	Document Number: OMS-4000-DT00-MAN-0007.008	Status Approved	Date: 2022-Sep-30
Document Title: Operation, Maintenance and Surveillance Manual Tailings and Water Management Facilities Part VIII –EPRP		Author: W. Ding	Approver: M. Taghimohammadi

OMS-4000-DT00-MAN-0007.008

Rainy River Mine
Operation, Maintenance and Surveillance Manual
Tailings and Water Management Facilities
Part VIII – Emergency Preparedness & Response Plan

New Gold Inc.
Rainy River Mine
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September 2022
Version 2022-1

Review and Revision History

The OMS Manual shall be reviewed annually and following any significant changes at the site to assess if the document is representative of the current condition and operation of the dam at the time of the review. Revisions to the manual should be undertaken within six months of changes. It is the responsibility of the Tailings Dam Engineer to initiate the OMS review.

The review team and approval record are given in **Table 1**. The version history of the OMS Manual is shown in **Table 2**.

Table 1 - Review Team

Role	Name/ Alternative	Company/ Department	Position	Signature	Date
Prepared By ⁽¹⁾	Winston Ding	Capital Projects	Sr. Tailings Dam Engineer	<Original signed by>	Oct 21, 2022
Reviewed by	Travis Pastachak	Capital Projects	Manager, Capital Projects	<Original signed by>	Oct 22, 2022
	Kristin Kowalski	Capital Projects	Superintendent, Project Services	<Original signed by>	Oct 26, 2022
	Garnet Cornell	Environment	Superintendent, Environment	<Original signed by>	Nov 1, 2022
	Richard Francoeur	Health & Safety	ERT Safety Officer	<Original signed by>	Nov 2, 2022
	Calvin Boese	SRK	Interim Engineer of Record	<Original signed by>	Nov 7, 2022
	Colin Boese	SRK	Interim Engineer of Record	<Original signed by>	Nov 7, 2022
	Michael Dabiri/	SRK	Interim Engineer of Record	<Original signed by>	Nov 7, 2022
	Samantha Barnes	SRK	Interim Engineer of Record	<Original signed by>	Nov 7, 2022
Approved by	Mohammad Taghimohammadi	Mill Operations	Mill Manager	<Original signed by>	Nov 7, 2022

(1) This update would not be able to be completed without team effort. Thanks for the input from NGI Environment, Community, Mill, Mine Ops and ERT

Table 2 - Revision Summary

Revision Number	Details of Revision	Date of Issue	Comment
Rev. A	Issued for Internal Review	February 28, 2022	Completed on Mar. 12, 2022
Rev. B	Issued for EOR Review	May 1, 2022	Completed on June 13, 2022
Rev. 0	Issue for Use	September 30, 2022	

Table of Contents

Review and Revision History	2
Table of Contents	3
1. Purpose and Scope	4
2. Roles and Responsibilities	5
2.1 General Manager	5
2.2 Department Managers	5
2.3 NG Engineers and EOR	5
2.4 ERT	6
2.5 Contact Info	6
3. Risk Assessment	7
3.1 Dam Safety Hazards and Failure Modes	7
3.2 Emergency Levels	7
3.3 Inundation Scenarios and Maps	9
4. Emergency Response Process and Procedure	13
4.1 Emergency Activation Level	13
4.2 Notifications and Communications	17
4.2.1 Dam Safety Events	17
4.2.2 Scenarios and Process	17
4.2.3 Notification Process	19
5. Maintenance, Training and Testing of Dam Emergency Plan	22
5.1 Maintenance	22
5.2 Training, Exercise and Drills	22
6. Emergency Preparedness Plan	23
6.1 General	23
6.2 Facility Description	23
6.3 RRM Emergency Management	26
6.4 Inundation Maps	26
6.5 Emergency Notification and Procedure	26
6.5.1 Notification	26
6.5.2 Notification Processes	27
6.6 SWN Frequently Asked Questions	27
Appendix A	29
Appendix B	31

1. Purpose and Scope

The objective of this document is to provide procedures to detect, contain, delay, and respond to emergencies as related to tailings, water management, and water diversion structures. This Emergency Preparedness and Response Plan (EPRP) links the operation, maintenance, and surveillance manual (OMS) with the general EPRP that has been developed for the New Gold Inc. (NGI) Rainy River Mine (RRM).

For readability, the OMS Manual has been separated into “Parts” as listed below:

- Part 1: General
- Part 2: TMA
- Part 3: WMP
- Part 4: MRP
- Part 5: SEDIMENT PONDS
- Part 6: DIVERSIONS
- Part 7: WATER TREATMENT
- **Part 8: EPRP**

To simplify and condense the OMS Manual, the site conditions were removed from the individual structure parts and covered in Part 1 of the OMS Manual.

Part 8, EPRP, of the Manual is only about the **dam-safety-related** emergency preparedness and response plan. Other emergency conditions, such as personnel injury, fire, incident spill, high wind, security, electrical power outage, site access and security etc. are all covered in the RRM site-wide Emergency Preparedness and Response Plan. An independent Environment Risk and Response Plan has also been prepared for dam breach inundation by NG Environment from the environmental perspective.

2. Roles and Responsibilities

RRM has a site emergency response team (ERT) responsible for site-wide emergency. This section describes the roles and responsibility of RRM teams specific to the emergency conditions occurring at tailings and water management facilities, i.e., Dam Safety Events.

2.1 General Manager

General Manager is the Incident Commander (IC) responsible for overall emergency response and preparedness at the RRM. The IC's responsibilities specific to the Dam Safety Events are the following.

- Oversight the assessment of the dam safety events carried out by RRM managers, TDE, water management engineer and EOR.
- Approve and declare the Dam Alert and Dam Breach events based on the suggestions made by RRM managers, TDE, water management engineer and EOR.
- Lead the response actions following the declaration of Dam Alert and Dam Breach events.
- Responsible for work with government agencies and make sure that RRM's response to Dam Safety Events satisfy legal and regulatory requirements.

2.2 Department Managers

RRM department managers responding to Dam Safety Event are Capital Projects Manager, Environment Manager, and Mill Managers. The Capital Projects Manager takes lead.

- Lead the assessment of the Dam Safety Events together with IC, TDE, water management engineer and EOR.
- Provide suggestions to IC to determine Dam Safety Events.
- Assist the IC and ERT in the response actions following declaration of Dam Alert and Dam Breach events.

2.3 NG Engineers and EOR

NG Engineers responding to Dam Safety Events are the TDE and Water Management Engineer. The interim EOR is SRK Consulting.

- The TDE and the representative responds to unusual conditions and abnormal performance observed at all the RRM dams. When the TDE is off site, this responsibility is that of The Capital Projects Manager or designated representative.
- Water Resource Engineer responds to unusual conditions and abnormal performance observed at all the RRM ponds.
- TDE lead the TARP assessment and Dam Safety Events evaluation with the assistance of RRM managers and EOR.
- EOR supports the RRM Engineers and Managers to conduct the assessment of Dam Safety Events.
- Assist the IC and ERT in the response actions following declaration of Dam Alert and Dam Breach events.

2.4 ERT

- Send out internal and external notification once a Dam Alert or Dam Breach event is declared.
- Responsible for the response actions following declaration of Dam Alert and Dam Breach events.
- Coordinates response team activity.

2.5 Contact Info

RRM ERT maintains the contact info of communities in the dam breach inundation zones.

Environment Manager is the point of contact between RRM and government agencies in terms of Dam Safety Events.

People listed in Table 2- 1 form the dam safety emergency operation team of the RRM.

Table 2- 1: Dam Safety Events Contact Info

Position		Name	Contact Information	Alternate
Incident Commander		Suresh Kalathil	<personal information removed>	See Site Duty Manager Schedule
RRM Managers	Capital Projects Manager	Travis Pastachak	<personal information removed>	See Site Duty Manager Schedule
	Mill Manager	Mohammad Taghimohammadi	<personal information removed>	<personal information removed>
			<personal information removed>	<personal information removed>
	Environmental Officer	Garnet Cornell	<personal information removed>	See Site Duty Manager Schedule
ERT	Operations Sector	ERT Captain	Radio	See Response Capability Schedule
	Safety Officer	Richard Francoeur	<personal information removed>	See Site Duty Manager Schedule
	Emergency Services Supervisor	JF Mercier	<personal information removed>	Dennis Morrisseau
TDE		Winston Ding	<personal information removed>	<personal information removed>
Water Management Engineer		Emily O'Hara	<personal information removed>	<personal information removed>
EOR	Calvin Boese		<personal information removed>	<personal information removed>
	Michael Dabiri		<personal information removed>	<personal information removed>

3. Risk Assessment

3.1 Dam Safety Hazards and Failure Modes

Dam safety hazards: External hazards and internal hazards.

External hazards originate outside the boundary of the dam and reservoir system and are beyond the control of the dam owner. Those specific to TAM dams and water management dams are:

- Meteorological events, such as floods, intense rainstorms (causing local erosion or landslides), temperature extremes, ice, lightning strikes, and windstorms.
- Seismic events, either natural, or caused by economic activity such as mining.
- Vandalism and security threats.

Internal hazards may arise from the ageing process or from errors and omissions in the design, construction, operation, and maintenance of the dam and water structures. Those specific to TMA dams and water management dams can be subdivided by source:

- Omissions and errors in design, construction, and operation of the dams, spillway and or culverts.
- Failure of mechanical, electrical, and control subsystems.
- Failure of infrastructure, such as access road, instruments, and omissions and errors in plans, such as OMS strategies and procedures, emergency plans, as well as inflow forecasts.

A failure mode describes how a component failure occurs to cause loss of the system function. In any analysis, the failure characteristics, including extent and rate of development, should be determined to an appropriate level of detail. At a general level, there are two dam failure modes:

- Overtopping – Inadequate freeboard leading to the flow of water over the crest of the dams in a manner not intended or provided for in the design, construction, maintenance, and operation of the dams.
- Collapse – Inadequate internal resistance to the hydraulic forces applied to the dams, foundations and abutments while being hydraulically operated in accordance with the design intent.

NGI will be working together with the new EOR to conduct PFMA (potential failure mode analysis) for the TMA dams and water management dams.

3.2 Emergency Levels

An emergency is defined by the Mining Association of Canada (MAC, 2021) as:

“... a situation that poses an impending or immediate risk to health, life, property, or the environment and which requires urgent intervention to prevent or limit the expected adverse outcomes”

More specifically, CDA (2021) defines emergency as:

“A present or imminent threat, either natural or manmade, created by a release of water or other retained fluid from a dam, that requires prompt coordination of actions to protect the health, safety or welfare of people, or to limit damage to property or environment.”

MAC (2021) suggests a Four Risk-Level Framework which has similarity to Emergency Activation Levels suggested by CDA (2021). Two guidelines are grouped together as shown in Table 3- 1.

Table 3- 1: Risk and Emergency Levels

MAC (2021)		CDA (2021)	
Risk Level	Definition and Actions	Emergency Level	Definition
Green – Acceptable	<ul style="list-style-type: none"> Performance is in line with performance objectives. 	Normal River Condition	<ul style="list-style-type: none"> River conditions are normal, no Flood Situation. Dam is being operated within the specified operating limits and no adverse events are forecast.
Yellow – Minor Risk	<ul style="list-style-type: none"> There may be a pre-defined risk management action that can be taken, or the pre-defined action may be to increase the frequency of surveillance and analysis. Other surveillance activities may be undertaken. Surveillance results and corresponding actions are documented and reported. 	Flood Situation ⁽¹⁾	<ul style="list-style-type: none"> High river flows that may not threaten the safety of the dam but will cause (or are forecasted to cause) local flooding The province is typically responsible for flood management and flood warning. However, as a dam will need to pass or release the flow, the dam owner should be involved in the coordination of flood management.
Orange – Moderate Risk	<ul style="list-style-type: none"> Pre-defined risk management actions are implemented. Surveillance activities may be intensified to monitor the performance indicator in question. Related performance criteria, and the effectiveness of the risk management action implemented. Expert advice may be sought as appropriate, including from the EOR. Risk management actions are implemented, and results of follow-up surveillance activities are documented and reported. The accumulation or combination of moderate risk situations could lead to a high-risk situation and threshold values will need to be assessed accordingly. 	Dam Alert ⁽²⁾	<ul style="list-style-type: none"> Abnormal condition that poses a threat. The hazard or incident does not pose an immediate danger but could develop into one. Maximum operating water level has been exceeded and is expected to continue to rise. Unexpected release of water or other retained fluid.
Red – High Risk	<ul style="list-style-type: none"> An imminent loss of control or a loss of control has occurred. Depending on the potential consequence, this may trigger a significant pre-defined risk management action (e.g., ceasing ore processing operations) or it may trigger the implementation of the ERP. The accumulation or combination of moderate risk situations could lead to a high-risk situation and threshold values will need to be assessed accordingly. 	Potential Dam Emergency ⁽³⁾	<ul style="list-style-type: none"> Potential dam failure is developing. Downstream agencies or communities may need to take steps to mitigate damage or prepare for evacuation. Maximum operating water level has been exceeded, and potential for dam overtopping has been identified
		Dam Failure	<ul style="list-style-type: none"> Dam failure is imminent or occurring. Evacuation of the affected population is appropriate. Control of water levels and flows has been lost and overtopping is expected to result in failure.

(1) The risk of flood situation can range from low to high.

(2) Dam Alert should be better named Dam Incident. If a dam is designed to store IDF with spillway, operating above MOWL is just an incident and does not pose immediate dam safety concern. It is more an environmental issue for mining dams.

(3) Potential Dam Emergency should be better defined as IDFL is reached which implies potential overtopping. It is a Dam Alert.

3.3 Inundation Scenarios and Maps

In 2019, SRK conducted a FLO-2D modelling to simulate downstream flood routing of potential breach scenarios for the Rainy River TMA (including WMP) and MRP (SRK-STY-0001). The modelling is considered a sunny day case. The results of the analysis showed the following.

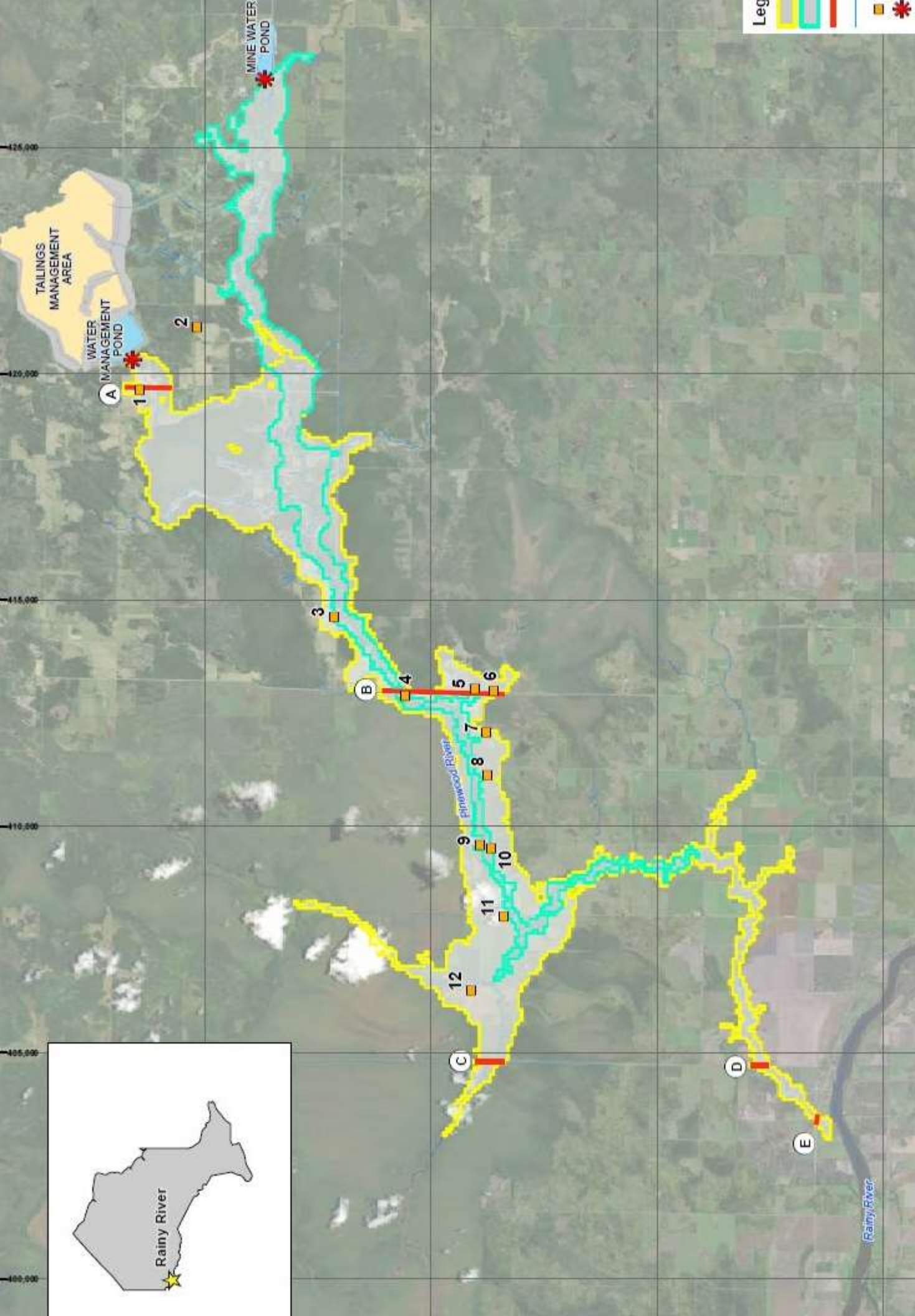
TMA and WMP Facility:

- The inundation mapping shows that there are in the order of 10 farms and approximately 5 km of highway (over 5 segments) within the inundation zone. Approximately 16 km of local roads may also be inundated. See Figure 3- 1
- The breach flood wave is contained within natural riverbanks by the time it reaches Rainy River (approximately 30 km downstream).
- It is expected that a plume of fine sediments will continue to be carried downstream by Rainy River toward Lake of the Woods. It is estimated that the plume will reach the mouth 1 to 2 days once it enters the river (or 2 to 3 days post-failure).
- The flood arrival time to the farms and highway segments ranges from less than half hours to over five hours as shown in Figure 3- 2.

MRP:

- The inundation mapping shows that there are in the order of 3 farms and approximately 0.3 km of highway (over 1 segment) within the inundation zone. Approximately 3 km of local roads may also be inundated.
- The breach flood wave is fully contained within natural riverbanks of Pinewood River well before it reaches the confluence with Rainy River.
- The flood arrival time to the farms and highway segments ranges from a few minutes to one hour (incorrect data between the table and figures in the report) as shown in Figure 3- 3.

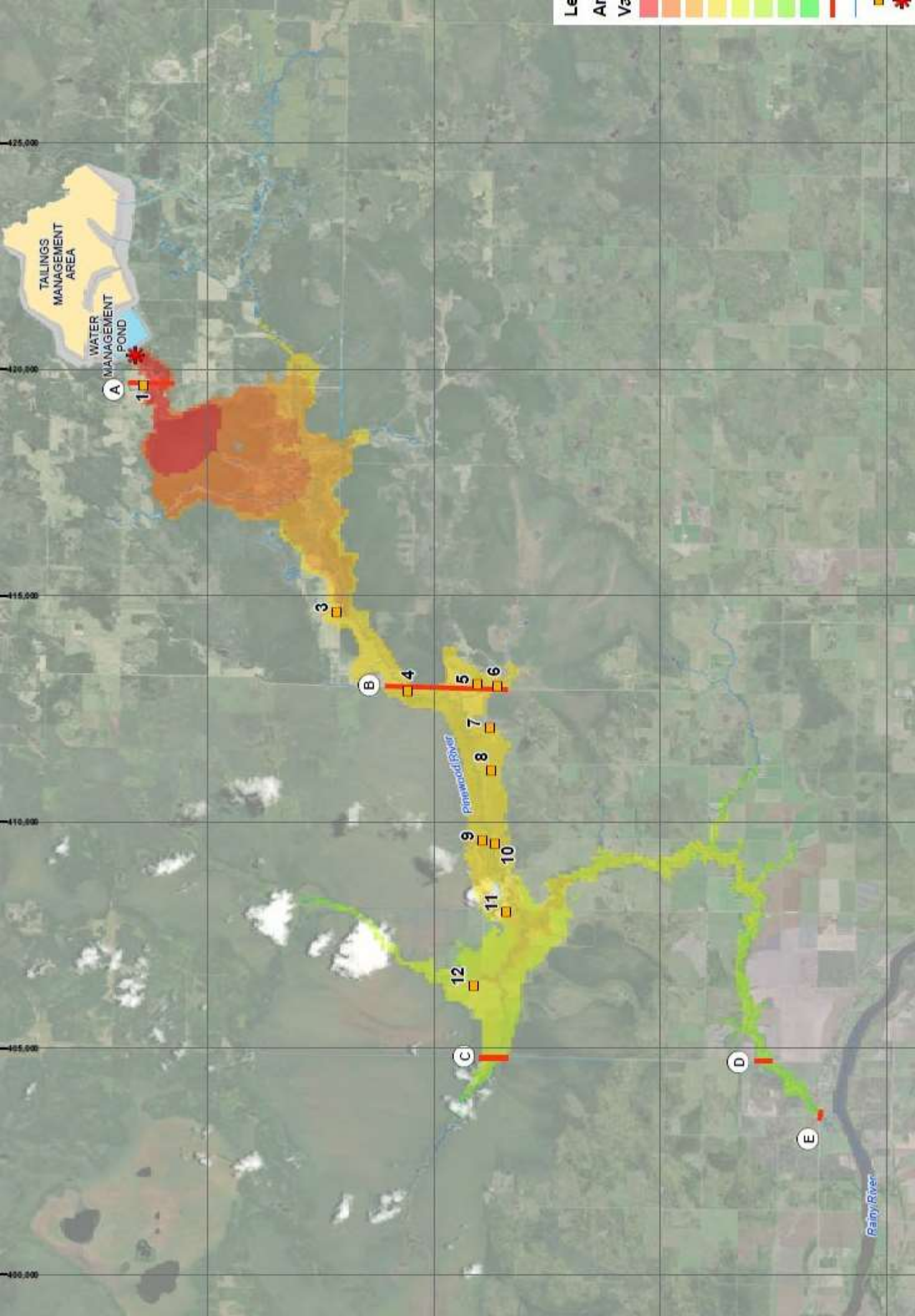
Among the 12 farms, three of them (labelled 1, 2 and 3) are owned by NG. NG's Health and Safety team keeps the civic address, owner's name, and phone number of the farms for emergency contact.



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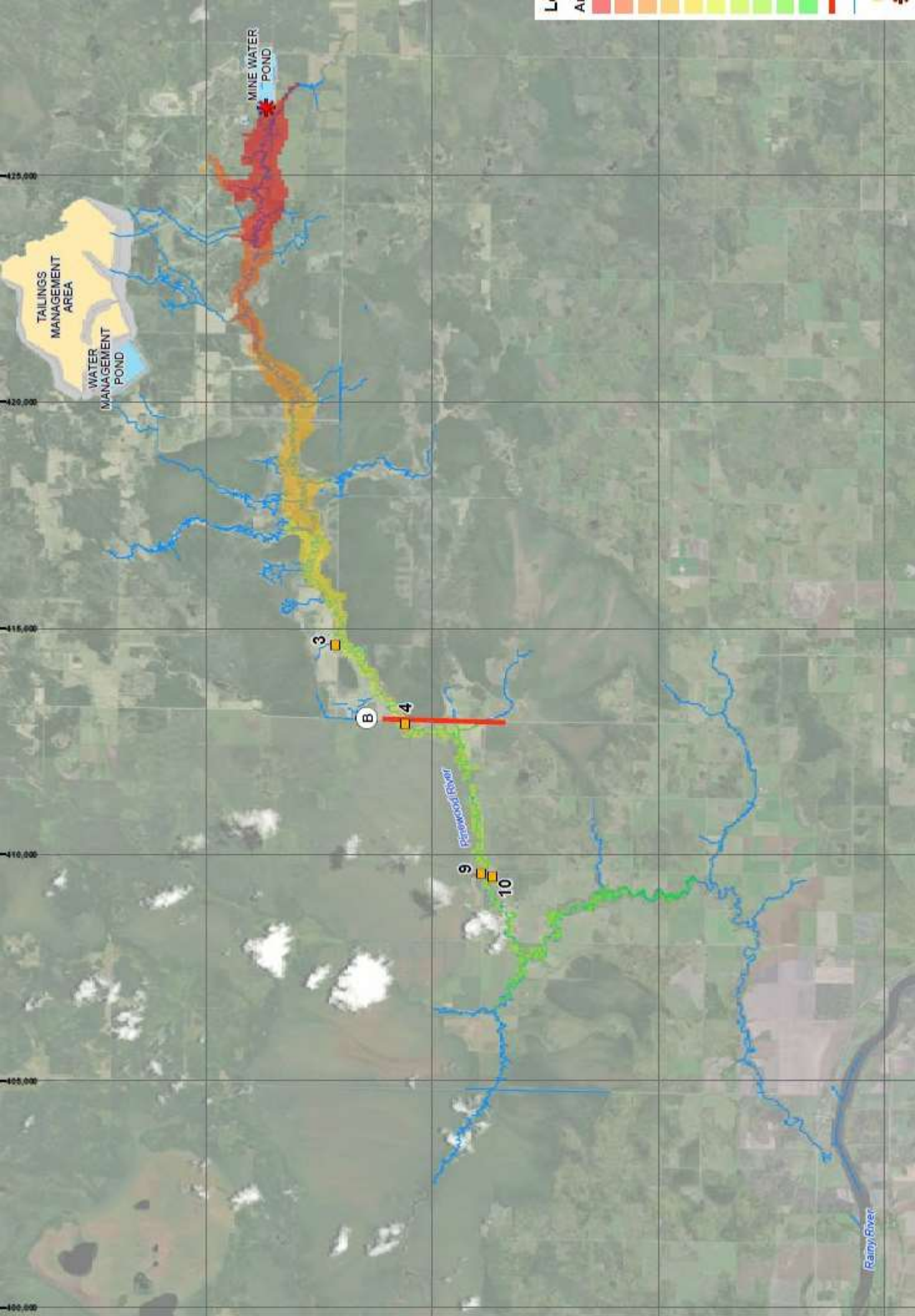
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4. Emergency Response Process and Procedure

4.1 Emergency Activation Level

A trigger action response plan (TARP) that has defined trigger levels for performance indicators. A series of escalating qualitative risk levels is described for each performance indicator. For each performance indicator and each risk level there are pre-defined risk management actions. The number of risk levels are dependent upon the performance indicator, the risk management plan, and the associated critical control.

Table 4- 1 is TARP for RRM tailings and water management dams.

Surveillance response plans (SRP) corresponding to the performance indicators are as the following:

- SRP for High Pond:
 - Rainfall
 - Tailings Facility Freeboard
 - Water Facility Freeboard
- SRP for Increase Seepage through Dam
 - Sinkhole in Dam Crest or DS Slope if seepage is observed
 - Internal Erosion
 - Seepage through Dam
 - Standing Water at DS Toe
- SRP for Observation of Dam Deformation
 - Displacement, Sloughing, Crack, Bulging of Crest or DS Slope
 - Sinkhole in Dam Crest or DS Slope if dam deformation is observed
 - Surface Erosion
- SRP for Post-EQ
 - Earthquake
- SRP for Special Event
 - Snowmelt
- Instrument Threshold Exceedance Responsibilities Workflow
 - Slope Indicator
 - Piezometers
 - Dam Settlement

See Appendix B in Part 2 for the SRPs. Those SRPs are also applicable to water management dams.

A separate emergency response plan for tailings near the dam crest is attached in Appendix B.

Vegetation growth has been managed by NG Environment.

Tailings leak and rupture has been managed by NG Mill.

The contact of Personnel Notified is shown in Table 2- 1 in Section 2.

		pumping, or 24 mm in 30 days with pumping.	For Clark Diversion and SED <IDF: 127 mm in 24 hours (Rainfall)	
		For WDC and freshwater diversion dams, no EDF was defined.	For West Creek Diversion <IDF: 516 mm in 24 Hours (PMP)	
			For other facilities Not specified	
elt	Snowpack is less than 170 cm. Snowmelt less than 510 mm in hours which is equal to a 1:1-year, 24-hour, 51 mm rainfall.	<ul style="list-style-type: none"> Extreme snowpack (170cm cumulative snowfall, i.e., 120% or greater than normal snowfall at Barwick) Rapid snowmelt and/or heavy rainstorms exceeding a 1:1-year, 24-hour rainfall (51 mm) 		
ake Dam ocation, to be d according to am ocation)	<p>For TMA perimeter dams, SPD, WCD, MRP, and WMP:</p> <ul style="list-style-type: none"> M 6.0 for the design earthquake at a site-to-source distance of approximately 174 km or farther (Correspond to Dam Class: Low). Displacement criteria unclear. <p>For Clark Creek Dam, Teeple Pond Dam, WDC and SRP Dam:</p> <ul style="list-style-type: none"> No earthquake activity, or M 6.0 for the design earthquake at a site-to-source distance of approximately 174 km farther <p>Greater magnitude EQ is unlikely to occur and not considered.</p> <p>Table 4-2 in BGC-4910-DT00-RPT-0004.001</p>	<p>For TMA perimeter dams, SPD, WCD, MRP, and WMP:</p> <ul style="list-style-type: none"> M 6.0 for the design earthquake at a site-to-source distance of approximately 126 km or closer (Correspond to Dam Class: Significant). Displacement criteria unclear. <p>Table 4-2 in BGC-4910-DT00-RPT-0004.001</p>	<p>For TMA perimeter dams, SPD, WCD, MRP, and WMP:</p> <ul style="list-style-type: none"> M 6.0 for the design earthquake at a site-to-source distance of approximately 86 km or closer (Correspond to Dam Class: High and Very High). Displacement criteria unclear. <p>Table 4-2 in BGC-4910-DT00-RPT-0004.001</p>	<p>For TMA perimeter dams, SPD, WCD, MRP, and WMP:</p> <ul style="list-style-type: none"> M 6.0 for the design earthquake at a site-to-source distance of approximately 50 km or closer (Correspond to Dam Class: Extreme) The maximum allowable permanent seismic displacement is 0.3 m. <p>For Clark Creek Dam, Teeple Pond Dam, WDC and SRP Dam</p> <ul style="list-style-type: none"> M 6.0 for the design earthquake at a site-to-source distance of approximately 174 km or closer (Correspond to Dam Class: Significant) Displacement criteria unclear. <p>Table 4-2 in BGC-4910-DT00-RPT-0004.001</p>
s Facility ard	Water level stable and below normal operating level (NOWL). Stage 4 NOWL: 371.3 m.	Water level exceeds NOWL but below spillway invert (MOWL). Stage 4 MOWL: 371.8 m	Water level exceeds MOWL but below IDF level (IDFL). Stage 4 IDFL: 372.6 m	Water levels exceed or expected to exceed the IDF level.
Facility ard ^(1,2,3)	Water level stable and below NOWL. See Table 4-3 in Part 1	Water level exceeds NOWL but below spillway invert (MOWL). See Table 4-3 in Part 1	Water level exceeds the spillway Invert (MOWL) but below IDF level (IDFL). It is already an Environment Incident (exceeds EIL). See Table 4-3 in Part 1	Water levels exceed or expected to exceed the IDF level. See Table 4-3 in Part 1
ement, ng, Crack, of Crest or oe	<ul style="list-style-type: none"> Nonvisible. Surveillance results within design limits and range of historic trends. 	<ul style="list-style-type: none"> Visible displacement, sloughing, crack, or bulging. Condition new, but no sign of continued progression or worsening condition. 	<ul style="list-style-type: none"> Signs of continued progression or worsening condition (crack elongating, scarp height increasing, new scarps forming, dam crest settling, downstream slope or toe area bulging). loss of freeboard (crest dropped). Surveillance results continuously increasing from range of historic results. 	<ul style="list-style-type: none"> Toe displacement related to sloughing >3 m from original location. Bulging of downstream slope >1 m in height.
e in Dam r DS Slope	<ul style="list-style-type: none"> Not visible. 	<ul style="list-style-type: none"> Visible 	Sinkhole > 0.5 m in diameter.	Sinkhole >1 m in diameter.

Pre-Defined Actions

	Surveillance activities and frequencies according to the OMS manual	<p>Increased surveillance frequencies</p> <ul style="list-style-type: none"> Surveillance results to be immediately provided to EOR for review Document location, photograph, and survey area of concern Identify potential cause(s) Implement engineering review Plan and take appropriate mitigation measures with engineering review 	<p>All items from previous situation plus:</p> <ul style="list-style-type: none"> Suspend activities in area of concern Reassess thresholds and conditions for high-risk situation considering the conditions observed and interactions of various items 	<p>All items from previous situation plus:</p> <ul style="list-style-type: none"> Temporary evacuation of non-essential personnel from the facility Prepare to initialize the ERI
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Personnel Notified

			engineering assessment)	<ul style="list-style-type: none"> Boils with deposits of fines growing in downstream toe
Seepage through	<ul style="list-style-type: none"> Seepage is clear. Seepage in location of historic locations. Seepage rate is within design limits and range of historic trends. 	<ul style="list-style-type: none"> Seepage is turbid. Seepage is new area relative to historic performance. Seepage rate is higher than historic trends. 	Same as previous situation plus <ul style="list-style-type: none"> Ongoing increased seepage rate from historic trends. Sand Boils observed in downstream toes area. See Internal Erosion. 	Same as previous situation plus <ul style="list-style-type: none"> Whirlpool visible in the pond, 3' Internal Erosion
Seepage Water at toe	<ul style="list-style-type: none"> Small volume No increasing volume or area If it is from rainfall or snowmelt No signs of sand boiling at dam toe Water is clear 	<ul style="list-style-type: none"> If it is seepage through dam, see Seepage 	<ul style="list-style-type: none"> Water is muddy Sand boiling observed If it is caused by internal erosion, see Internal Erosion	
Overtopping (1,2,3)	<ul style="list-style-type: none"> Not happened 	.		<ul style="list-style-type: none"> Pond water levels rising and exceed dam crest elevation Wind-generated waves are running over and eroding dam crest so that pond water level exceed eroded crest level.
Inclinometer	<ul style="list-style-type: none"> Rates of displacement < 0.2 mm/day measured in a discrete deformation zone. 	<ul style="list-style-type: none"> Rates of displacement > 0.2 mm/day measured in a discrete deformation zone. 	One or more SI's <ul style="list-style-type: none"> Accelerating rates of displacement > 0.2 mm/day, or blockage of the slope inclinometer casing. Evidence of movement continuation between slope inclinometers. Unusual visual observations, including toe bulging, cracks, or other signs of instability. 	Same as previous situation plus <ul style="list-style-type: none"> Nearby VWP's exceed the alert level. Nearby SI's exceed alert level
Water Meters	<ul style="list-style-type: none"> Measured PWP below TMA Stage 4 design PWP at tip location (PWP below PWP corresponding to design FOS) TMA Ultimate Pre-loading Design Trigger: measured PWP below TMA Ultimate Pre-loading design PWP at tip location (PWP below PWP corresponding to design FOS) Water Management Dams Trigger: measured PWP below maximum fill elevation at tip location. See Table A-1 in Stage 4 Threshold Report (BGC-4910-DT00-MEM-0030) for details.	<ul style="list-style-type: none"> Measured PWP exceeds TMA Stage 4 design PWP at tip location (PWP exceeds PWP corresponding to design FOS) TMA Ultimate Pre-loading Design Trigger: measured PWP exceeds TMA Ultimate Pre-loading design PWP at tip location (PWP exceeds PWP corresponding to design FOS) Water Management Dams Trigger: measured PWP exceeds maximum fill elevation at tip location. See Table A-1 in Stage 4 Threshold Report (BGC-4910-DT00-MEM-0030) for details.	<ul style="list-style-type: none"> Significantly exceeds TMA Stage 4 design PWP at tip location (PWP exceeds PWP corresponding to FOS of 1.3 or lower) for WML and BRE CH. See Table A-1 in Stage 4 Threshold Report (BGC-4910-DT00-MEM-0030) for details.	Same as previous situation plus <ul style="list-style-type: none"> Nearby VWP's exceed the alert level. Nearby SI's exceed alert level

Pre-Defined Actions

	Surveillance activities and frequencies according to the OMS manual	Increased surveillance frequencies <ul style="list-style-type: none"> Surveillance results to be immediately provided to EOR for review Document location, photograph, and survey area of concern Identify potential cause(s) Implement engineering review Plan and take appropriate mitigation measures with engineering review 	All items from previous situation plus: <ul style="list-style-type: none"> Suspend activities in area of concern Reassess thresholds and conditions for high-risk situation considering the conditions observed and interactions of various items 	All items from previous situation plus: <ul style="list-style-type: none"> Temporary evacuation of non-essential personnel from the facility Prepare to initialize the EPP
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Personnel Notified

	<ul style="list-style-type: none"> Responsible Person Mill Manager Capital Projects Manager Environmental Manager 	All personnel from previous situation plus: <ul style="list-style-type: none"> General Manager EOR Regulator Independent Reviewers 	All personnel from previous situation plus: <ul style="list-style-type: none"> COIs First Responders Emergency Response Personnel 	All personnel from previous situation plus:
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Excluding MRP Dam, Clark Creek Dam, and Teeple Pond Dam. Those are designed for overtopping.

IDEI, not specified for WDP, SED 2 and South Runoff Pond, Stockpile Pond Dam

Line capture	<ul style="list-style-type: none"> Not happened 	<ul style="list-style-type: none"> Tailings is contained in pipeline ditch or TMA 	<ul style="list-style-type: none"> Tailings spilled out of pipeline ditch or TMA. Spilled tailings slurry erodes the dam. Leaked tailings reported to WDP, WMP, and SED 1 	<ul style="list-style-type: none"> Leaked tailings reported to freshwater diversions. Leaked tailings reported to Pinewood River
Settlement	<ul style="list-style-type: none"> Annual (TMA) or total (settlement of dam crest, and spillway invert < 0.10 m. Reduction of a crest to invert vertical elevation difference < 0.05 m. <p>See Table 5-1 and 5-2 in Stage 4 Threshold Report (BGC-4910-DT00-MEM-0030) for details</p>	<ul style="list-style-type: none"> Annual settlement of dam crest, and spillway invert > 0.10 m but <0.2 m Reduction of a crest to invert vertical elevation difference > 0.05 m but less than 0.1 m. <p>See Table 5-1 and 5-2 in Stage 4 Threshold Report (BGC-4910-DT00-MEM-0030) for details</p>	<ul style="list-style-type: none"> Annual settlement of dam crest, and spillway invert > 0.2 m Reduction of a crest to invert vertical elevation difference > 0.1 m. <p>See Table 5-1 and 5-2 in Stage 4 Threshold Report (BGC-4910-DT00-MEM-0030) for details</p>	<ul style="list-style-type: none"> Same as previous situation plus Pond elevation reaches IDF
Plants,	<ul style="list-style-type: none"> Sparse and low Shrubs < 1 m tall. 	<ul style="list-style-type: none"> Dense and tall Invisible ground due to weeds coverage Shrubs >1.0 m tall 		

Pre-Defined Actions

	<p>Surveillance activities and frequencies according to the OMS manual</p>	<p>Increased surveillance frequencies</p> <ul style="list-style-type: none"> Surveillance results to be immediately provided to EOR for review Document location, photograph, and survey area of concern Identify potential cause(s) Implement engineering review Plan and take appropriate mitigation measures with engineering review 	<p>All items from previous situation plus:</p> <ul style="list-style-type: none"> Suspend activities in area of concern Reassess thresholds and conditions for high-risk situation considering the conditions observed and interactions of various items 	<p>All items from previous situation plus:</p> <ul style="list-style-type: none"> Temporary evacuation of non-essential personnel from the facility Prepare to initialize the ERF
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Personnel Notified

	<ul style="list-style-type: none"> Responsible Person Mill Manager Capital Projects Manager Environmental Manager 	<p>All personnel from previous situation plus:</p> <ul style="list-style-type: none"> General Manager EOR Regulator Independent Reviewers 	<p>All personnel from previous situation plus:</p> <ul style="list-style-type: none"> COIs First Responders Emergency Response Personnel 	<p>All personnel from previous situation plus:</p>
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4.2 Notifications and Communications

4.2.1 Dam Safety Events

All is about dam safety. The outcome of analysis of the performance indicators and risk levels (TARP) is to tell the safety status of the TMA dams and water management dams at RRM. The TDE led by the Capital Projects Manager will discuss the safety status of the dams and declare one of the three Dam Safety Events, together with the Mill Manager, Environment Manager, General Manager, ERT and EOR of RRM.

The three Dam Safety Events are defined as:

- Incident

An abnormal condition or performance of the dam with the potential to jeopardize the safety of the dam but that, at this time, is not expected to lead to a breach of the dam.

It is not considered an emergency.
- Alert

An abnormal condition or performance of the dam that, without swift and effective intervention, could further degenerate with time and lead to a breach of the dam.
- Breach

An actual breach or abnormal condition or performance of the dam that has a significant probability of leading to a breach of the dam.

Not all the high risks result in Dam Alert or even Dam Breach events. An example is tailings deposited near the dam crest elevation which can be a dam incident if no erosion of dam core and tailings did not leave the containment. Appendix B presents a response plan for this performance indicator.

4.2.2 Scenarios and Process

Once any unusual condition or abnormal performance is observed at any of the RRM dams, The Capital Project Manager or TDE or their delegate must:

- Refer to TARP in Table 4- 1 to identify the risk level for an unusual condition or abnormal performance of the RRM dam.
- Follow Figure 4- 1, the decision analysis preprocess, actions for each type of Dam Safety Events.
- Refer to inundation maps.
- Follow the notification process and reporting requirements.

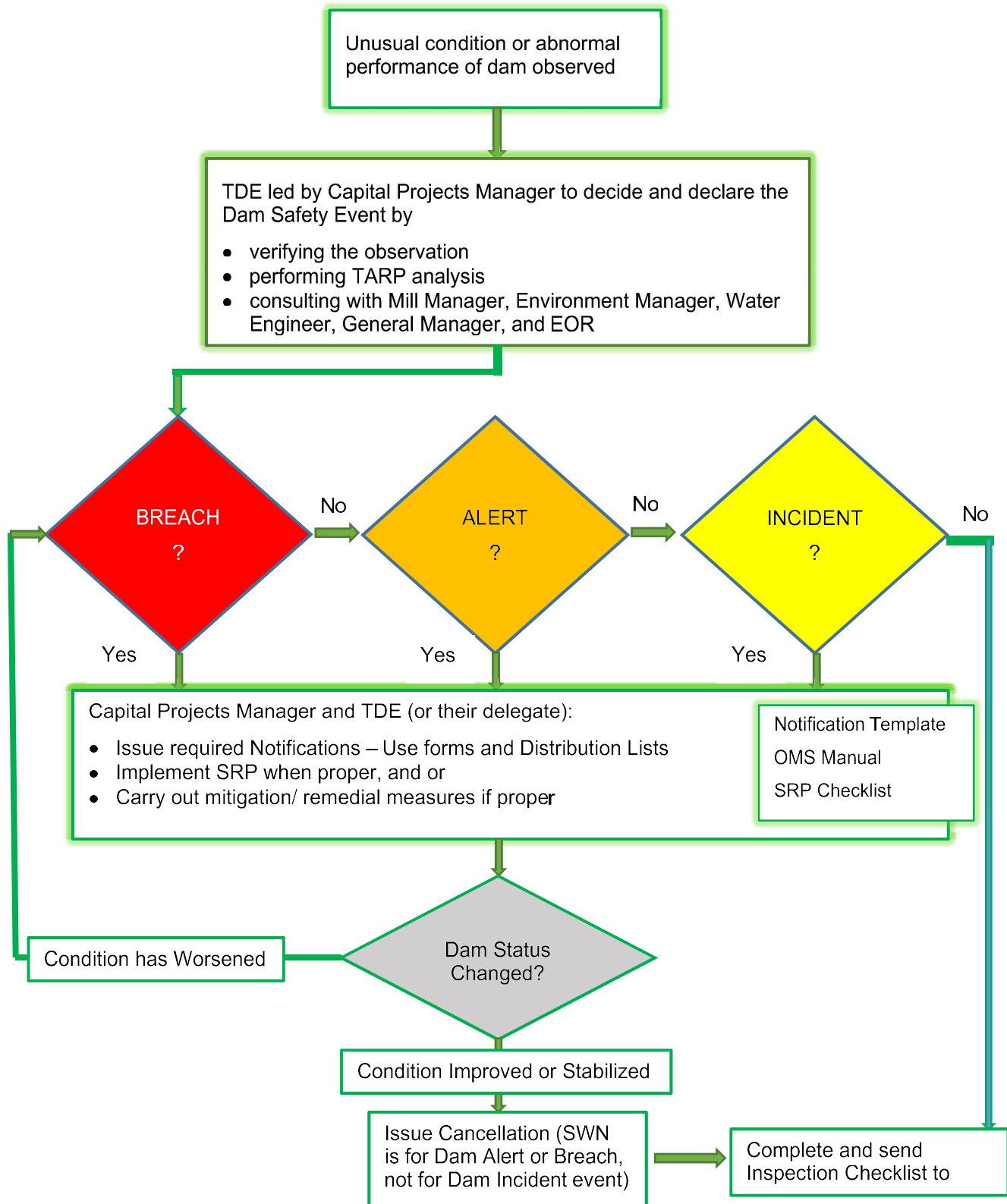


Figure 4- 1: Flow Chart for Dam Safety Events

4.2.3 Notification Process

Dam Incident Notification

If a dam incident condition is identified, notifications must be issued. Capital Project Manager or delegate is to prepare the Dam Incident notification form (Table 4- 2) outlining the conditions and actions RRM is taking, and contact information.

Note: Send Word Now (SWN) is NOT used for Dam Incidents.

Dam Alert/ Breach Notification

In the event of a dam alert/breach condition is identified, it is the responsibility of the General Manager (IC, or delegate) to instruct ERT to initiate notifications through Send Word Now (SWN), RRM's mass notification tool (to be developed, template is shown in Appendix A). SWN notifications are sent to internal personnel, government agencies, and COI etc. in the forms of Telephone, Email, and text. Recipients are asked to confirm receipt of the message. All delivery and confirmations are logged in SWN.

Additional alerts and Cancellation alerts are continued to issue notifications every 12 hours until the condition stops, at which time issue a cancellation notification.

Table 4- 2: Dam Incident Notice Form

NAME OF DAM: _____

Date: _____ Time: _____	To: Capital Projects Manager, TDE, Environment Manager, Mill Manager, General Manager, EOR, and related government agencies.
----------------------------	--

A DAM INCIDENT is an abnormal condition or performance of the dam that has the potential to jeopardize the safety of the dam, but that is NOT expected to lead to a breach of the dam.

THIS IS NOT AN EMERGENCY SITUATION

Description of condition and events:

Outlook for the next 24 hours

Present conditions are favorable, and flows are expected to decrease.
 Discharge may increase if conditions worsen.

Signed:

Position/Title

Date:

Time:

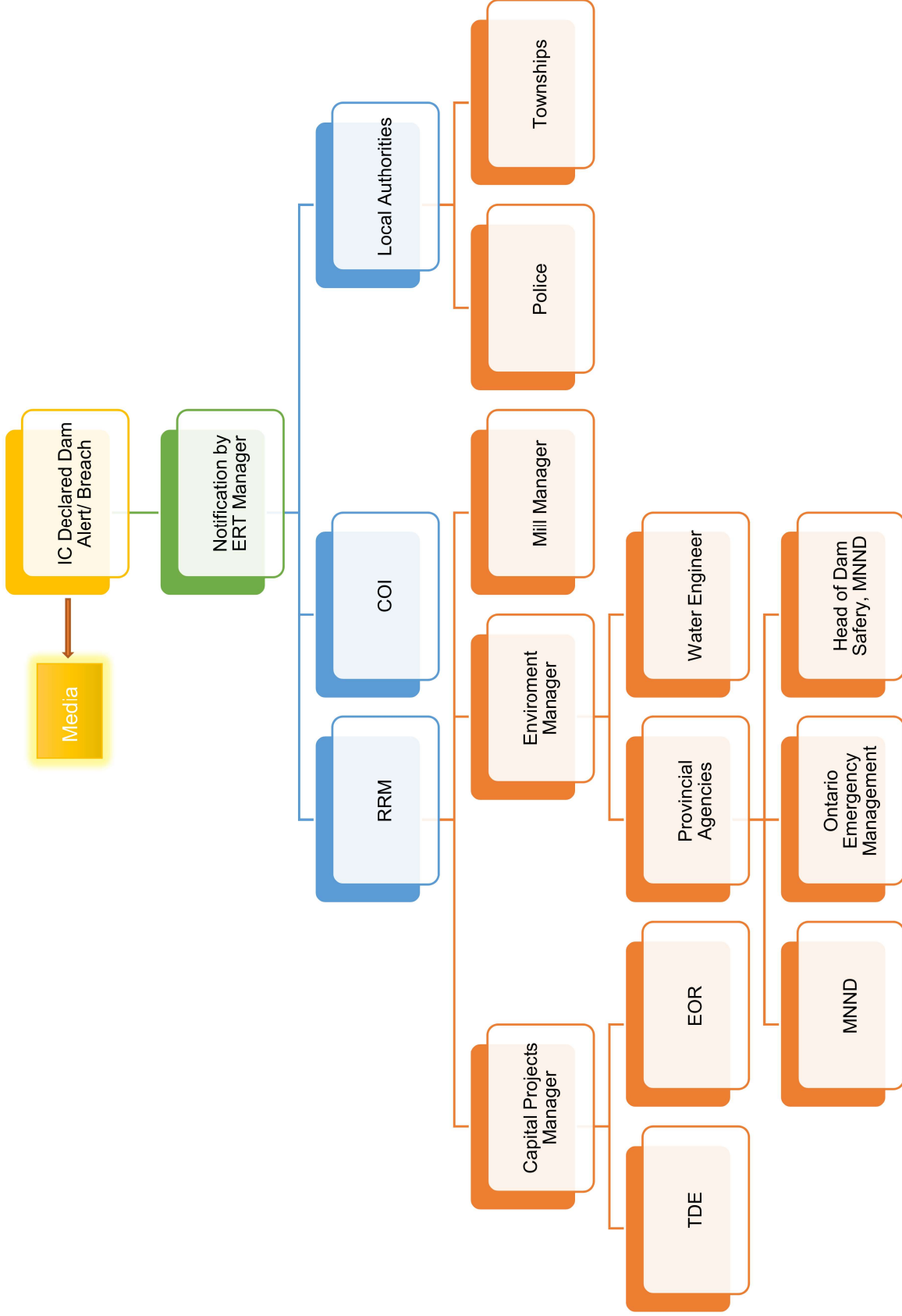


Figure 4- 2: Dam Alert and Dam Breach Notification Flow Chart

5. Maintenance, Training and Testing of Dam Emergency Plan

5.1 Maintenance

EPRP for dam safety is developed and maintained by TDE with assistance from various RRM teams.

EPRP is scheduled to update every year and or major changes to RRM.

5.2 Training, Exercise and Drills

Dam safety EPRP training:

TDE and Capital Projects Manager are jointly responsible for training people involved in the emergency response to ensure that they are thoroughly familiar with its elements and their responsibilities and duties under the plan.

Community Manager and ERT are jointly responsible for training the COI in preparing emergency preparedness plan, and evacuation actions.

Training records are maintained by Capital Projects team and ERT for internal and external training, separately.

Table 5- 1: Types of Training, Drills and Exercises

EXERCISE TYPE	FREQUENCY	DESCRIPTION	PARTICIPANTS
Internal Training and Annual Fresh	Annual - Change in 50% of key personnel Or replaced by an actual event	Understand the contents and procedures.	<ul style="list-style-type: none"> • Capital Project Team • ERT • Mill, Environment managers and supervisors
External Awareness	Every two years	<ul style="list-style-type: none"> • Prepare the emergency preparedness plan • Evacuation process 	<ul style="list-style-type: none"> • COI • ERT • Community
Send Word Now Test Alert (external)	Every year	Send Word Now Test Alert for all externals listed in plan	<ul style="list-style-type: none"> • COI • ERT • Community
Drill	When proper, or replaced by an actual event	<ul style="list-style-type: none"> • Understand the contents, and • Practice the procedures. 	<ul style="list-style-type: none"> • Capital Project Team • ERT • Mill, Environment managers and supervisors

6. Emergency Preparedness Plan

If needed, this chapter with some modification can be an independent file to be released to the public

6.1 General

The emergency preparedness plan is to:

- Describes the RRM's emergency management system and roles/responsibilities.
- Provides details of the RRM Dams.
- Defines conditions as they relate to RRM dam operations and describes the notification processes that RRM will follow for these conditions.
- Provides contact information, maintenance, and distribution of this Plan.
- Is to be used in conjunction with inundation maps that we issue.

Upon receipt of this Plan, we recommend that you take the following actions:

- 1 Review the Plan with those people in your organization involved in emergency management. Advise RRM ERT if there have been changes in your agency or organization that impact information in this Plan.
- 2 Use the information to inform your emergency planning ensuring that it:
 - Reflects the hazards identified in this Plan.
 - Aligns/relates to roles and responsibilities defined in this Plan.
 - Identifies notifications that could be issued, their meaning and appropriate response.
 - Links, or refers to inundation maps that we have shared with you.
- 3 Provide training and ensure personnel are prepared to respond to notifications that RRM issues.
- 4 Contact RRM to clarify information. We are available to provide additional information and discuss ways to improve emergency planning and response.

6.2 Facility Description

RRM currently operates 17 dams enclosing 12 ponds as shown in Figure 6- 1. Four out of 17 dams are freshwater dams; four are sediment control dams, four tailings' dams, and the rest five of them are process water dams. The dam feature is summarized in Figure 6- **1: RRM Dams and Ponds**.

Except for the TMA dams which have been raised annually, the other 13 dams enclosing 11 ponds were constructed a few years ago. 11 out of the 17 dams are could potentially result in loss of life, irreparable environmental damage, or destruction of critical infrastructure if one of them is failed. Those dams are highlighted green in Figure 6- **1: RRM Dams and Ponds**.

Dams are designed, constructed, and operated to contain tailings and water. Failure to do it results in the contained tailings and or water spreading to the Pinewood River and affecting the downstream communities.

RRM is committed to safe operation of the mine and safety of local communities. RRM is therefore working together with those communities and local authorities to develop emergency preparedness plans and guide your preparedness for the emergency in case it occurs.

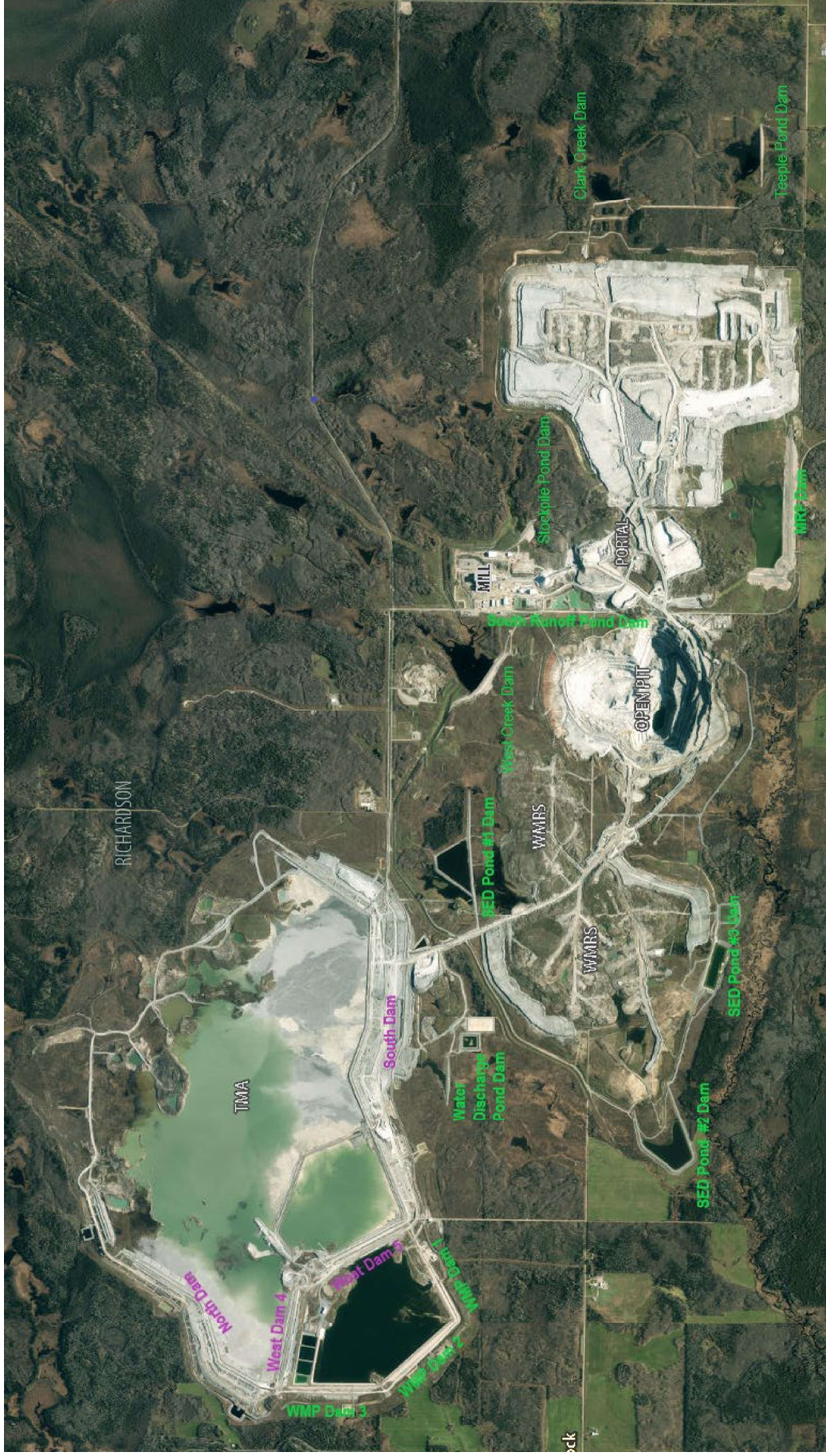


Figure 6- 1: RRM Dams and Ponds

Table 6- 1: RRM Dam Features

Purpose & Facility	Dam Name	Type of Dam	Construction Stage	Max. Dam Height (m)	Dam Length (m)
Tailings Dams	North Dam	Central Core + Rockfill	Under Construction	12	1200
	South Dam		Under Construction	22	3250
	West Dam 4		Under Construction	12	800
	West Dam 5		Under Construction	12	850
Process Water Dams	WMP Dam 1	Clay Fill	Final	4.2	850
	WMP Dam 2			9.5	800
	WMP Dam 3			13.3	750
	Mine Rock Pond Dam	Central Core + Rockfill	Final	13.0	1655
Sediment Control Dams	Water Discharge Pond Dam	Clay Fill	Final	2.2	350
	Sediment Pond #1 Dam	Central Core + Rockfill	Final	3.8	1750
	Sediment Pond #2 Dam	Clay Fill	Final	5.2	1460
	Sediment Pond #3 Dam	Central Core + Rockfill	Final	1.0	344
Freshwater Dams	South Runoff Pond Dam	Clay Fill	Final	6.5	420
	Clark Creek Dam	Clay Fill	Final	4.0	285
	Teeples Road Dam	Clay Fill	Final	7.0	465
	Stockpile Pond Dam	Central Core + Rockfill	Final	9.8	380
	West Creek Dam	Central Core + Rockfill	Final	8.9	750

6.3 RRM Emergency Management

RRM's typical procedure of handling dam safety incidents/ events are the following.

1. Detection of an abnormal condition at the dam(s).
2. Decision-making and actions within RRM teams and EOR regarding the severity of the problem and appropriate response to the situation.
3. Notification by RRM ERT to agencies responsible for public emergencies and safety, given the nature and potential effects of the situation.
4. Coordinated response with government agencies and stakeholders.

Most incidents/events will be addressed through regular points of contact for routine operations, community relations and emergency management. When necessary, RRM will activate our response structure to manage and support the response to an emergency.

For the conditions identified in this Plan, we will issue initial notifications following the process described. Further response coordination and liaison between all parties impacted will be determined at the onset of the event and depend on the nature of the event and response.

6.4 Inundation Maps

Extensive and intensive rainfall could cause flood situations to the community nearby RRM. The flooding situation is managed by local authorities.

Hydrodynamic modelling of inundation scenarios for the RRM dams are caused by dam breach and conducted to identify approximate area(s) flooded in the event of each inundation scenario. Inundation maps are then prepared to show the results of the modeling. They show the approximate area(s) flooded, and details such as water arrival locations and times.

Three scenarios were modelled:

- Dam breach at WMP Dam 2 associated with TMA dam failure.
- Dam breach at WMP Dam 1 associated with TMA dam failure, and
- Dam breach at MRP Dam.

The inundated zone of the modelled scenarios is shown in Figure 3- 1. The arrival time to downstream communities for the modelled scenarios are shown in Figure 3- 2 and Figure 3- 3.

6.5 Emergency Notification and Procedure

6.5.1 Notification

All RRM dams have dam safety and water management programs that are aligned and integrated with our communications and emergency management. Under the following two specific operating conditions, RRM will issue notifications to describe the conditions and actions we are taking:

Dam Alert

An abnormal condition is observed at the dams, or the dam performs abnormally, and, without swift and effective intervention, the condition could deteriorate and lead to failure of the dam.

Dam Breach

The dam has breached or is visibly breaching.

6.5.2 Notification Processes

If a dam alert/breach condition exists or is forecast at the dam covered in this Plan, RRM will take the following actions.

- An emergency notification will be issued through Send Word Now, RRM's mass notification tool.
- Notifications will be sent on three communication channels to those government agencies, COI, and external stakeholders. Communication channels that messages will be sent on are:
 - Telephone
 - Email
 - Text
- People will be asked to confirm receipt of the message and all message delivery and confirmations will be logged.

Examples of typical messaging are provided in Appendix A.

6.6 SWN Frequently Asked Questions

What is Send Word Now?

- Send Word Now is RRM's emergency communications tool. It will be used to alert you to an emergency condition.
- Alerts will be sent to the contact details provided to us (email and phone numbers, including mobile phones where provided). This means you will receive alerts via:
 - Phone call
 - Email
 - Text Message
- Send Word Now allows for two-way communication. Upon receiving an alert, you may be prompted to reply.

How can I reply to Send Word Now alerts?

The alert may ask you to reply to a question and pre-defined responses will be given. To reply, enter the exact corresponding number of your response on the keypad of your phone or your keyboard. Do not reply to the voicemail as a response cannot be made from the voicemail message. To reply, refer to your email or text.

- Important: only enter the number from the options given.
- Do not type in anything other than the number given. If you enter additional text, your reply will not get registered in Send Word Now.
- Do not call or text the phone number associated with the alert.
- Emails or texts that are forwarded cannot be responded to. Only the intended recipient of the message can reply with a response.
- You only need to send a reply from one device.

The instructions on how to reply will be supplied in the alert.

Who administers Send Word Now?

RRM ERT manages and administers Send Word Now.

I already got a lot of emails. How often will I get RRM alerts through Send Word Now?

You will only get an RRM alert under those conditions described in this Emergency Preparedness Plan. We may arrange practice drills and will notify you in advance.

**How will I know that Send Word Now has my correct contact information and is working?
What if I want to update my contact information?**

Send Word Now is currently loaded with the contact information in our ERT. Please update your contact information by email. XXX@NewGold.com.

Is my personal contact information safe and private?

RRM evaluated Send Word Now's information security measures and polices and ensured they met our Protection of Privacy requirements. If you have concerns, please contact XXX@NewGold.com

Why is sending emergency alerts through Send Word Now important for RRM and what are the benefits?

- Currently, you may receive emergency incident information from RRM either by email, or telephones call or text message you IF you are registered in the system. By using Send Word Now timing to issue emergency notifications will be reduced and we will be able to communicate information to multiple parties instantaneously.
- You will receive information more quickly and reliably from us during an emergency.
- You will receive information instantaneously on your email and phone(s) (as provided). If your mobile phone number is in the system, you will be alerted via text message.
- You will be able to reply to alerts and let us know you received it.
- Alerts can be customized based on the impact, type, and location of the emergency.
- Emergency contact information will be kept in one place and be easier to manage.

Appendix A

SWN - Dam Safety Alert/ Breach

DAM ALERT INITIATION
SUBJECT: INITIATION - RRM EMERGENCY NOTIFICATION - DAM ALERT
<p>This is an emergency notification from RRM. This is Alert # RRM_XX</p> <p>A dam alert is being issued for the RRM.</p> <p>RRM has observed an abnormal condition at the XXX Dam and is actively investigating the situation. As a precaution, local agencies may need to activate emergency response procedures.</p> <p>Please check the attached inundation map in case evacuation is needed.</p> <p>This RRM Dam Alert is in effect and resent every 12 hours until rescinded.</p> <p>Did you receive this Alert?</p>

DAM ALERT CANCELLATION
SUBJECT: CANCELLATION - RRM EMERGENCY NOTIFICATION - DAM ALERT
<p>This is a cancellation of the emergency notification from RRM. This is Alert # RRM_XX</p> <p>The previously declared Dam Alert # RRM_XX in effect for the XXX Dam has been rescinded</p> <p>Did you receive this Alert?</p>

DAM BREACH INITIATION

SUBJECT: INITIATION - RRM EMERGENCY NOTIFICATION - DAM BREACH

This is an emergency notification from RRM. This is Alert # **RRM_XX**

The **XXX** Dam has failed.

Implement your emergency evacuation plan immediately.

This RRM Dam Alert is in effect and resent every 12 hours until rescinded.

Did you receive this Alert?

DAM BREACH CANCELLATION

SUBJECT: CANCELLATION - RRM EMERGENCY NOTIFICATION - DAM BREACH

This is a cancellation of the emergency notification from RRM. This is Alert # **RRM_XX**

The previously declared Dam Breach # **RRM_XX** at **XXX** Dam has been rescinded.

Did you receive this Alert?

Appendix B

Response Plan for Tailings Elevation close to Dam Crest

