

RAINY RIVER MINE

OFFSET PLAN FOR FISHERIES ACT SECTION 35(2)(B) AUTHORIZATION, AMENDMENT

SUBMITTED TO:

Fisheries and Oceans Canada
Ecosystems and Fisheries Management Branch

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ON BEHALF OF:

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**RAINY RIVER MINE OFFSET PLAN FOR
FISHERIES ACT SECTION 35(2)(B)
AUTHORIZATION, AMENDMENT**

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REVISION HISTORY

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1.0 Introduction

New Gold Inc. (New Gold) was granted a Fisheries Act Authorization (Number: 15-HCAA-00039) under Section 35(2) of the Fisheries Act on July 4, 2015. The accompanying Offset Plan which forms part of the Authorization has been amended herein. This document outlines changes to the Offset Plan in response to changes in the Fisheries Act since the Authorization was issued as well as considering the results of the mandatory five years of monitoring and reporting that was outlined in Section 9.0 of the original offset plan and the associated success criteria in Table 5 of Section 8.0.

1.1 Changes to the Fisheries Act

In 2015, the Government of Canada began the process of updating and modernizing the Fisheries Act. On June 21, 2019, Bill C-68 received Royal Assent and became law. On August 28th, 2019 provisions of the modernized *Fisheries Act* came into force. The purpose of the *Act* is to provide a framework for: The proper management and control of fisheries and the conservation and protection of fish and fish habitat, including by preventing pollution.

The modernized *Act* provides two core prohibitions against persons carrying out works, undertakings or activities that result in the “death of fish by means other than fishing” (subsection 34.4(1)), and the “harmful alteration, disruption or destruction of fish habitat” (subsection 35(1)). A more comprehensive definition of fish habitat under subsection 2(1) of the modernized *Fisheries Act* includes all waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out their life processes. The types of areas that can directly or indirectly support life processes include but are not limited to: spawning grounds and nursery; rearing; food supply and migration areas.

The previous prohibition under the 2012 *Act* against works, undertakings or activities causing “serious harm to fish” that are part of, or support a commercial, recreational or Aboriginal fishery was rescinded.

The modernized *Fisheries Act* also includes prohibition of the deposit of deleterious substances of any type in water frequented by fish (Section 36(3)), which is administered by ECCC. When death to fish or a harmful alteration, disruption or destruction of fish habitat cannot be avoided or mitigated, an authorization under subsections 34.4(2) and 35(2), respectively, may be provided by the Minister of Fisheries and Oceans with the provision of appropriate offsetting of residual adverse effects. Factors that may be taken into account by the Minister when considering approval of an authorization include (but are not limited to):

- (a) the contribution to the productivity of relevant fisheries by the fish or fish habitat that is likely to be affected;
- (b) fisheries management objectives;

- (c) whether there are measures and standards to avoid the death of fish or to mitigate the extent of their death or offset their death, or to avoid, mitigate or offset the harmful alteration, disruption or destruction of fish habitat;
- (d) whether any measures and standards to offset the harmful alteration, disruption or destruction of fish habitat give priority to the restoration of degraded fish habitat;
- (e) Traditional knowledge of the Indigenous peoples that has been provided to the Minister; and,
- (f) any other factor that the Minister considers relevant.

In support of the *modernized Fisheries Act*, DFO has published updated policy statement and guidance documents and interim standards and codes of practice. These include but are not limited to:

- *Fish and Fish Habitat Protection Policy Statement* (DFO 2019);
- *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act* (DFO 2019b); and,
- *Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada* (DFO 2013).

The first of these two documents replaces the previous policy with regards to fish and fish habitat protection and offsetting measures associated with the former version of the *Fisheries Act*. This Amended Offset Plan has been prepared within the context of the modernized *Fisheries Act* and its policies. Where applicable terminology has been changed from “serious harm to commercial, recreational and Aboriginal fisheries” to “harmful alteration, disruption or destruction of fish habitat”.

1.2 Rationale for Amendment

Amendment to this offset plan is specific to modification of the success criteria. The rationale that was considered for the amendment include the following:

- 1) The offsets to HADD of fish and fish habitat were completed as authorized. The total area (9.2 ha) of habitat offset was built to specification with few exceptions as presented in the original offset plan (AMEC Foster Wheeler, 2016). Variance from the design were limited with six less boulder piles and three more tree piles in the features than designed. These differences were determined to not likely impact the performance of the pond and the overall intent of the offset. Success measures associated with construction were met (see Table 4). No change to form or structure of approved offset measures is proposed as part of this amendment.
- 2) The impacts to fish habitat were associated with the loss of small baitfish creeks. Prior to mine development Clark Creek supported twelve (12) species of small-bodied baitfish

and forage base fish species considered common in the region and, it was recognized that these fish populations may provide forage base and colonization potential to downstream areas.

The offset plan detailed measures for the offset of 4.59 ha of fish habitat loss. It was developed in consultation with regulators, Indigenous communities and stakeholders. The offset accounting was based solely on an aerial area basis of like for like habitat creation. The offset ratio applied by specific offset feature was based on the timing associated with habitat loss and the creation of the offset feature. Ratios ranged from 1.2:1 to 2:1. The final approved offset plan did not incorporate a weighting factor of suitable habitats (i.e., species or fish community weightings). The final offset area was 8.41 ha equating to a ratio of 1.8:1.

Species richness within offset features was included in the original Offset Plan. Specifically, a minimum of 9 species was set as a target. It is suggested that this performance criterion be reduced to a range between 6 and 8 species for the Teeple system for the following reasons:

- Baseline species richness in upper Clark Creek, in what would become Teeple outlet, was limited to four (4) species (AMEC, 2012, 2013).
- Based on the results of five years of offset performance monitoring, the range of species richness that can be ecologically sustained is 6 to 8 species.
- This reduced number exceeds the baseline fish community richness and is appropriate for addressing the success of the offset which was based on and aerial replacement ratio of 1.8:1.

Sampling has been representative of the habitat features constructed with ample effort and replication to be representative of the species richness and abundance in the offset features. Such a range is consistent with the factors to be taken into account for authorization under the modified *Fisheries Act*; (a) the contribution to the productivity of relevant fisheries by the fish or fish habitat that is likely to be affected; (b) fisheries management objectives. A species richness ranging from 6 to 8 provides a reasonable contribution to the productivity of the downstream fish community and fishery. This range of species richness also meets the fisheries management objective of maintaining a baitfish community (MNR 2012, Fort Frances MNR 2013).

- 3) A success criterion was originally identified for fish abundance. Based on the results of five years of offset performance monitoring, a proposed amendment to the required sampling to measure abundance to a single representative measure for each waterbody type (i.e., seine netting for ponded features and backpack electrofishing for channelized features). The amendment is considered reasonable based on the understanding that sampling has been representative of the habitat features constructed with ample effort

and replication to be representative of the species richness and abundance in the offset features. Fishing efficiency is closely tied to habitat such that seining is a more effective method in ponded habitat whereas electrofishing is the standard in flowing systems such as the outlet. Fishing gear specific catch per unit effort targets to quantify success will remain unchanged. The proposed amendment is consistent with the factors to be considered for authorization under the modernized *Fisheries Act*; (a) the contribution to the productivity of relevant fisheries by the fish or fish habitat that is likely to be affected; (b) fisheries management objectives. The abundance of fish in the feature provides a reasonable contribution to the productivity of the downstream fish community and fishery. This abundance also meets the fisheries management objective of maintaining a baitfish community.

1.3 Five years of Monitoring and Reporting

Conditions of the Authorization and the associated Offset Plan included the success criteria for the constructed Offset features (Section 8.0, Table 5). Determination of success was to be conducted for five years post construction as outlined in Section 9.0, Table 6. Accordingly, reports on the monitoring and the associated success of the Offset features were to be provided to DFO by December 31st of 2016 to 2020, inclusive. Construction of the Teeple Pond and the associated outlet began in 2015 and was completed in 2016. Monitoring began in 2017. As a result, the fifth year of monitoring and associated reporting was conducted in 2021 rather than 2020. The results of the 2021 (i.e., fifth year) of monitoring and comparison of those results in combination of the other four years of data resulted in consultation with the Department of Fisheries and Oceans (DFO) with respect to the contingency measures to be implemented to address any instances of success criteria not being met as well as an overarching discussion on the applicability of the success criteria for determining of proper functioning of the Offset features and their ability to meet the intent of the Offset Plan. This Amended Offset Plan includes appropriate changes to the monitoring, reporting and associated success criteria for both the pond and outlet offset features.

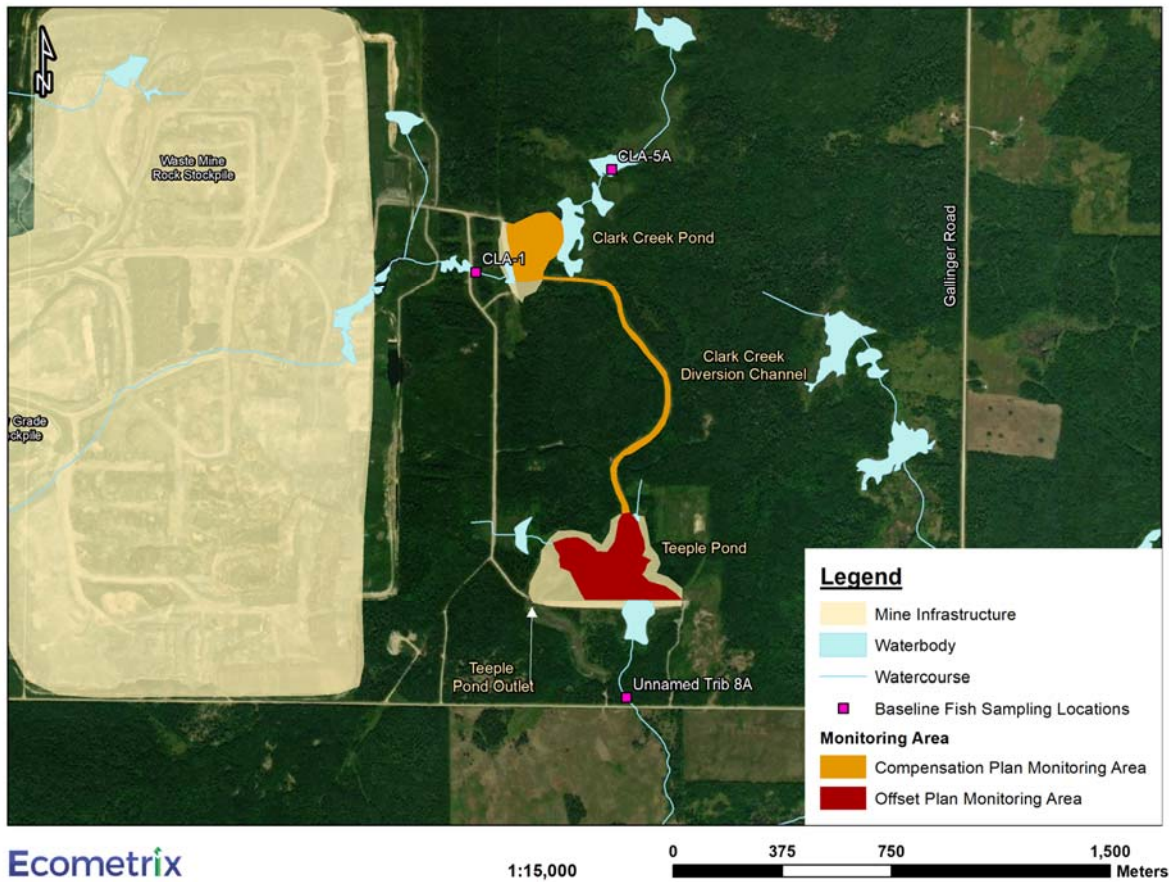
This rationale is based on five years of monitoring data in the Teeple Pond and outlet offset features and understanding of fish habitat and community structures gained through the sampling conducted to date in addition to the baseline data. In addition to the biological monitoring component, the hydrograph in the area of the Project indicates seasonal reduction and absence of flow. Design features in both the pond and outlet were included to account for the seasonal lack of flow and necessary summer and winter refuge areas for fish. The as-built surveys indicated that constructed features generally met the design criteria and therefore is appropriate for the given flow conditions encountered in this area.

Sampling in each of the five monitoring years has included the requisite 10 – 15 m beach seines, 10,000 seconds of electrofishing effort and 2,500 hours of minnow trap (Gee trap) effort. This effort has targeted a variety of habitats suitable for the collection gear and provided suitable replication to indicate that capture rates were indicative of the overall fish community present. The range of 6 to 9 for species richness was reported for each of the five years of monitoring. In

addition, baseline data indicate that 100% and 99% of the fish caught in the Clark Creek/Teeple Complex in 2011 and 2012, respectively, were comprised of four or less species (See Table and Figure below). Fish communities of low species richness both upstream and downstream of the Teeple Complex may prevent the original success criteria of 9 species from being sustainable and indicates a target range of 6 to 8 is likely more appropriate given the pre-development conditions. The abundance of the fish community using seines in the pond has been indicative of a well-established baitfish community. Further monitoring should continue to target a variety of habitats within the features using the most appropriate effort for the waterbody (i.e., seines and electrofishing).

Year	Location	Brassy Minnow	Brook Stickleback	Central Mudminnow	Creek Chub	Finescale Dace	Pearl Dace	Total
2011	Clark Creek (CLA-1)	2	23	0	0	30	0	55
2012	Clark Creek (CLA-5A)	14	5	5	0	0	0	24
	Unnamed Trib 8A	0	78	31	1	14	1	125

Notes: Data from AMEC 2012 and AMEC 2013.



The Table below from the fifth year of offset monitoring provide the species richness and abundance calculations for the five years of post-construction monitoring (Ecometrix 2021).

WaterBody			Teepole Pond	Teepole Pond Outlet
DFO Success Criteria	Diversity ^a	2017 ^b	7	7
		2018 ^b	9 ^e	6
		2019 ^c	6	4
		2020 ^c	8	3
		2021	8	2
		Target	≥ 9 fish species	≥ 9 fish species
	Electrofishing	2017 ^b	6	26
		2018 ^b	5	42
		2019 ^c	76	131
		2020 ^c	14	108
		2021	31	60 ^d
		Target	≥ 44 fish per 1,000 seconds	≥ 44 fish per 1,000 seconds
	Minnow Trap	2017 ^b	0.5	0.32
		2018 ^b	1.83	0.05
		2019 ^c	0.18	0.01
		2020 ^c	0.4	0.02
		2021	0.49	0.03
		Target	≥ 2 fish per trap hour	≥ 2 fish per trap hour
	Seine Net	2017 ^b	216	NA
		2018 ^b	98	NA
		2019 ^c	978	NA
2020 ^c		327	NA	
2021		575	NA	
Target		≥ 16 fish per 15m trap haul	NA	

Denotes value achieved success criterion.

^a Total species count does not include young-of-year cyprinids.

^b Previous studies conducted by Wood (Wood 2018, 2018b).

^c Previous studies conducted by Minnow (Minnow 2019, 2020)

^d Estimate based on 15 fish captured in 1 small pool

^e Species diversity includes inferred presence of Common Shiner previously encountered in low abundance during the 2017 studies (Wood 2018).

2.0 Purpose and Project

2.1 Purpose

Development of the Rainy River Project (RRP) will result in the unavoidable harmful alteration, disruption or destruction (HADD) of fish habitat; which requires Authorization as per Section 35(2)(b) of the Fisheries Act. In order for the government of Canada to authorize the HADD, development and implementation of fishery offset measures (compensation) must be provided to ensure that overall contribution to productivity of the fish or fish habitat is maintained or enhanced. In the case of the RRP, the impacted fish and fish habitat of the offset measures are baitfish (primarily minnow) species that inhabit the small creek systems associated with the site. A detailed No Net Loss Plan for the Section 35 fishery impacts (AMEC 2014b) has been prepared for the Project and circulated to stakeholders during the Environmental Assessment process. The final Offset Plan was accepted as part of the Fisheries Authorization (July 4, 2015).

The purpose of this Amended offset plan document is to update the predicted HADD, the offset measures, and proposed conditions to be specified in the Authorization.

2.2 Proponent:

Name and Address of Owner	Project / Mailing Address
New Gold Inc.	New Gold Inc.
Brookfield Place	Rainy River Mine
181 Bay Street, Suite 3320	5967 Highway 11/71
Toronto, Ontario	Emo, Ontario
M5J 2T3	P0W 1E0

Authorized Contact Person
Attention to:
Garnet Cornell
Environment Superintendent
New Gold Inc.
1361 Roen Road
Chapple, Ontario
P0W 1A0
Telephone: (807) 234-8170

Mr. Garnet Cornell is an authorized representative for the Proponent. Mr. Cornell will be the signing authority for the Application, on behalf of the Proponent.

3.0 Location of the Existing Proposed Project

The Rainy River Project (RRP) is located in the Rainy River District, in northwestern Ontario in Chapple Township, approximately 65 km northwest of Fort Frances and 420 km west of Thunder Bay.

The universal transverse Mercator (UTM) coordinates for the centroid of the proposed open pit are 425660E, 5409700N (NAO 83 Zone 15). A large-scale site plan showing facilities, and waterbodies affected by the Project is provided in Appendix A1.

The nearest regional communities in proximity to the Project are:

- Emo, Rainy River District, Ontario, 25 km south southeast of Project;
- Pinewood, Rainy river district, Ontario, 25 km west-southwest; and
- Fort Frances, Rainy River District, Ontario, 65 km east-southeast of the Project.

There are three waterbodies directly affected by the Project where HADD to fish and fish habitat occurred. Waterbodies affected by the Project and their geographic Project centroid coordinates are below in Table 1.

Table 1: Coordinates of Waterbodies Affected by Project

Name of Waterbody	Easting (Project Centroid)	Northing (Project Centroid)
Clark Creek	429086.53	5409823.84
West Creek	425289.51	5410215.78
Marr Creek	423770.84	5411402.58

Notes:

Coordinates are in UTM NAO 83, Zone 15

Project Centroid is the centermost point of the length or portion of waterbody affected by the project

4.0 Description of the Existing Project

The Proponent proposed to construct, operate and eventually reclaim a new open pit and underground gold mine at the RRP property. The Project includes all mine workings, process and waste disposal facilities, and related infrastructure. Project specific components include:

- Open pit;
- Underground mine;
- Mine rock, temporary low grade ore, overburden and topsoil stockpile(s);
- Primary crusher and ore process plant;
- Tailings management area (TMA) and associated external ponds;
- Tailings and water pipelines on site, and water pipelines to the Pinewood River for watertaking and discharge;
- 230 kV transmission line connection and supporting infrastructure to Provincial electrical grid;
- Impoundment and diversion of local watercourses and drainage systems on site;
- Water taking and flow reduction in the Pinewood River adjacent to the site;
- East Access Road, onsite roads and re-alignment of a portion of gravel-surfaced Highway 600; and
- Associated buildings, facilities and infrastructure including: an administration building, truck shop, fuel storage and dispensing, laydown area(s), sewage treatment plant, explosives storage facilities and water management facilities. These facilities will be supported by related piping and power infrastructure as needed.

In addition to the components listed above, the Project includes all temporary activities associated with their construction including stockpiles, laydown areas, access roads, water management, temporary flow isolation and creek crossings.

Detailed descriptions of the Project components and their interactions with the environment can be found in the Rainy River Project, Final Environmental Assessment Report (Environmental Impact Statement) (AMEC 2014a).

5.0 Description of the Existing Works, Undertakings of Activity Likely to Result in Residual Harmful Alteration, Disruption or Destruction of Fish and Fish Habitat

Due to the constraining nature of the ore deposit, the ability to relocate facilities while maintaining a compact Project footprint is limited. However, where possible, avoidance and mitigation measures were taken to reduce the overall effects of the mine on fisheries. The Project works likely to have caused residual HADD to fish are as follows:

1. Development of the open pit, and plant site / ancillary facilities which resulted in the direct loss and alteration of fish and fish habitat due to the infilling and destruction, and dewatering of portions of West Creek and its tributaries;
2. Construction of the Clark Creek Pond and Diversion Channel which resulted in the direct loss and alteration of fish and fish habitat and channel dewatering in Clark Creek/ Teeple Drain; and,
3. Construction of the Tailings Management Area (TMA), south dam across Marr Creek, and the loss of the downstream remnant Marr Creek channel due to the infilling, dewatering and destruction of a portion of Marr Creek.

A figure showing the delineation of proposed works and HADD to fish associated with the Project is provided in Appendix A1.

6.0 Harmful Alteration, Disruption or Destruction to Fish and Fish Habitat Likely to Result from the Existing Works, Undertaking or Activity

A summary of the areas of habitat destruction / alteration resulting in HADD for each waterbody is provided below in Table 2. All works are considered to be permanent.

Table 2: Summary of Project Works and Associated Residual HADD for Section 35(2) Authorization Waterbodies

Mine Feature	Total Area of Destroyed / Altered Habitat - ha)			
	Marr Creek	West Creek	Clark Creek (Teepie Drain)	Total
Clark Creek Pond and Diversion			2.14	2.13
Open Pit		1.74		1.74
Dam Structures	0.02		0.02	0.04
Plant Site / Ancillary Facilities		0.25		0.25
Remnant Channels	0.42			0.42
Total (ha)	0.44	1.99	2.16	4.59
Total in Acres (ac)	1.1	4.9	5.3	11.3

7.0 Conditions that Relate to the Period during which the Work Undertaking or Activity can be Carried on

The works, undertaking or activity that were likely to result in HADD to fish and fish habitat were to be carried on between April 1, 2015 and December 31, 2017. An approximate implementation timeline for the works is provided in Table 3.

If the work, undertaking or activity was not completed during the specified time period, DFO was notified in writing in advance of the expiration of the above time period. DFO, where appropriate, provided written notice that the period to carry on the works, undertaking or activity had been extended.

Table 3: Schedule of Plan Implementation

Offset Component/ Activity	Construction Dates	
	Early Start	Late Completion
Construction of Teeple Pond and Outlet Channel habitat offsets	April 2015	September 2016
Diversion of Clark Creek (impacts to Clark Creek)	April 2015	September 2016
Open Pit Development and Plant site (Impacts to West creek)	April 2015	September 2016
Abandonment or alteration of remnant channels (impacts to Marr Creek, West Creek and Clark Creek)	April 2015	September 2016
Development of TMA Starter Dams (across Marr Creek)	October 2015	September 2016
Maintenance or adjustment period to offset works if required	September 2016	December 2017

8.0 Conditions that Relate to Measures and Standards to Avoid or Mitigate HADD to Fish or Fish Habitat

8.1 Measure or Standards

A list of measures and standard that-were to be implemented during the project to avoid or mitigate HADD to fish and fish habitat are shown in Table 4.

Table 4: List of Measures and Standards, Success Criteria and Contingency Measures.

Measure or Standard	Success Criteria	Contingency
Sediment and erosion control measures associated with the work will be in place prior to substantial ground disturbance and through the duration of construction	No visible sediment entering natural waterbodies as a result of ground disturbance	Stop the work that is resulting in sediment release until effective controls are implemented. Maintain supply of erosion and sediment control supplies on site to repair, replace or supplement control measures as needed.
Observe timing constraints for in-water work	No in-water work during constraint period	Exemption from timing period may be requested from MNR and copied to DFO
Minimize duration of in-water work to the extent practicable.	Work continues in continuous manner to completion.	Monitor contractor's effort and implement additional site planning as needed. Ensure materials are available to complete the construction continuously as needed.
Undertake instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.	Work areas are effectively isolated from flowing water.	Stop works that are not isolated from flowing water. Isolate work area, remove fish from work area before continuing works. Maintain a sufficient supply of pumps and materials on site to isolate flows.
Stabilize shoreline or banks disturbed by any activity associated with the works.	Shorelines are mostly stable and not eroding.	Grade bank to stable slope if necessary. Use temporary or permanent bank stabilization material to stabilize banks.
Remove fish from areas where waterbodies are to be abandoned or isolated from the active creek channel due to the works.	No dead or stranded fish within the work areas.	If stranded or distressed fish are observed in the work area, stop work causing distress, and continue fish removal.
Screen or use other deterrents at any water intakes or outlet pipes to prevent entrainment or impingement of fish.	No fish entrained or impinged at intakes or outlets.	If fish are entrained or impinged, implement corrective action by, either repairing or supplementing the exclusion measure in place.

Measure or Standard	Success Criteria	Contingency
"Ramp up and down" flow takings in Pinewood River at intake and monitor and adjust water takings to avoid stranding of fish.	No dead or stranded fish observed in the Pinewood River downstream of intake.	If stranded or dead fish are observed in Pinewood River due to pumping, adjust or stop pumping accordingly. Report observations and contingency measure to DFO within 5 business days
Implement plan to monitor fish community in Pinewood River between the existing West Creek and Loslo Creek to confirm that the fish community and fish passage are maintained.	Consistent species presence, catch per unit effort and fish length distribution between stations upstream, within, and downstream of existing West Creek to Loslo river section. Monitoring will be conducted each year in the mid to late summer and include the following minimum effort at each station: -minnow traps (600 trap hours), - seine nets (9 individual (15 m) net hauls) -electrofishing (3,000 seconds) -gill nets (* 6 standard gill net sets); or as otherwise agreed to with DFO	Adaptive measures to be determined in cooperation with DFO if criteria is inconsistent between reaches. Report monitoring results with annual report specified in Table 8.
Follow DFO Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters	No dead or distressed fish resulting from use of nearby explosives.	If dead or distressed fish are observed, implement corrective action by either, reducing or adjusting the size and sequence of charges, implementing buffers, isolating or deterring fish from the work area.
Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks.	Machinery arrives on site in clean condition.	Have an area or location on site to clean equipment that does not arrive in a suitable condition.
Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water	No deleterious substances entering waterbodies.	Follow site response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.
Remove all unused construction materials from site upon project completion	Site is clean with no unused construction material that may enter the waterbody	Use designated locations for excess material and or stabilization measure to prevent excess material from entering any watercourse

*Standard gill net sets to be 50 m multiple mesh panels set 12-16 hours per set.

8.2 Contingency Measures

The measures and standards and contingencies listed in Table 4 shall be implemented and/or ready for use prior to the start of the works.

8.3 Dates that Measures and Standards Shall be Implemented

The measures and standards and contingencies listed in Table 4 were implemented and/or ready for use prior to the start of the works.

8.4 Conditions that Relate to Monitoring and Reporting of Measures and Standards to Avoid or Mitigate HADD to Fish and Fish Habitat

8.4.1 Monitoring of Avoidance and Mitigation Measures

To ensure that the measures and standards described in this plan were implemented as proposed, construction was monitored by RRP onsite monitors, or designates. Monitoring was reported to DFO in annual offset construction reports for each year of the Project where the works were and are being implemented. Reports were provided to DFO on or before March 31 following the year being reported on. Monitoring reports were prepared as per the sections below.

8.4.2 Demonstration of Effective Implementations and Functioning

Reporting of the above measures and standards will demonstrate effective implementation and function through:

- A detailed photographic record and inspection reports were kept to document measures and standards employed and their effectiveness to limit-HADD to fish and fish habitat;
- A record of all fish removal efforts carried out with the numbers of fish removed and relocation locations; and,
- A record of any contingency measures that were implemented and the effectiveness of the measures.

8.4.3 Contingency Measures

A detailed record of any contingency measures that were followed to prevent impacts greater than those covered by the Authorization in the event that mitigation measures did not function as described was provided.

9.0 Conditions that Relate to the Offsetting of the HADD to Fish and Fish Habitat Likely to Result from the Authorized Work, Undertaking or Activity

9.1 Letter of Credit

DFO may draw upon funds of the letter of credit provided with the original application for Authorization, to cover the cost of implementing the offsetting measures required to be implemented under the Authorization, including the associated monitoring and reporting measures included in the original plan, in instances where the Proponent fails to implement these required measures.

New Gold intends to change the letter of credit based guarantee to a performance bond based set aside.

9.2 Scale and Description of Offsetting Measures

The offset measure for the estimated 4.59 ha (11.3 ac) of impacted fisheries habitat (Table 2) was the development of an on-line impoundment along the realigned Clark Creek immediately north of Teeple Road, referred to as the Teeple Pond. The Teeple Pond and its outlet channel were designed to provide similar habitat attributes as those found during the baseline studies in the frequent beaver ponds and other ponded areas within the local tributaries being impacted. The Teeple Pond and outlet channel as proposed was designed to provide a minimum of 8.41 ha (20.8 ac) of new fish habitat. This provided a 1:1.8 offset ratio for the impacted areas, which is considered reasonable given the intention to construct the new habitat at the same time the affected habitat were impacted. Detailed design drawings showing the proposed Teeple Road Pond are provided in Appendix A. The as-built construction report indicated that the pond and outlet were constructed as proposed with minimal variance.

The Teeple Pond and outlet channel incorporate several habitat features with the objective of meeting fisheries values early in the development of the feature. Key features of the offset habitat include permanent deeper water refuge pools, log and boulder structures, and highly productive emergent wetland margins.

Overwintering and summer refuge are provided with 36% of the surface area being greater than 1 m, and a maximum pool depth of up to 2.5 m. These deeper water pools and refuge area are situated strategically around the pond and connected with deep central channels that mimic deeper creek channels in beaver ponds. Boulder piles (72) and submerged tree piles (23) were spaced in both shallow and deeper zones to provide cover opportunities throughout the pond.

The Teeple Pond outlet channel incorporates riffle and pool morphologies and is designed to provide fish passage into and from the pond habitat to the adjacent tributary downstream. The channel configuration contains pools with a designed depth of approximately 0.7 m to promote standing water during periods of low to no flow.

9.3 Criteria to Assess the Implementation and Effectiveness of the Offset Measures

Implementation and effectiveness of the offset measures were determined by confirming that Teeple Pond and its Outlet Channel have been constructed as per the approved plans and are functioning as intended using the following criteria.

Table 5: Criteria and Dates to Assess Offsetting Measures Implementation and Effectiveness Success

Attribute	Success Criteria	Date
Physical construction of offset measures	<ul style="list-style-type: none"> As-built survey demonstrates that measures are constructed as per the approved plans Area of replacement habitat is equal to or greater than 8.41 ha 	December 31, 2016
Physical function of offset measures	<ul style="list-style-type: none"> Water levels are consistent with those specified in the design The outlet channel and pond allows for passage of fish 	December 31, 2018
Stability of structures	<ul style="list-style-type: none"> Constructed habitat features remain in place (log and boulder structures in place) Shorelines and graded offset features are stable and not eroding (greater than 80% of features are considered stable) Riparian vegetation cover and plantings achieve 80% coverage of area, and or survival of planted stock 	December 31, 2018
Species presence	<ul style="list-style-type: none"> Minimum of 6* species of fish are present in the offset measure (i.e., Teeple System) 	December 31, 2021
Full life cycle usage	<ul style="list-style-type: none"> Multiple year classes including young of the year fish are present in the offset feature (i.e., Teeple System) 	December 31, 2021
Fish abundance	<ul style="list-style-type: none"> Overall Catch per Unit Effort (CPUE) for all species combined, for at least one* of the following capture methods (electrofishing [in channelized habitat], Seine Nets [in ponded habitat]). Minimum success criteria are: <ul style="list-style-type: none"> Seine Net CPUE: to 16 fish per 15 m net pull Electrofishing CPUE: 44 fish per 1000 seconds 	December 31, 2021

* – the original Offset plan indicated a minimum of 9 species present. an acceptable range in species richness for the offset habitats is between 6 and 9. Such a range is consistent with the factors to be taken into account for authorization under the modified Fisheries Act; (a) the contribution to the productivity of relevant fisheries by the fish or fish habitat that is likely to be affected; and, (b) fisheries management objectives. A species richness ranging from 6 to 9 provides a reasonable contribution to the productivity of the downstream fish community and fishery. This range of species richness also meets the fisheries management objective of maintaining a baitfish community.

* – Fishing efficiency is closely tied to habitat such that seining is a more effective method in ponded habitat whereas electrofishing is the standard in flowing systems such as the outlet. The amount of effort expended and the spatial extent of the effort in the pond and outlet has been such to represent a variety of habitats and areas to properly represent the function of each feature as a whole.

9.4 Contingency Measures

If the results of the monitoring required in Section 9 indicate that the offsetting measures are not completed by the date specified and/or are not functioning according to the criteria in Table 5, the Proponent will give written notice to DFO and shall implement the contingency measures and associated monitoring specified below.

9.4.1 Scale and Description of Contingency Measures

The scale and description of the proposed contingencies that will be implemented in the event of that the offset measures are not functioning as specified are listed in Table 6.

9.4.2 Monitoring of Contingency Measures

Monitoring of the implemented contingency measures prelisted in Table 6 will follow the criteria specified in Table 5. The period of monitoring in Table 5 will be extended until the success criteria are achieved or as otherwise agreed to in writing by DFO.

Table 6: Contingency Measures for Implementation Success

Attribute	Mode of Failure	Contingency
Physical construction of offset measures	<ul style="list-style-type: none"> Dam not constructed as per plans Channel not constructed as per plan. Water area, depths and or habitat structures not in place or present as per the Plans. 	<ul style="list-style-type: none"> Engineer to assess failure and recommend corrective actions. Proponent to take required corrective action.
Physical function of offset measures	<ul style="list-style-type: none"> Conditions do not provide for fish passage 	<ul style="list-style-type: none"> Engineer/ biologist to assess cause of failure and recommend corrective actions. Proponent to take required corrective action.
	<ul style="list-style-type: none"> Water level not consistent with those specified in plans. 	<ul style="list-style-type: none"> Adjust grades of structures to alter water levels Excavate pools to specified depths.
Stability of structures	<ul style="list-style-type: none"> Constructed habitat features (log and boulder structures) missing or not functional 	<ul style="list-style-type: none"> Repair or replace structures
	<ul style="list-style-type: none"> Shorelines and graded offset features not stable (less than 80% of features are considered stable) 	<ul style="list-style-type: none"> Assess cause and areas of instability Add permanent erosion control (rock, vegetation) in areas of erosion Grade channel or shore to decrease velocity
	<ul style="list-style-type: none"> Riparian vegetation cover and plantings are less than 80% 	<ul style="list-style-type: none"> Apply seed and replacement plantings where required

Attribute	Mode of Failure	Contingency
	<ul style="list-style-type: none"> coverage of area, and or survival of planted stock 	<ul style="list-style-type: none"> Substitute species, and/or use soil amendments if conditions require.
Species presence	<ul style="list-style-type: none"> Less than 6* species of fish are present in the offset measure. 	<ul style="list-style-type: none"> Use monitoring data to assess limiting factors for other species Supplement limiting factors through additional planting, structure or excavation Stock species from local creeks if habitat is suitable.
Full life cycle usage	<ul style="list-style-type: none"> Multiple year classes including young of the year fish are not present in the offset feature. 	<ul style="list-style-type: none"> Use monitoring data to assess limiting factors for spawning or overwintering Supplement limiting factors through additional planting, structure or excavation
Fish abundance	<ul style="list-style-type: none"> Overall Catch per Unit Effort (CPUE) does not meet targets. 	<ul style="list-style-type: none"> Use monitoring data to assess limiting factors for abundance Supplement limiting factors through additional planting, structure or excavation. Consider longer term monitoring program if trend shows increasing abundance.

* – 9 species was the original target however as outlined in the above Rationale for Amendment section the five years of monitoring resulted in fish species richness of no less than 6 species considered a more suitable richness target than the original plan.

10.0 Conditions that Relate to Monitoring and Reporting of Implementation of Offsetting Measures

10.1 Schedule and Criteria

The proponent shall conduct monitoring of the implementation and the offsetting measures according to the timeline and criteria listed in Table 7.

10.2 Report Schedule

The Proponent shall report to DFO on whether the offsetting measures were conducted according to the conditions of the authorization by providing the reports listed in Table 7.

Table 7: Monitoring Criteria and Reporting Schedule of Offsetting Measures

Attribute	Monitoring Criteria	Report Schedule
Physical construction of offset measures	<ul style="list-style-type: none"> As-built survey will be conducted within 6 months of completion of the offset measures. The survey will include areas of wetted and frequently flooded habitats, all constructed habitat features, water depths, vegetation zones, and channels. Photo documentation will be taken during construction to document that mitigation and avoidance measures were implemented, and that all structures were constructed as per the approved plans. A comparison of the constructed habitat to the approved plan will be made to confirm that the area of replacement habitat is equal to or greater than 8.41 ha 	As-constructed Report due to DFO on or before March 31, 2016*
Physical function of offset measures	<ul style="list-style-type: none"> Water level gauges with an automated water level logger will be used to monitor water levels in the constructed Teeple Pond for 5 years following construction. Water depths measurements of the pond area will be conducted once per year during monitoring period (5 yrs) to confirm refuges area are maintained. Water level data from Teeple Pond will be used to evaluate frequency and duration of flows in the outlet channel. Water depth and velocity measurements in the outlet channel will be taken in pools, flats and riffles during at least one low flow period and high flow period each year (for 3yrs). This data will be used to assess the channel conditions for fish passage. 	Annual Monitoring Reports due to DFO on or before December 31 each year for 5 years post construction. December 31, 2017 December 31, 2018 December 31, 2019 December 31, 2020 December 31, 2021 <i>(Completed)</i>

	<ul style="list-style-type: none"> Fish presence within the outlet channel will be monitored once per summer during the monitoring period (5yrs) to assess fish access to the outlet channel 	
Stability of structures	<ul style="list-style-type: none"> Observations will be made once per year during the monitoring period, during low flow for best visibility to confirm that constructed features are in place and functional. Stability of the features and general condition will be assessed by mapping and photo documenting the perimeter of the pond, and the outlet channel once per year. Consistent vantage points will be used to provide between year comparisons. Riparian vegetation cover and plantings success will be monitored annually by estimating the percent cover of herbaceous ground cover, and the percent survival of planted stock (shrubs). 	
Species presence	<ul style="list-style-type: none"> Fish sampling will be conducted annually during the summer using as a minimum effort: <ul style="list-style-type: none"> Pond habitat: minnow traps (1,500 trap hours), seine nets (10 individual (15 m) net hauls) and electrofishing (10,000 seconds). Additional effort and methods may be used to confirm larger bodied species and species presence. Outlet channel habitat: minnow traps (250 trap hours), electrofishing (1,000 seconds). Additional effort and methods may be used to confirm larger bodied species, species presence and species movement through the channel. 	
Full Life cycle usage		
Fish abundance		

* – New Gold requested and was granted a 9 month extension by DFO and provided the as-built report prior to the amended deadline of December 31, 2016.

11.0 Conditions that Relate to Monitoring and Reporting of the Potential Effects Pinewood River Community and Fish Passage

11.1 Schedule and Criteria

The proponent shall conduct monitoring of the fish community in the Pinewood River according to the timeline and criteria listed in Table 8.

11.2 Report Schedule

The Proponent shall report to DFO on whether the fish community and fish passage has been maintained in the Pinewood River according to the conditions of the authorization by providing the report listed in Table 8.

Table 8: Monitoring Criteria and Reporting for the Pinewood River Fish Community

<i>Attribute</i>	<i>Monitoring Criteria</i>	<i>Report Schedule</i>
Fish Community	Minnow Traps (600 hours)	Annual Monitoring Reports due to DFO on or before March 31 for 5 years post construction. March 31, 2018 March 31, 2019 March 31, 2020 March 31, 2021 March 31, 2022
	Seine Net (9 individual; 15 m net hauls)	
	Electrofishing (3,000 seconds)	
	Gill nets (6 experimental sets)	

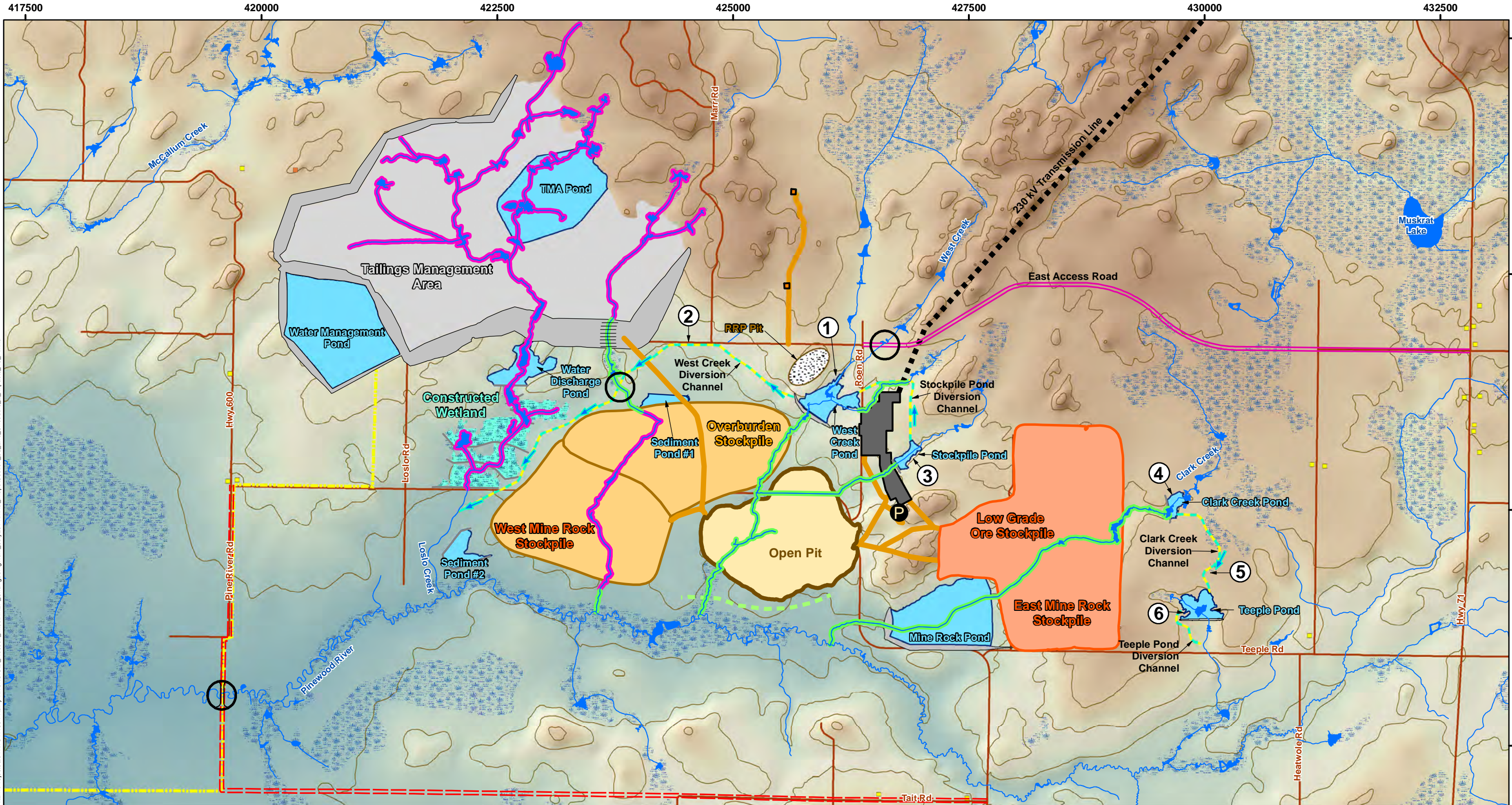
12.0 References

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Wood. 2018b. 2018 Annual Monitoring Report – Offset Plan for Fisheries Act Section 35(2)(b)
Authorization. December 2018.

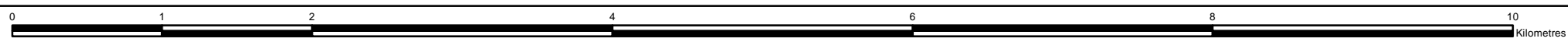
Appendix A Plans and Specifications

A.1 Figure Showing Harmful Alteration, Disruption or Destruction Locations (Figure 4.1 of NNLP)



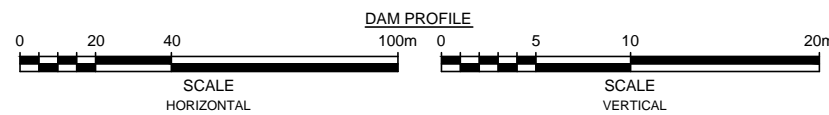
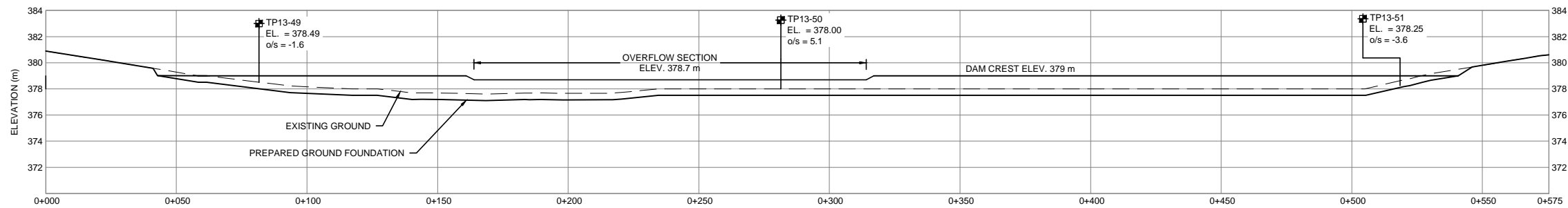
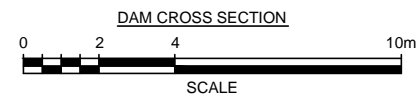
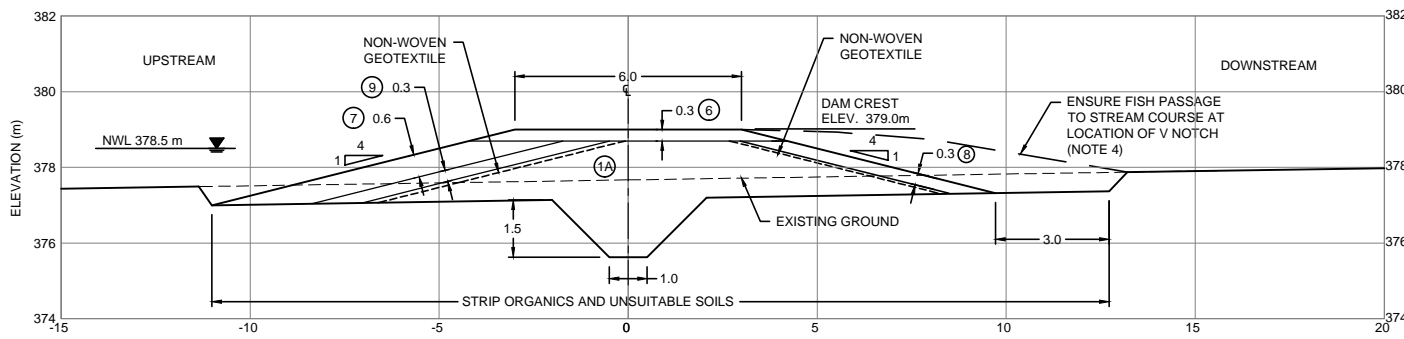
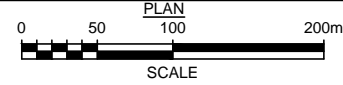
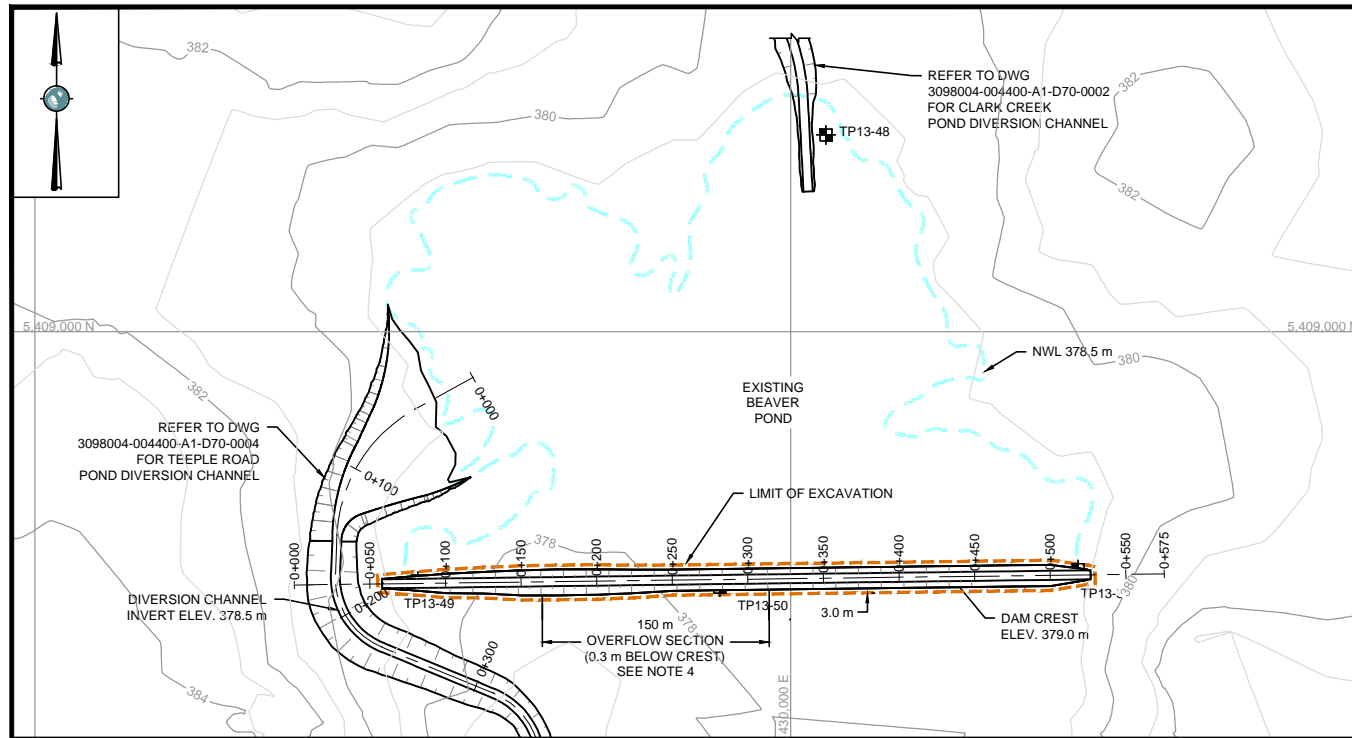
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<p>LEGEND</p> <ul style="list-style-type: none"> ■ Residence-House ■ Lodging Cabin-Occasional Use — Roads — Contours, 10 m interval (LIO-MNR) — Water Course — MMR Schedule 2 Impacts — Section 35 Impacts 	<p>Section 35 Impacts Impact Dependent On MMR Schedule 2 Listing</p> <ul style="list-style-type: none"> — Low Lying Area ○ New Road Crossings # Onsite Like For Like Habitat Offset Areas 	<p>Elevation Colour Ramp</p> <p>High ground</p> <p>Low ground</p>	<p>Proposed Site Features</p> <ul style="list-style-type: none"> P Underground Portal Plant Site / Ancillary Facilities ○ Open Pit Explosives Facilities Water Management Pipelines Major Watercourse Crossing 	<ul style="list-style-type: none"> Ore / East Mine Rock Stockpile Site Roads Overburden/ West Mine Rock Stockpile Former MTO Aggregate Pit Pond Tailings Management Area 	<ul style="list-style-type: none"> Pit Protection Berm Highway Re-alignment East Access Road 230 kV Transmission Line Constructed Wetland Watercourse Diversion Dams 	<p>Source / Notes:</p> <ul style="list-style-type: none"> - Road data extracted from Land Information Ontario, Ontario Road Network, MNR - Background topographic and elevation data extracted from MNR Land Information Ontario - Only major facilities are shown. Connecting infrastructure and supporting facilities are generally not shown. <p>Datum: NAD83 Projection: UTM Zone 15N</p>	<div style="text-align: right;"> Rainy River Project </div> <hr/> <p style="text-align: center;">RAINY RIVER PROJECT</p> <hr/> <p style="text-align: center;">Altered/Displaced Waters Frequented by Fish (Section 35, Schedule 2 Impacts)</p> <hr/> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">PROJECT N^o: TC111504</td> <td style="width: 50%;">FIGURE: 4-1</td> </tr> <tr> <td>SCALE: 1:39,000</td> <td>DATE: November 2014</td> </tr> </table>	PROJECT N ^o : TC111504	FIGURE: 4-1	SCALE: 1:39,000	DATE: November 2014
PROJECT N ^o : TC111504	FIGURE: 4-1										
SCALE: 1:39,000	DATE: November 2014										



Appendix B Detailed Design Drawings

- B.1 Detailed Design Drawings for Teeple Pond and Outlet Channel (RRP Offset Plan for Fisheries Act Section 35(2)(b) Authorization)



CONSTRUCTION MATERIALS	
1	CORE - SELECT CLAY
1A	CORE - RANDOM CLAY
2	UPSTREAM SHELL - CLEAN RANDOM FILL
2A	UPSTREAM SHELL - CLEAN RANDOM FILL
3	DOWNSTREAM SHELL - CLEAN MINE ROCK
3A	SELECT - CLEAN MINE ROCK
4	FILTER - SAND AND GRAVEL
4A	FINE FILTER - SAND
5	TRANSITION / DRAIN - PROCESSED ROCK
6	ROAD SURFACE - SAND AND GRAVEL
7	UPSTREAM EROSION PROTECTION - COBBLES AND BOULDERS.
8	DOWNSTREAM EROSION PROTECTION - SAND TO COBBLES.
9	BEDDING - COBBLES
10	ARMOUR STONE - BOULDERS
GEOSYNTHETICS	
---	NON-WOVEN GEOTEXTILE (TERRAFIX 1200R OR EQUIVALENT)

NOTES:

- ALL ELEVATIONS AND GRID COORDINATES SHOWN ON THIS DRAWING ARE IN METRES. GRID COORDINATES ARE REFERENCED TO UTM NAD 83 ZONE 15 DATUM. ELEVATIONS ARE GEODETIC.
- GROUND SURFACE CONTOURS (1m INTERVALS) PROVIDED BY RAINY RIVER RESOURCES LTD.
- WATERCOURSE DATA, LOCAL ROADS AND HIGHWAYS OBTAINED FROM ONTARIO DIGITAL GEOSPACIAL DATABASE (OBM), MAY 2011.
- A LOW LEVEL V-NOTCH AND DOWNSTREAM SLOPE PROTECTION TO BE FIELD FIT TO ENSURE FISH PASSAGE.
- FOR FISH COMPENSATION DETAILS REFER TO DRAWINGS 3098004-004400-A1-D50-0006 AND 3098004-004400-A1-D50-0007.

LEGEND:

- CONTOURS
- EXISTING ROADS & HIGHWAY
- ACCESS ROADS BY BBA
- RIVERS / CREEKS
- MAXIMUM OPERATING WATER LEVEL (MOWL)
- SEEPAGE COLLECTION DITCH/DIVERSION CHANNEL
- SPILLWAY
- EXTENT OF STRIPPING
- NWL NORMAL WATER LEVEL

INVESTIGATION LEGEND:

- BH14-11 BOREHOLE LOCATION (AMEC, 2014)
- TP14-11 TEST PIT LOCATION (AMEC, 2014)
- BH13-11 BOREHOLE LOCATION (AMEC, 2013)
- TP13-11 TEST PIT LOCATION (AMEC, 2013)
- BH12-11 BOREHOLE LOCATION (AMEC, 2012)
- TP2012-11 TEST PIT LOCATION (AMEC, 2012)
- BH11-11 BOREHOLE LOCATIONS (AMEC, 2011)
- TP10-01 TEST PIT LOCATIONS (KCB, 2010)
- CPT-10-01 CONE PENETRATION TEST LOCATION (KCB, 2010)

3098004-004400-A1-D70-0003



REV	D	M	Y	ISSUE/REVISION DESCRIPTION	ENG.	APPR.
AD	13	11	2014	ISSUED FOR TENDER	DR	DGR
AC	11	04	2014	ISSUED FOR CONSTRUCTION	SF	DGR
AB	02	04	2014	ISSUED FOR CLIENT APPROVAL	SF	DGR
AA	11	02	2014	ISSUED FOR INFORMATION	SF	DGR



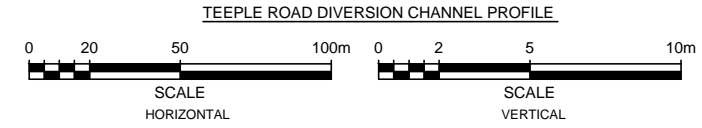
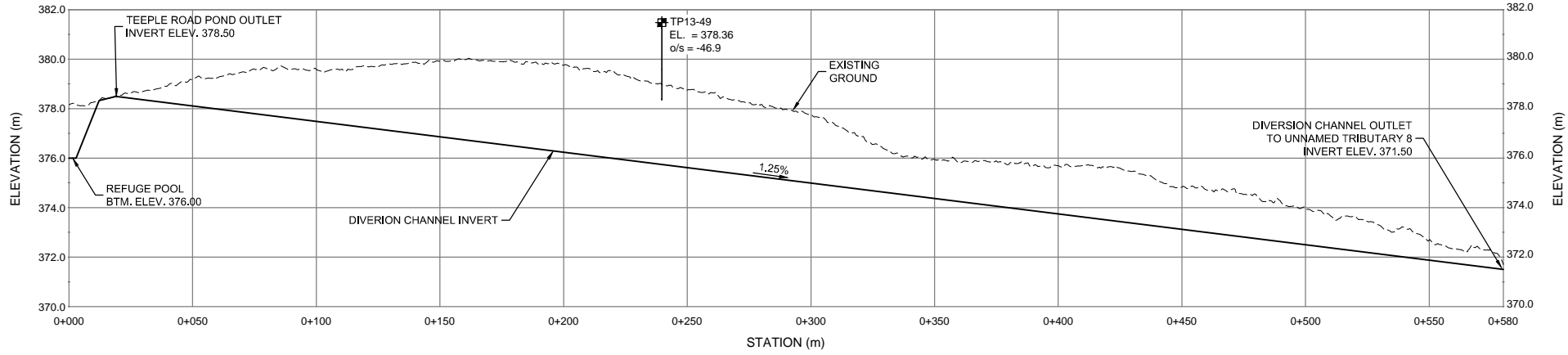
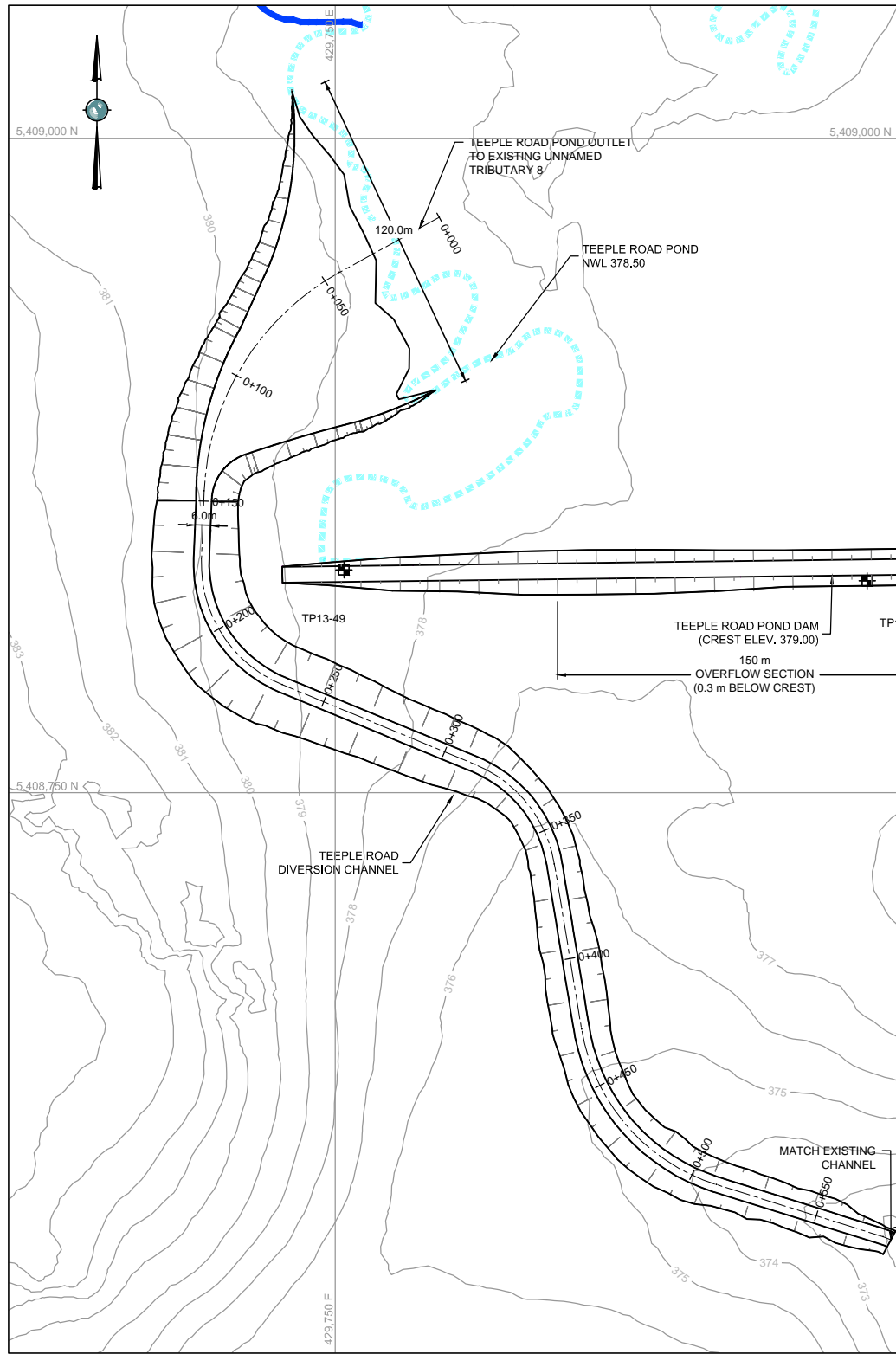
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NEW GOLD INC.
AMEC Environment & Infrastructure
160 Traders Boulevard East
Mississauga, Ontario, Canada L4Z 3K7



DRAWN BY:	NR
DESIGNED BY:	SF
CHECKED BY:	SF
REVIEWED BY:	DGR
APPROVED BY:	DGR

PROJECT: RAINY RIVER PROJECT
DETAILED DESIGN
TITLE: TEEPLE ROAD DAM
PLAN, TYPICAL SECTION AND PROFILE

PROJECT NO.:	TC133921
REVISION NO.:	AD
DATE:	APRIL 2014
SCALE:	AS SHOWN
DRAWING NO.:	135



- NOTES:**
- ALL ELEVATIONS AND GRID COORDINATES SHOWN ON THIS DRAWING ARE IN METRES. GRID COORDINATES ARE REFERENCED TO UTM NAD 83 ZONE 15 DATUM. ELEVATIONS ARE GEODETIC.
 - GROUND SURFACE CONTOURS (1m INTERVALS) PROVIDED BY RAINY RIVER RESOURCES LTD.
 - WATERCOURSE DATA, LOCAL ROADS AND HIGHWAYS OBTAINED FROM ONTARIO DIGITAL GEOSPACIAL DATABASE (OBM), MAY 2011.
 - FOR FISH COMPENSATION DETAILS REFER TO DRAWINGS 3098004-004400-A1-D50-0006, 3098004-004400-A1-D50-0008 AND 3098004-004400-A1-D50-0009.

- LEGEND:**
- 370 CONTOURS
 - RIVERS / CREEKS
 - NORMAL WATER LEVEL

TEEPLE ROAD POND AND DIVERSION PLAN
0 20 50 100m
SCALE

3098004-004400-A1-D70-0004



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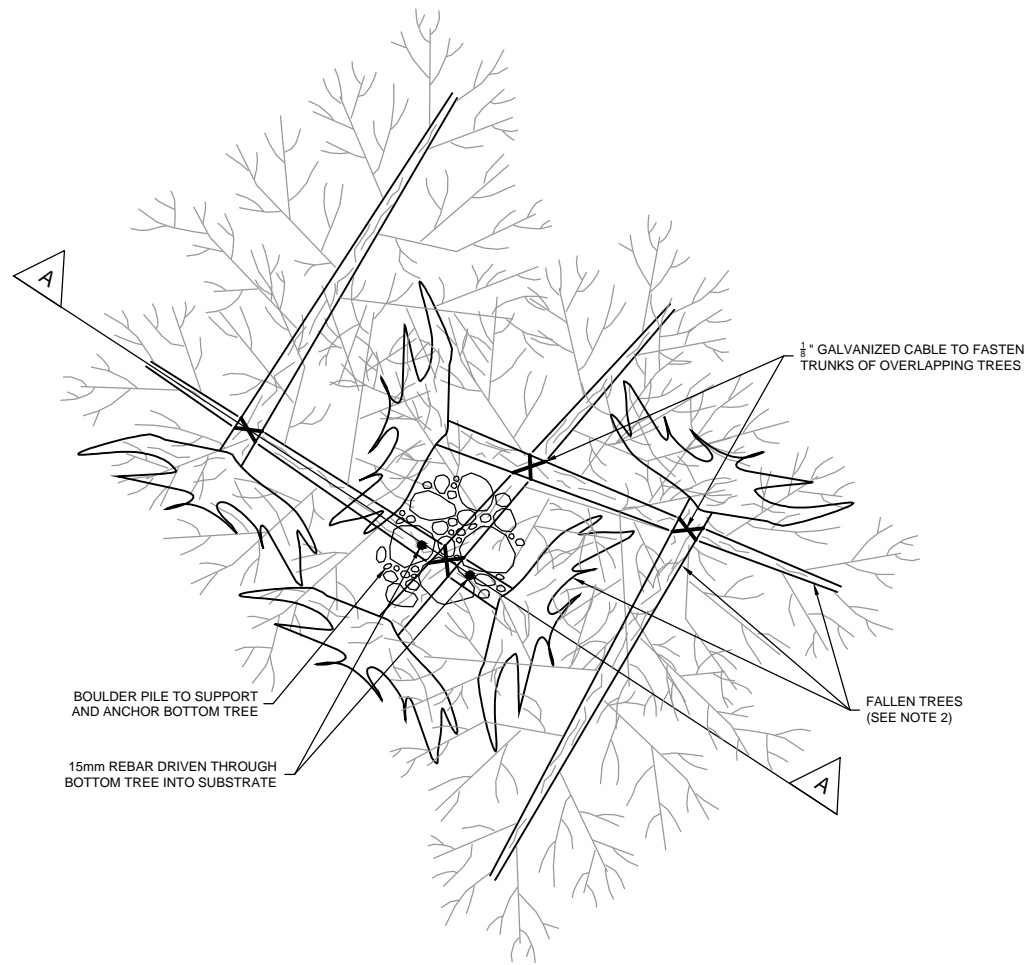
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AMEC Environment & Infrastructure
160 Traders Boulevard East
Mississauga, Ontario, Canada L4Z 3K7



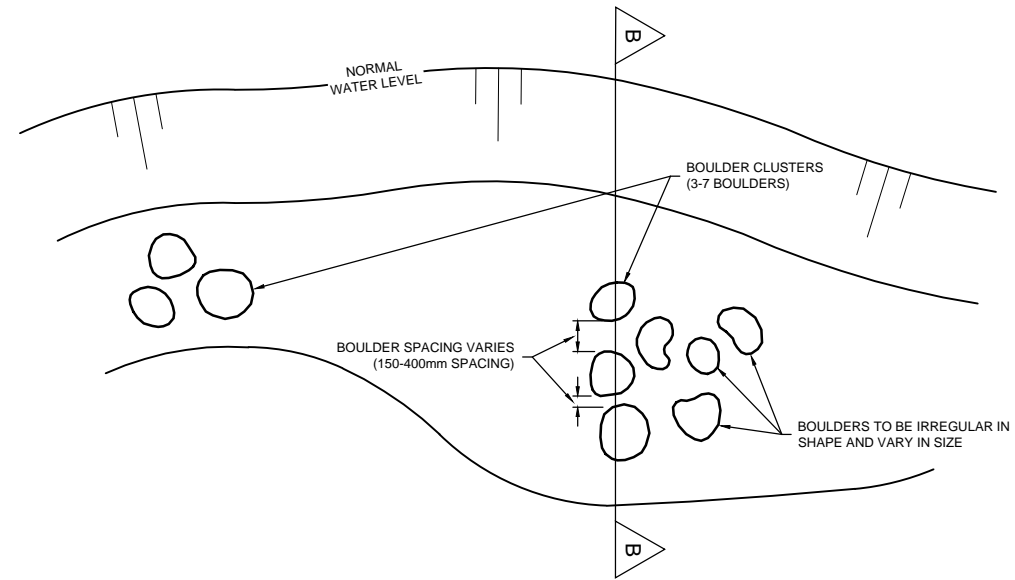
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**RAINY RIVER PROJECT
DETAILED DESIGN**
TITLE:
**TEEPLE ROAD POND
DIVERSION CHANNEL
PLAN AND PROFILE**

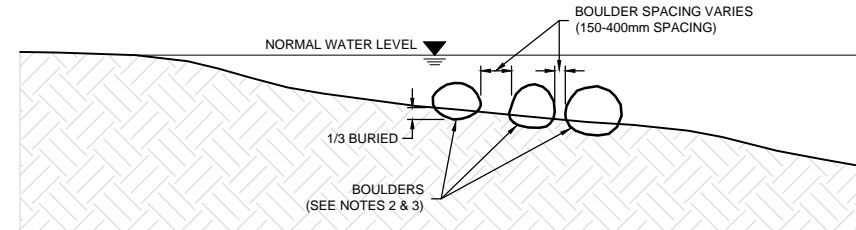
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TYPICAL TREE PILE: PLAN VIEW
SCALE: N.T.S.

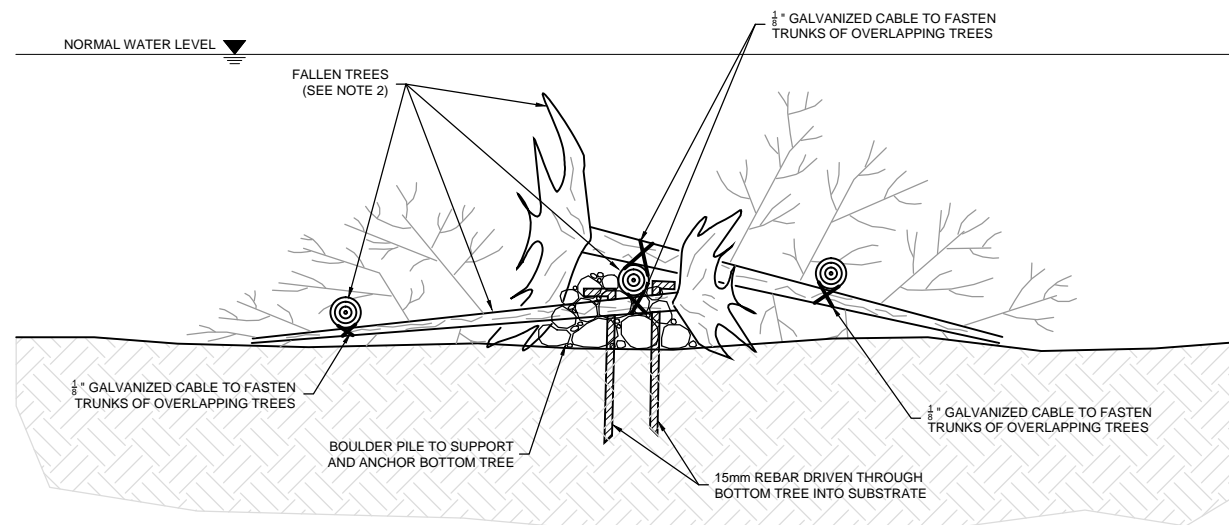


TYPICAL BOULDER CLUSTER: PLAN VIEW
SCALE: N.T.S.



TYPICAL BOULDER CLUSTER: SECTION B-B
SCALE: N.T.S.

- BOULDER CLUSTER NOTES:**
1. BOULDER CLUSTERS SHALL BE PLACED IN LOCATIONS OUTLINED IN THE APPROVED PLANS.
 2. BOULDERS PLACED WITHIN DIVERSIONS AND OUTLET CHANNELS SHALL BE APPROXIMATELY 300mm TO 500mm IN DIAMETER.
 3. BOULDERS PLACED WITHIN PONDS SHALL BE APPROXIMATELY 500mm TO 1000mm IN DIAMETER.
 4. USE OF IRREGULARLY SHAPED BOULDERS WITH A VARIETY OF DIAMETERS IS PREFERRED.
 5. BOULDERS SHALL NOT CONTAIN POTENTIALLY ACID GENERATING ROCK.
 6. BOULDER CLUSTERS SHALL CONSIST OF 3 TO 7 BOULDERS.
 7. BOULDERS SHALL BE BURIED TO ONE THIRD OF THEIR TOTAL HEIGHT.
 8. BOULDERS MAY BE PLACED SUCH THAT THE TOPS OF SOME BOULDERS ARE ABOVE THE NORMAL WATER LEVEL.
 9. SPACING BETWEEN BOULDERS WITHIN THE CLUSTER SHALL RANGE FROM 150mm TO 400mm.



TYPICAL TREE PILE: SECTION A-A
SCALE: N.T.S.

TREE PILE MATERIALS NOTES:

1. TREE PILES SHALL CONSIST OF A MINIMUM OF 5 TREES.
2. TREES SHALL HAVE A MINIMUM DIAMETER OF 150mm AND A MINIMUM LENGTH OF 3m.
3. IT IS PREFERRED THAT TREES WITH ROOTS AND BRANCHES INTACT BE UTILIZED FOR CONSTRUCTION OF TREE PILES.
4. TREES SHALL BE SOUND AND FREE OF CENTER ROT.
5. TREES UTILIZED SHALL BE A MIXTURE OF CONIFEROUS AND DECIDUOUS TREES.
6. BOULDERS UTILIZED FOR CRADLE/SADDLE AND WEIGHTING OF BOTTOM TREE SHALL BE A UNIFORM MIXTURE OF 150mm TO 400mm ROCK WHICH IS NOT POTENTIALLY ACID GENERATING.
7. TREES SHALL BE FASTENED TOGETHER UTILIZING 1/2\"/>

TREE PILE GENERAL NOTES:

1. IT IS PREFERRED THAT WITHIN EACH POND APPROXIMATELY 1/3 OF TREE PILES CONTAIN SOLELY CONIFEROUS TREES, 1/3 OF TREE PILES CONTAIN SOLELY DECIDUOUS TREES, AND THE REMAINING 2/3 OF TREE PILES CONTAIN BOTH CONIFEROUS AND DECIDUOUS TREES.
2. TREES SHOULD BE PILED TO MAXIMIZE THE HEIGHT OF THE PILE.
3. DRYING OUT OF TREES PRIOR TO INSTALLATION SHALL BE MINIMIZED IN ORDER TO REDUCE THE NUMBER OF BRANCHES WHICH ARE BROKEN OFF DURING INSTALLATION.

TREE PILE INSTALLATION NOTES:

1. TREE PILES SHALL BE PLACED IN LOCATIONS OUTLINED IN THE APPROVED PLANS.
2. ALL TREE PILES SHALL BE INSTALLED IN THE DRY.
3. TREE PILES SHALL CONSIST OF A MINIMUM OF 5 TREES.
4. TREE PILES SHALL BE CONSTRUCTED BY STACKING TREES ATOP ONE ANOTHER TO PROVIDE HEIGHT TO THE STRUCTURE.
5. THE BOTTOM TREE IN THE PILE SHALL BE PLACED IN A BOULDER CRADLE/SADDLE AND FURTHER WEIGHTED WITH BOULDERS IN ADDITION TO BEING ANCHORED TO THE GROUND WITH REBAR.
6. REBAR ANCHORING SHALL CONSIST OF A MINIMUM OF TWO 15mm REBAR STAKES.
7. TWO PILOT HOLES SHALL BE DRILLED VERTICAL IN THE TREE TRUNK OF THE BOTTOM TREE ONCE IT HAS BEEN PLACED SECURELY IN THE BOULDER CRADLE. THE HOLES SHALL BE A MINIMUM OF 300mm APART FROM EACH OTHER.
8. EACH REBAR STAKE SHALL BE DRIVEN INTO THE NATIVE GROUND THROUGH THE PILOT HOLE LEAVING 150mm OF REBAR EXPOSED OUT OF THE TRUNK.
9. EACH EXPOSED REBAR SECTION SHALL BE BENT OVER THE SIDES OF THE TREE IN OPPOSITE DIRECTIONS, THUS LOCKING THE TREE IN PLACE.
10. BOULDERS SHALL BE ADDED TO THE CRADLE TO CREATE A BOULDER PILE WHICH COVERS THE REBAR STAKES.
11. TREES SHALL THEN BE ADDED TO THE PILE BY OVERLAPPING TREE TRUNKS AND BINDING THE TREES TOGETHER AT THE POINT OF OVERLAP UTILIZING 1/2\"/>

3098004-004400-A1-D50-0001

REFERENCE DRAWINGS:
THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 3098004-002510-A1-D50-0002 TO ...-0007, 3098004-004400-A1-D50-0002 TO ...-0009, 3098004-002590-A1-D50-0001 TO ...-0006.



REV	D	M	Y	ISSUE/REVISION DESCRIPTION	DES.	APPR.
01	14	11	2014	ISSUED FOR TENDER	NSH	DGR
00	15	09	2014	ISSUED FOR USE	NSH	DGR
AB	15	07	2014	ISSUED FOR CLIENT APPROVAL	NSH	MCR
AA	30	12	2013	ISSUED FOR REVIEW	NSH	MCR

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Client:
NEW GOLD INC.
AMEC Environment & Infrastructure
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Mississauga, Ontario, Canada L4Z 3K7



DRAWN BY: NSH
DESIGNED BY: NSH
CHECKED BY: MCR
REVIEWED BY: DGR
APPROVED BY: DGR

PROJECT: **RAINY RIVER PROJECT**
DETAILED DESIGN
PROJECT NO.: TC133921
REVISION NO.: **01**
DATE: DEC. 2013
SCALE: AS SHOWN
DRAWING NO.: 200






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SUMMARY POND AREA AND WATER DEPTH:

Elevations Table				
Minimum Elevation	Maximum Elevation	Area (m ²)	% Area	Water Depth
378.25	378.50	14,814	16.1%	0.00 - 0.25
378.00	378.25	11,957	13.0%	0.25 - 0.50
377.50	378.00	31,365	34.0%	0.50 - 1.00
377.00	377.50	23,215	25.2%	1.00 - 1.50
376.50	377.00	6,638	7.2%	1.50 - 2.00
376.00	376.50	4,260	4.6%	2.00 - 2.50
TOTAL		92,249		

- NOTES:
- ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
 - 1m EXISTING CONDITION CONTOURS HAVE BEEN AUTOMATICALLY GENERATED AND SMOOTHED BY AUTOCAD BASED ON LIDAR SURVEY DATA.
 - 0.5m EXISTING CONDITION CONTOURS HAVE BEEN MANUALLY SMOOTHED BASED ON LIDAR SURVEY DATA.
 - AN AMOUNT OF TOPSOIL SUFFICIENT TO COMPLETE THE WORKS SHALL BE STRIPPED FROM AREAS REQUIRING GRADING AND STOCKPILED FOR RE-USE. FLOWS SHALL BE MANAGED DURING CONSTRUCTION TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT TRANSPORT OFF-SITE.
 - MATERIAL GENERATED THROUGH CREATION OF REFUGE POOLS AND CONNECTOR CHANNELS SHALL BE REMOVED FROM THE POND AREA AND USED ON OTHER PORTIONS OF THE RAINY RIVER PROJECT OR CONTOURED TO THE LANDSCAPE ABOVE THE HIGH WATER LEVEL.
 - SEE DRAWING NO. 3098004-004400-A1-D50-0001 FOR DETAILS ON BOULDER CLUSTERS AND TREE PILES.

LEGEND

-  BOULDER CLUSTER
-  TREE PILE
-  NWL NORMAL WATER LEVEL
-  ZONE A - SCRUB-SHRUB WETLAND - 3,248 m²
-  ZONE B - EMERGENT WETLAND - 34,693 m²

VEGETATION RESTORATION NOTES:

- ALL AREAS EXCAVATED TO THE DEPTH OF MINERAL SOIL SHALL BE TREATED WITH A MINIMUM OF 100mm OF TOPSOIL / ORGANIC SOIL SALVAGED FROM SITE.
- PLACED TOPSOIL SHALL BE COMPACTED UTILIZING THE TRACK WEIGHT OF A CRAWLER TRACTOR OR DOZER. FURTHER MACHINERY TRAFFIC ATOP PLACED TOPSOIL SHALL BE MINIMIZED TO PREVENT OVER-COMPACTION.
- ANY SOIL COMPACTED DUE TO REPEATED MACHINERY ACCESS SHALL BE LOOSENED PRIOR TO SEED APPLICATION.
- ALL DISTURBED SOILS SHALL BE STABILIZED WITH A NURSE CROP OUTLINED IN TABLE 2.
- ZONE A AND B SHALL BE SEEDED WITH NATIVE WETLAND SEED MIX AT A RATE OF 5.5 kg/ha IN ADDITION TO NURSE CROP SEED.
- ZONE A SHALL BE PLANTED WITH NATIVE SHRUB CUTTINGS. APPROXIMATELY 50% OF ZONE A SHALL BE PLANTED WITH CUTTINGS AT A 0.75m SPACING. ZONE A PLANTING AREAS SHALL BE LOCATED AS SHOWN IN THE PLAN VIEW DRAWING.
- NATIVE SHRUB CUTTINGS SHALL BE TAKEN FROM WILLOW AND DOGWOOD SPECIES PRESENT ON SITE AND IN SURROUNDING AREA.
- NATIVE SHRUB CUTTINGS SHALL BE HARVESTED DURING THE PLANTS' DORMANT PERIOD AND SHALL BE TREATED WITH ROOTING HORMONE PRIOR TO PLANTING.
- NO PLANTING OR SEEDING IS REQUIRED WITHIN EXISTING BEAVER PONDS OR CONNECTING CHANNELS.
- SUBSTITUTIONS OF PLANT MATERIAL MUST BE APPROVED BY NEW GOLD'S ENVIRONMENTAL SPECIALIST.

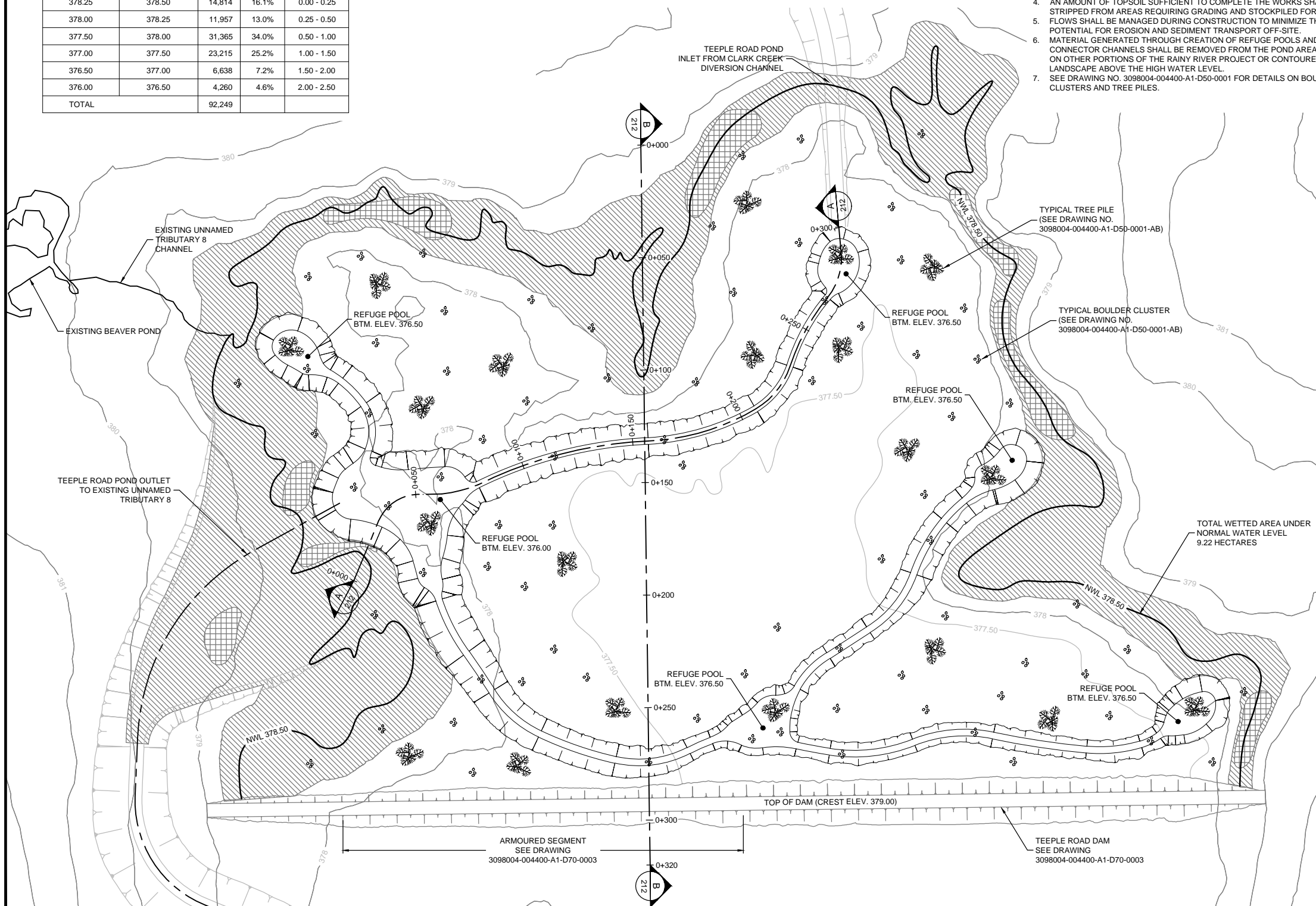


TABLE 1. MATERIAL SUMMARY

ZONE	MATERIAL	QUANTITY
DISTURBED AREAS	NURSE CROP SEED MIX	VARIES
A & B	WETLAND SEED MIX	20.9 kg
A	NATIVE SHRUB CUTTINGS*	2,887
-	BOULDER CLUSTER	78
-	TREE PILE	20

*CUTTINGS SHALL BE COMPRISED OF VARIOUS NATIVE WILLOW AND DOGWOOD SPECIES PRESENT ON SITE AND IN THE SURROUNDING AREA.

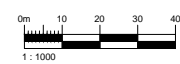
TABLE 2. NURSE CROP SEEDING

TIMING OF SEEDING	SELECTED SEED TYPE		
	LATIN NAME	COMMON NAME	APPLICATION RATE
POST-SPRING FRESHET TO AUG. 14	<i>Avena sativa</i>	Oats	30 kg/ha
AUG. 15 TO OCT. 15	<i>Triticum aestivum</i>	Winter Wheat	30 kg/ha

TABLE 3. WETLAND SEED MIX (APPLICATION RATE 5.5 kg/ha)

SPECIES	COMMON NAME	PERCENTAGE OF MIX (BY WEIGHT)
GRASSES (TOTAL 40% OF MIX)		
<i>Glyceria grandis</i>	Tall Manna Grass	8 - 10 %
<i>Panicum virgatum</i>	Switchgrass	12 - 13 %
<i>Elymus virginicus</i>	Virginia Wild Rye	12 - 13 %
<i>Leersia oryzoides</i>	Rice Cut Grass	5 - 6 %
SEDGES AND RUSHES (TOTAL 40% OF MIX)		
<i>Carex comosa</i>	Brittle Sedge	7 - 8 %
<i>Carex lacustris</i>	Lake Sedge	2 - 3 %
<i>Carex stricta</i>	Tussock Sedge	2 - 3 %
<i>Eleocharis palustris</i>	Marsh Spikerush	5 - 6 %
<i>Juncus torreyi</i>	Torrey's Rush	5 - 6 %
<i>Juncus canadensis</i>	Canadian Rush	5 - 6 %
<i>Scirpus validus</i>	Soft Stem Bulrush	7 - 8 %
<i>Scirpus cyperinus</i>	Woolgrass	3 - 4 %
FORBS (TOTAL 20% OF MIX)		
<i>Acorus americanus</i>	Sweet Flag	3 - 4 %
<i>Alisma subcordatum</i>	Water Plantain	3 - 4 %
<i>Asclepias incarnata</i>	Marsh Milkweed	2 - 3 %
<i>Sagittaria latifolia</i>	Broad-Leaved Arrowhead	2 - 3 %
<i>Sparganium eurycarpum</i>	Giant Bur Reed	7 - 8 %

TEEPEL ROAD POND PLAN VIEW
SCALE: 1:1000



3098004-004400-A1-D50-0006

REFERENCE DRAWINGS:
THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 3098004-004400-A1-D50-0001, 3098004-004400-A1-D50-0007, 3098004-004400-A1-D70-0003 AND 3098004-004400-A1-D70-0004.



REV	D	M	Y	ISSUE/REVISION DESCRIPTION	DES.	APPR.
-	-	-	-	-	-	-
01	14	11	2014	ISSUED FOR TENDER	NSH	DGR
00	15	09	2014	ISSUED FOR USE	NSH	DGR
AC	15	08	2014	ISSUED FOR CLIENT APPROVAL	NSH	MCR
AB	16	07	2014	ISSUED FOR CLIENT APPROVAL	NSH	MCR
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Client:
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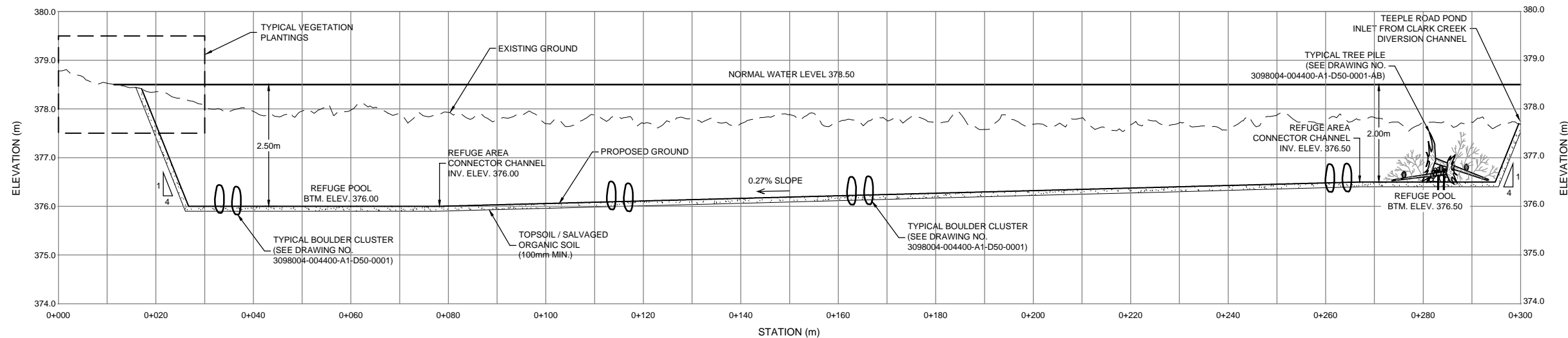


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DESIGNED BY: NSH
CHECKED BY: MCR
REVIEWED BY: DGR
APPROVED BY: DGR

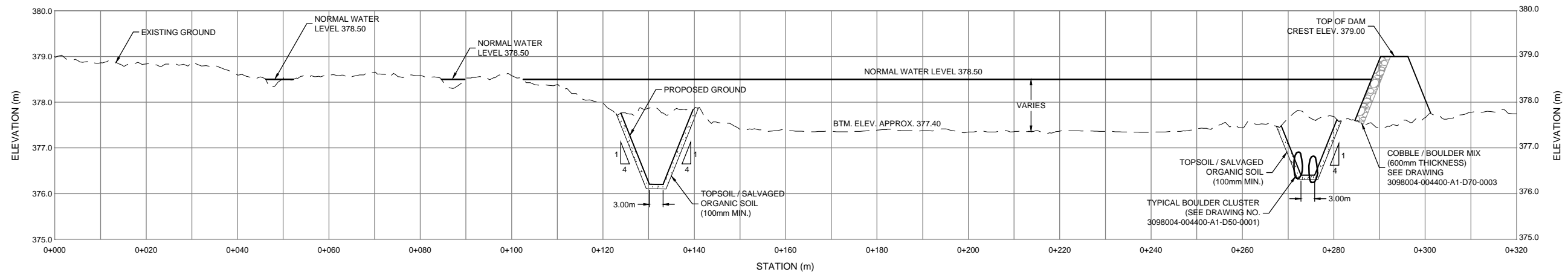
PROJECT:
**RAINY RIVER PROJECT
DETAILED DESIGN**
TITLE:
**TEEPEL ROAD POND
PLAN VIEW**

PROJECT NO.: TC133921
REVISION NO.: 01
DATE: JAN. 2014
SCALE: AS SHOWN
DRAWING NO.: 211

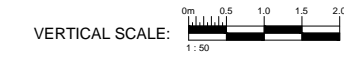
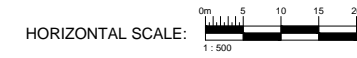
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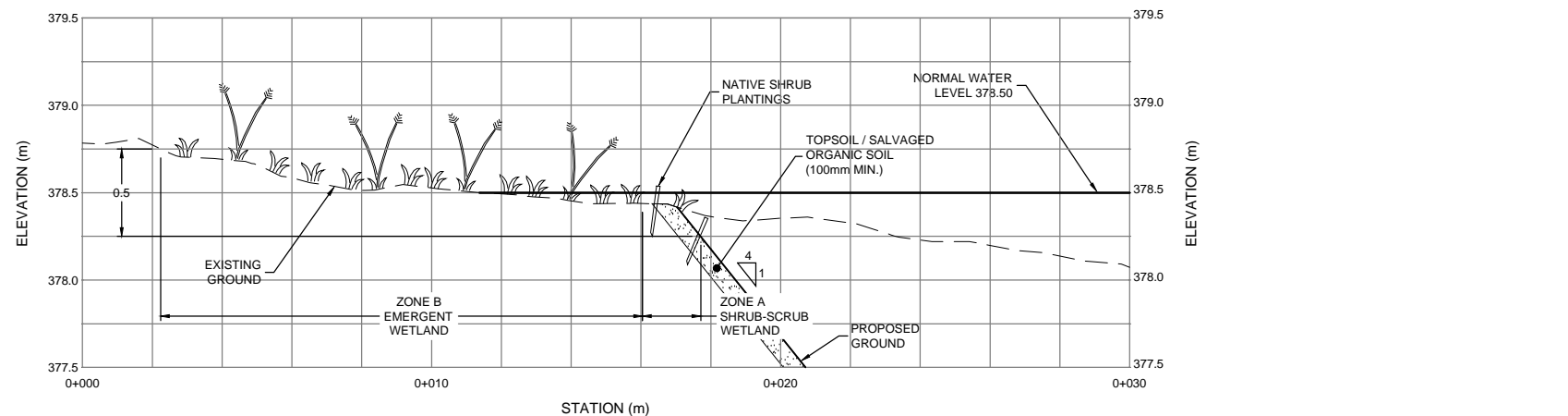
SECTION A-A: TEEPLE ROAD POND
SCALE: H=1:500 V=1:50



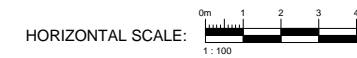
SECTION B-B: TEEPLE ROAD POND
SCALE: H=1:500 V=1:50



- NOTES:**
1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
 2. SEE DRAWING NO. 3098004-004400-A1-D50-0006 FOR NOTES.



TYPICAL VEGETATION PLANTINGS
SCALE: H=1:100 V=1:20



3098004-004400-A1-D50-0007

REFERENCE DRAWINGS:
THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 3098004-004400-A1-D50-0001, 3098004-004400-A1-D50-0006, 3098004-004400-A1-D70-0003 AND 3098004-004400-A1-D70-0004.



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AB	16	07	2014	ISSUED FOR CLIENT APPROVAL	NSH	MCR
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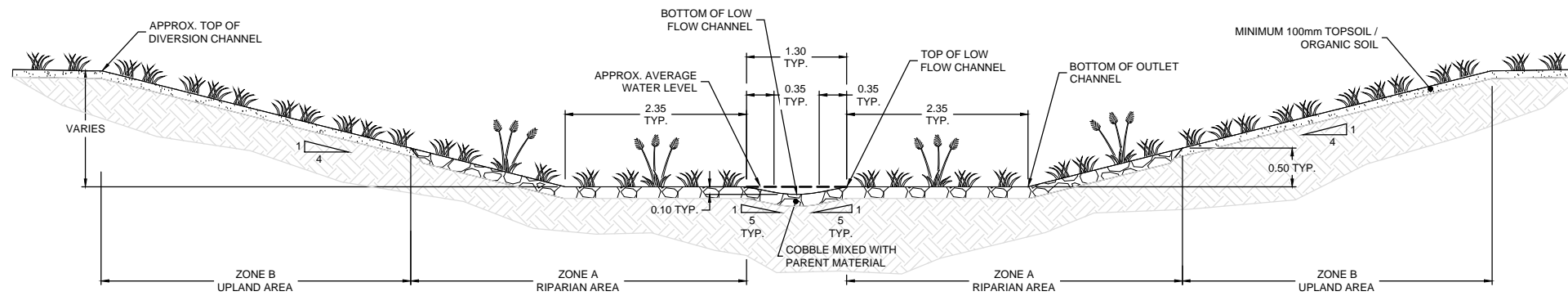
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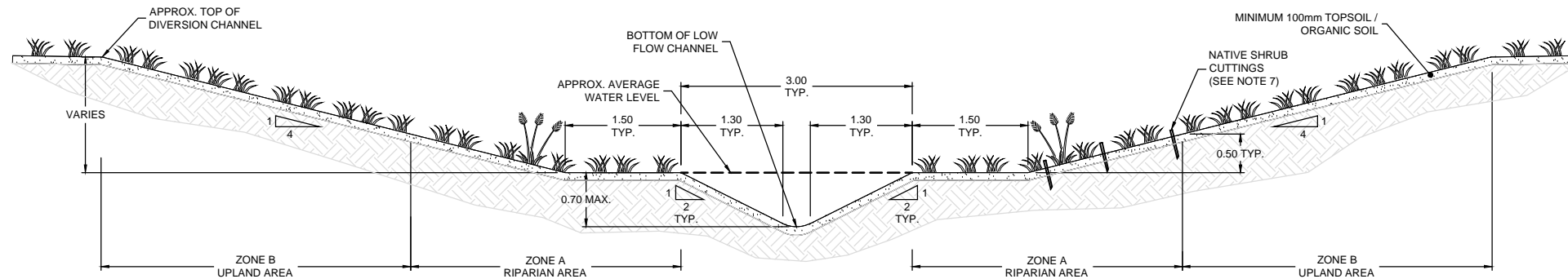
DRAWN BY: NSH
DESIGNED BY: NSH
CHECKED BY: MCR
REVIEWED BY: DGR
APPROVED BY: DGR

PROJECT: RAINY RIVER PROJECT
DETAILED DESIGN
TITLE: TEEPLE ROAD POND
CROSS SECTIONS

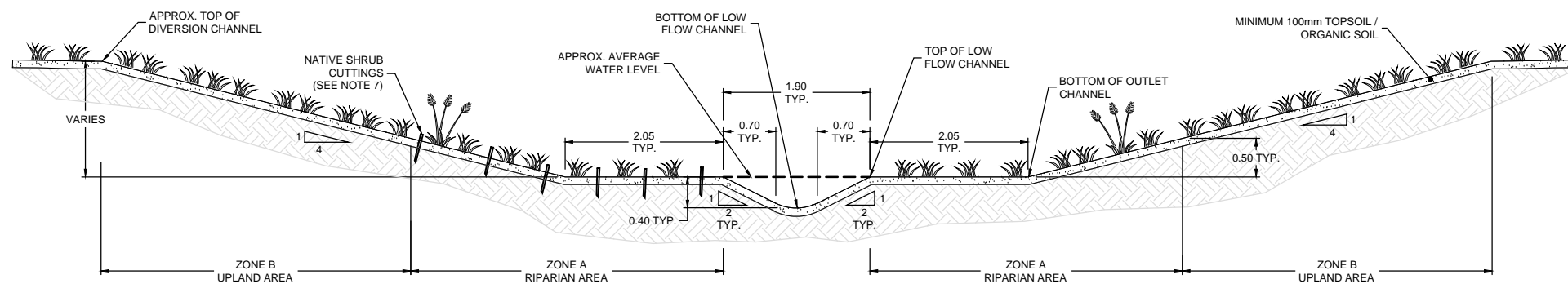
PROJECT NO.: TC133921
REVISION NO.: 01
DATE: JAN. 2014
SCALE: AS SHOWN
DRAWING NO.: 212



SECTION A-A: TYPICAL TOP OF RIFFLE SECTION
SCALE: H=1:40 V=1:40



SECTION B-B: TYPICAL POOL SECTION
SCALE: H=1:40 V=1:40



SECTION C-C: TYPICAL FLAT SECTION
SCALE: H=1:40 V=1:40

NOTES:

1. ALL UNITS ARE IN METRES UNLESS OTHERWISE NOTED.
2. AN AMOUNT OF TOPSOIL SUFFICIENT TO COMPLETE THE WORKS SHALL BE STRIPPED FROM AREAS REQUIRING GRADING AND STOCKPILED FOR RE-USE.
3. EXCESS MATERIAL TO BE REMOVED TO APPROVED STOCKPILE LOCATIONS OR CONTOURED INTO THE LANDSCAPE ABOVE THE HIGH WATER MARK.
4. FLOWS SHALL BE MANAGED DURING CONSTRUCTION TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT TRANSPORT OFF-SITE.
5. SEE DRAWING NO. 3098004-004400-A1-D50-0009 FOR MATERIAL SPECIFICATIONS FOR CONSTRUCTION OF ROCK RIFFLE GRADE CONTROLS.

VEGETATION RESTORATION NOTES:

1. ALL AREAS EXCAVATED TO THE DEPTH OF MINERAL SOIL SHALL BE TREATED WITH A MINIMUM OF 100mm OF TOPSOIL / ORGANIC SOIL SALVAGED FROM SITE.
2. PLACED TOPSOIL SHALL BE COMPACTED UTILIZING THE TRACK WEIGHT OF A CRAWLER TRACTOR OR DOZER. FURTHER MACHINERY TRAFFIC ATOP PLACED TOPSOIL SHALL BE MINIMIZED TO PREVENT OVER-COMPACTION.
3. ANY SOIL COMPACTED DUE TO REPEATED MACHINERY ACCESS SHALL BE LOOSENEED PRIOR TO SEED APPLICATION.
4. ALL DISTURBED SOILS SHALL BE STABILIZED WITH A NURSE CROP OUTLINED IN TABLE 2.
5. ZONE A SHALL BE SEEDED WITH NATIVE RIPARIAN SEED MIX AT A RATE OF 7.5 kg/ha IN ADDITION TO NURSE CROP SEED.
6. ZONE B SHALL BE SEEDED WITH NATIVE UPLAND SEED MIX AT A RATE OF 16.5 kg/ha IN ADDITION TO NURSE CROP SEED.
7. ZONE A SHALL BE PLANTED WITH NATIVE SHRUB CUTTINGS. CUTTINGS SHALL BE PLANTED IN CLUMPS OF 3 - 12 AT A 0.75m SPACING. A TOTAL OF 15-25% OF ZONE A SHALL BE PLANTED WITH THESE CUTTINGS.
8. NATIVE SHRUB CUTTINGS SHALL BE TAKEN FROM WILLOW AND DOGWOOD SPECIES PRESENT ON SITE AND IN SURROUNDING AREA.
9. NATIVE SHRUB CUTTINGS SHALL BE HARVESTED DURING THE PLANTS' DORMANT PERIOD AND SHALL BE TREATED WITH ROOTING HORMONE PRIOR TO PLANTING.
10. SUBSTITUTIONS OF PLANT MATERIAL MUST BE APPROVED BY NEW GOLD'S ENVIRONMENTAL SPECIALIST.

ZONE	SPECIES	COMMON NAME	TYPE OF MATERIAL	QUANTITY
A & B		NURSE CROP SEED MIX	SEED	42.3 kg
A		RIPARIAN SEED MIX	SEED	4.1 kg
B		UPLAND SEED MIX	SEED	14.2 kg
A	Various*	Various*	CUTTINGS	1,943

*CUTTINGS SHALL BE COMPRISED OF VARIOUS NATIVE WILLOW AND DOGWOOD SPECIES PRESENT ONSITE AND IN THE SURROUNDING AREA.

TIMING OF SEEDING	SELECTED SEED TYPE		
	LATIN NAME	COMMON NAME	APPLICATION RATE
POST-SPRING FRESHET TO AUG. 14	<i>Avena sativa</i>	Oats	30 kg/ha
AUG. 15 TO OCT. 15	<i>Triticum aestivum</i>	Winter Wheat	30 kg/ha

SPECIES	COMMON NAME	PERCENTAGE OF MIX (BY WEIGHT)
SHRUBS (TOTAL 5% OF MIX)		
<i>Alnus incana subsp. rugosa</i>	Speckled Alder	1 - 2%
<i>Ilex verticillata</i>	Winterberry Holly	1 - 2%
<i>Physocarpus opulifolius</i>	Ninebark	1 - 2%
<i>Rosa palustris</i>	Swamp Rose	1 - 2%
GRASSES (TOTAL 85% OF MIX)		
<i>Calamagrostis canadensis</i>	Bluejoint	2 - 3%
<i>Elymus riparius</i>	Riverbank Wild Rye	11 - 13%
<i>Elymus virginicus</i>	Virginia Wild Rye	18 - 19%
<i>Leersia oryzoides</i>	Rice Cut Grass	18 - 19%
<i>Poa palustris</i>	Fowl Bluegrass	11 - 13%
SEDGES AND RUSHES (TOTAL 15% OF MIX)		
<i>Juncus effusus</i>	Soft Rush	1 - 2%
<i>Carex scoparia</i>	Pointed Broom Sedge	2 - 3%
<i>Carex vulpinoidea</i>	Fox Sedge	5 - 6%
<i>Juncus tenuis</i>	Path Rush	1 - 2%
<i>Scirpus atrovirens</i>	Dark Green Bulrush	2 - 3%
<i>Scirpus cyperinus</i>	Woolgrass	1 - 3%
FORBS (TOTAL 15% OF MIX)		
<i>Asclepias incarnata</i>	Marsh Milkweed	3 - 4%
<i>Doellingeria umbellata</i>	Flat-Topped Aster	1 - 2%
<i>Eupatorium perfoliatum</i>	Common Boneset	1 - 2%
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	1 - 2%
<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed	3 - 5%
<i>Verbena hastata</i>	Blue Vervain	3 - 5%

SPECIES	COMMON NAME	PERCENTAGE OF MIX (BY WEIGHT)
SHRUBS (TOTAL 5% OF MIX)		
<i>Alnus incana subsp. rugosa</i>	Speckled Alder	1 - 2%
<i>Physocarpus opulifolius</i>	Ninebark	1 - 2%
<i>Aimophya nana</i>	Fragrant False Indigo	2 - 3%
GRASSES (TOTAL 85% OF MIX)		
<i>Andropogon gerardii</i>	Big Bluestem	9 - 10%
<i>Leersia oryzoides</i>	Rice Cut Grass	9 - 10%
<i>Elymus canadensis</i>	Nodding Wild Rye	21 - 22%
<i>Elymus virginicus</i>	Virginia Wild Rye	14 - 15%
<i>Panicum virgatum</i>	Switchgrass	11 - 12%
<i>Poa palustris</i>	Fowl Bluegrass	9 - 10%
<i>Sorghastrum nutans</i>	Indian Grass	9 - 10%
FORBS (TOTAL 10% OF MIX)		
<i>Asclepias incarnata</i>	Marsh Milkweed	1 - 2%
<i>Dalea purpurea</i>	Purple Prairie Clover	1 - 2%
<i>Desmodium canadense</i>	Canada Tick Trefoil	1 - 2%
<i>Helicopsis helianthoides</i>	Ox-eye	2 - 3%
<i>Rudbeckia hirta</i>	Black-eyed Susan	2 - 3%
<i>Verbena hastata</i>	Blue Vervain	1 - 2%

3098004-004400-A1-D50-0008

REFERENCE DRAWINGS:
THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 3098004-004400-A1-D50-0001, 3098004-004400-A1-D50-0009, AND 3098004-004400-A1-D70-0004.



REV	D	M	Y	ISSUE/REVISION DESCRIPTION	DES.	APPR.
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AC	13	08	2014	ISSUED FOR CLIENT APPROVAL	NSH	MCR
AB	16	07	2014	ISSUED FOR CLIENT APPROVAL	NSH	MCR
AA	10	01	2014	ISSUED FOR REVIEW	NSH	MCR

newgold RAINY RIVER PROJECT

Client: NEW GOLD INC.

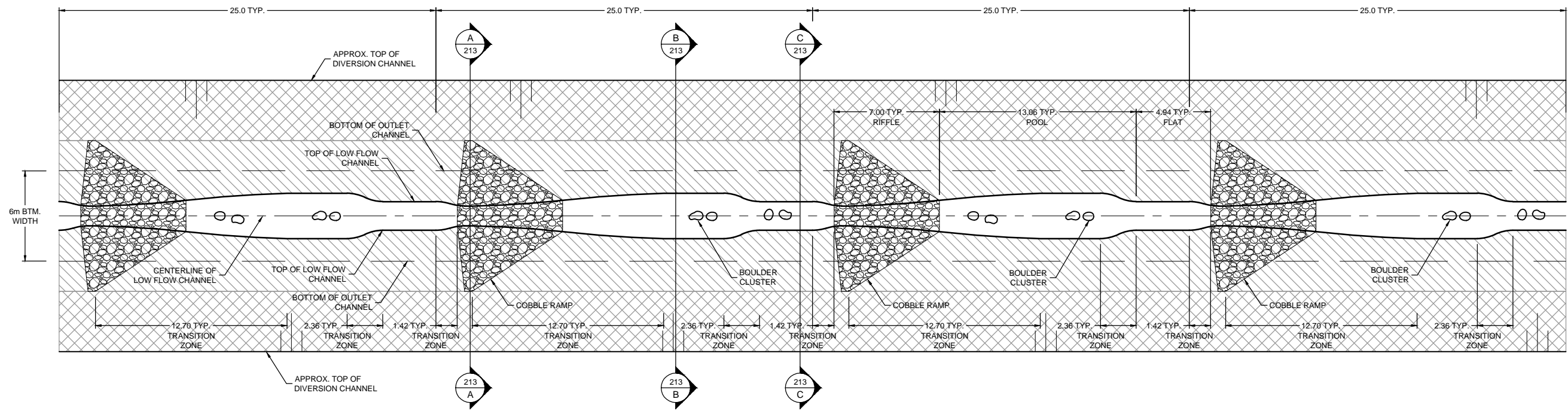
AMEC Environment & Infrastructure
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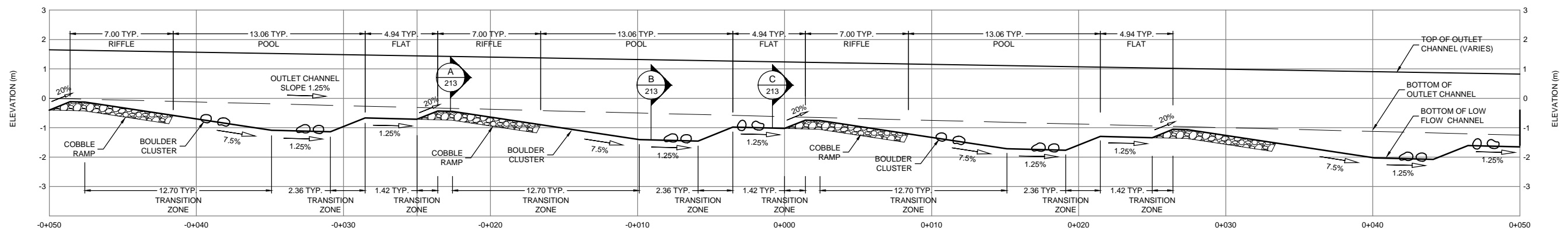
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DESIGNED BY: NSH
CHECKED BY: MCR
REVIEWED BY: DGR
APPROVED BY: DGR

PROJECT: RAINY RIVER PROJECT
DETAILED DESIGN
TITLE: TEEPLE ROAD POND OUTLET CHANNEL
TYPICAL CROSS SECTIONS

PROJECT NO.: TC133921
REVISION NO.: 01
DATE: JAN. 2014
SCALE: AS SHOWN
DRAWING NO.: 213



TYPICAL TEEPLE ROAD POND PLAN VIEW
SCALE : 1:150



TYPICAL TEEPLE ROAD POND OUTLET PROFILE
SCALE : H=1:150 V=1:75

LEGEND

- BOULDER CLUSTER (42)
- ZONE A - RIPARIAN AREA - 5,465 m²
LOW FLOW CHANNEL TO 0.5m ABOVE DIVERSION BOTTOM
- ZONE B - UPLAND AREA - 8,627 m²
0.5m ABOVE DIVERSION BOTTOM TO TOP OF CHANNEL

NOTES:

1. SEE DRAWING NO. 3098004-004400-A1-D50-0008 FOR NOTES.
2. ROCK RIFFLE GRADE CONTROLS SHALL BE CONSTRUCTED OF 70% ROCK AS SPECIFIED IN TABLE 1 MIXED WITH 30% PARENT MATERIAL PRIOR TO PLACEMENT.
3. PARENT MATERIAL SHALL CONSIST OF APPROXIMATELY 60% MINERAL SOIL AND 40% TOPSOIL / ORGANIC SOIL.

TABLE 1: ROCK GRADATION	
PERCENT FINER (BY SIZE)	PARTICLE SIZE (mm)
100	164
95	152
84	127
65	87
50	59
35	35
16	11
5	2

3098004-004400-A1-D50-0009

REFERENCE DRAWINGS:
THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NO. 3098004-004400-A1-D50-0001, 3098004-004400-A1-D50-0008, AND 3098004-004400-A1-D70-0004.



REV	D	M	Y	ISSUE/REVISION DESCRIPTION	DES.	APPR.
01	14	11	2014	ISSUED FOR TENDER	NSH	DGR
00	15	09	2014	ISSUED FOR USE	NSH	DGR
AB	16	07	2014	ISSUED FOR CLIENT APPROVAL	NSH	MCR
AA	10	01	2014	ISSUED FOR REVIEW	NSH	MCR

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DRAWN BY: NSH
DESIGNED BY: NSH
CHECKED BY: MCR
REVIEWED BY: DGR
APPROVED BY: DGR

PROJECT:
**RAINY RIVER PROJECT
DETAILED DESIGN**
TITLE:
**TEEPLE ROAD POND OUTLET CHANNEL
TYPICAL PLAN AND PROFILE**

PROJECT NO.: TC133921
REVISION NO.: 01
DATE: JAN. 2014
SCALE: AS SHOWN
DRAWING NO.: 214

\\ms-pst-prod01\proj\2013\133921 - RRP - Feasibility Study Update\CAD\Plan_Habitat_Drainage\Teeples\TP - Diversion - Teeples Channel\Teeples\TP - PLAN-HPD - Nov. 14, 2014_3d.dwg - nsh.nalldg