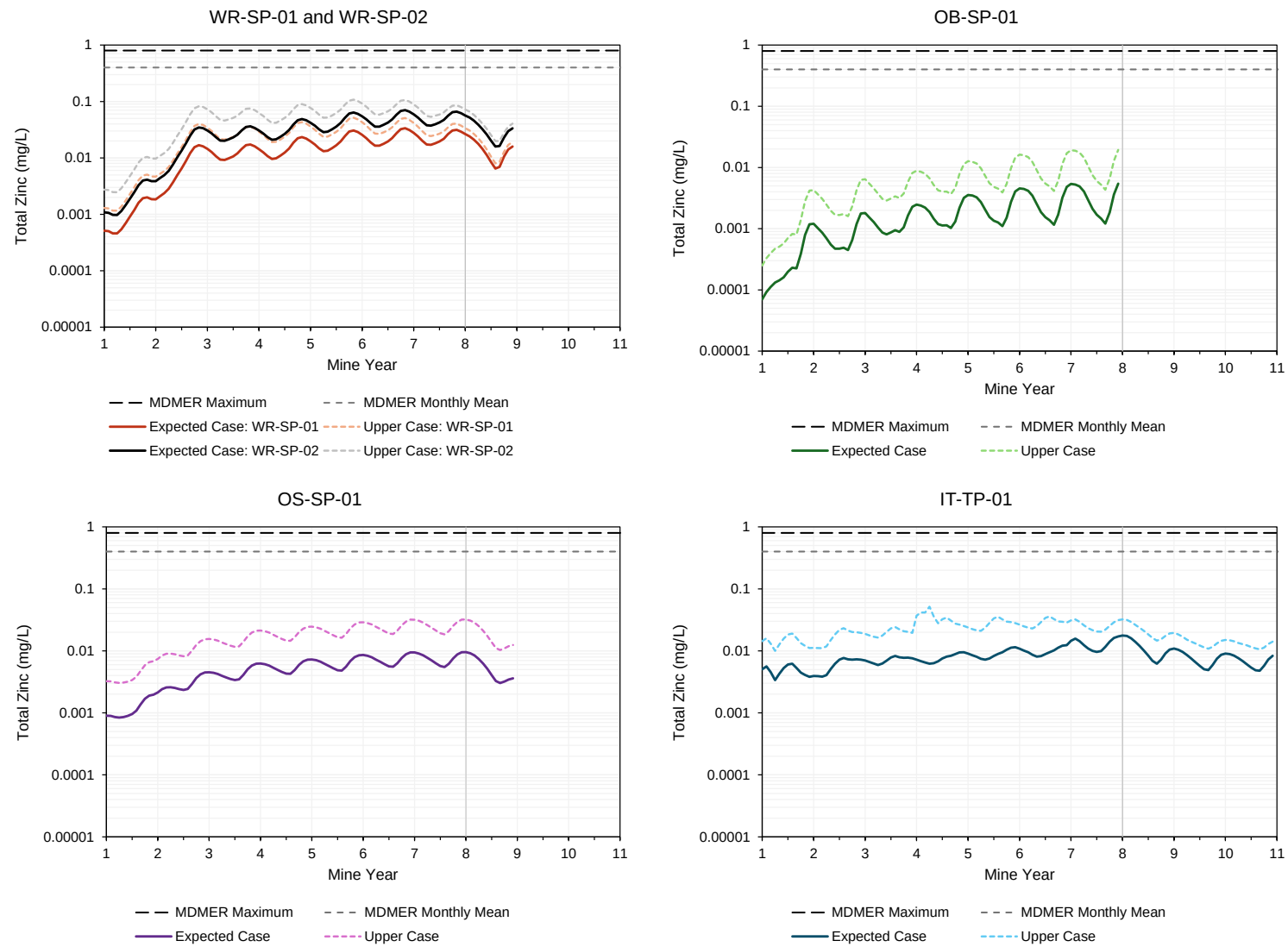




Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.63 Water Management Pond Water Quality Time-Series Plots for Dissolved Vanadium (mg/L) Under Climate Normal Conditions





Notes:
Vertical lines are used to delineate the following Project phases: construction/operation (Mine Years 1 to 7) and active closure (Mine Years 8 to 10).
“MDMER Maximum” refers to the maximum concentration of any grab sample (mg/L) and “MDMER Monthly Mean” refers to the maximum monthly mean concentration (mg/L) from the Metal and Diamond Mining Effluent Regulations (MDMER) Schedule 4 Table 1. The MDMER effluent quality limits are shown as dashed lines for applicable parameters.
mg/L = milligrams per litre; as N = expressed as nitrogen (applies to nitrogen species plots only)

Figure G.64 Water Management Pond Water Quality Time-Series Plots for Total Zinc (mg/L) Under Climate Normal Conditions



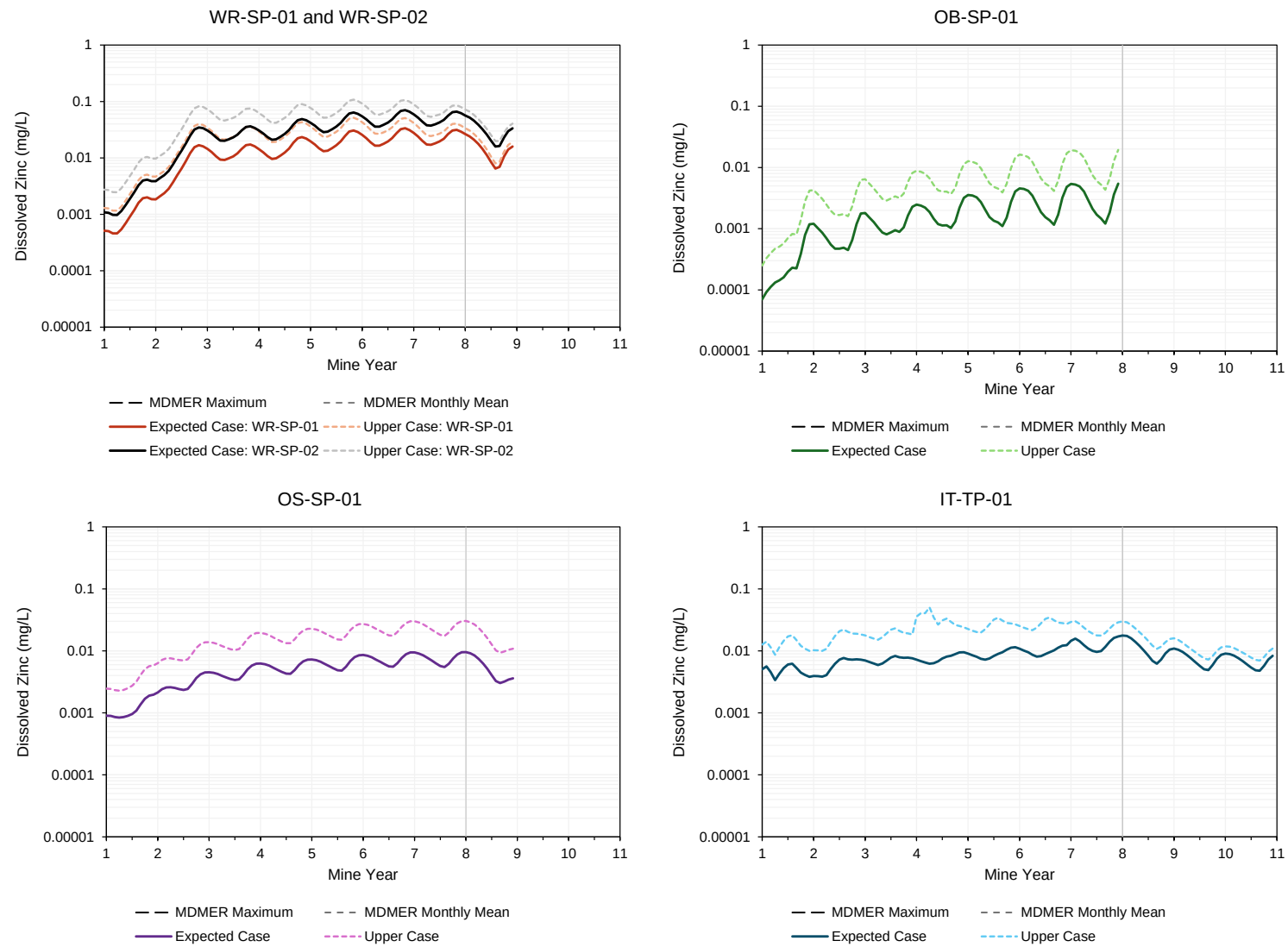


Figure G.65 Water Management Pond Water Quality Time-Series Plots for Dissolved Zinc (mg/L) Under Climate Normal Conditions

