The Field Representative will check that the rip rap fill is placed to the lines, slopes and elevations shown on the construction drawings. Erosion protection layers will be shaped with a wide-bucket excavator to produce a planar surface with consistent grade. Rip rap should be placed within seven days of completion of the slope excavation or foundation preparation on which it is to be placed. In general, fill materials may be placed on frozen ground, provided they are free of ice and snow. The rip rap and bedding can be placed and spread in a single lift. Nominal compaction will result from the systematic routing of the spreading equipment only.

The rip rap placed on the bedding layer will be levelled and dressed in such a manner that segregation of the material into zones of uniform particle size does not occur and that the completed layer is stable, with no tendency to move or slide. The larger particle sizes should be evenly scattered throughout the zone, with the smaller particles filling the voids between the larger particles to form a uniform zone of interlocked particles with no voids through which the underlying material is visible. The finished surface should be uniform and free from undulations and depressions.

The Field Representative will take samples of the rip rap materials both before and after placement and undertake required testing (to be detailed in the technical specifications) to confirm that the material meets the specifications. Control of rip rap gradation will generally be undertaken by visual inspection.

7.3.7 Surveying

Surveyors will be required to undertake the following tasks with respect to the construction of the reclamation work:

- Layout of survey control points to be used for later construction work;
- Cut stakes for spillway excavations and other channels;
- Grade stakes layout for the various layers within the cover, spillways and for surface swales;
- Validation of various material thicknesses;
- Topographic surveys and the calculation of quantities placed for the various materials;
- Coordinates and elevations of all instrumentation installed; and,
- Production of final as-built drawings in both plan and section views.

The as-built drawings will be included in the As-built Report as reviewed in Section 7.3.9.

7.3.8 Instrumentation

As discussed in more detail in Section 8, some instrumentation will be installed into and through the various reclamation works in order to provide performance monitoring. Instruments that are currently proposed include the following:

- Settlement monitoring points;

- Thermistors;
- Frost Gauges; and,
- Shallow monitoring wells.

The Field Representative, in combination with the Site Supervisor, will be required to coordinate the installation of these instruments, where and when practical around the construction activities. Site surveyors will then be required to record coordinates and elevations for the instruments installed.

7.3.9 As-Built Reports

As required in the Water License, an As-built Report will be produced the major elements of the reclamation plan for the WTDA. These reports will contain the following information:

- Summary of construction schedule;
- Summary of quantities and test results on materials placed;
- Summary of technical decisions made as they may deviate from original design specifications and/or intent; and
- A selection of construction photos.

The objective of the as-built report is to confirm that the reclamation works have been constructed in accordance with their design intent. Any deviations from the original design basis, and the associated rationale for the deviation, will also be included. This report will be stamped by a professional engineer, registered to practice in Nunavut.

8.0 PERFORMANCE MONITORING

In accordance with the "Guidelines for Abandonment and Restoration of Mines in the NWT" (1990), a performance monitoring program has been developed to provide a means of measuring the effectiveness of the reclamation works at the WTDA. The monitoring requirements during reclamation and closure periods are fully detailed in the Monitoring Requirements Report (Water License requirement Part G, Item 9).

In general, the monitoring program provides for performance monitoring during the 2 year Reclamation Period and for a subsequent 5 year Closure Period. During the Reclamation Period, worker presence at the mine site is anticipated for construction monitoring and general reclamation activities. This presence will enable the proposed monitoring programs to be carried out by the on-site personnel under the direction of an Environmental Coordinator and geotechnical engineer. During the Closure Period, performance monitoring will be conducted to determine the success of reclamation measures. Continuous worker presence at the mine site is not planned during the closure period and environmental monitoring programs will be carried out during regular site visits and possibly utilizing trained, local field assistants and staff hired from nearby Arctic Bay.

Table 18 outlines the proposed monitoring methods and components for the surface structures and reclamation works. Figure 26 provides the location of existing instrumentation and new instrument that will be installed at the WTDA.

Surface water released from the reclaimed WTDA into Twin Lakes Creek is currently monitored at Station 159-4 (Figure 27), as required by the Water Licence. Monitoring at this location will continue through the Reclamation and Closure Periods in order to assess any influences that the reclaimed facilities may have on water quality, beyond those assessed in Appendix VII, provided herein.

As described in the Monitoring Requirements Report, the monitoring schedules will be assessed on an on-going basis and modified as appropriate to ensure that site conditions are adequately evaluated.

8.1 Reclamation Period Monitoring

The majority of the monitoring completed during the reclamation period associated with the reclamation works will involve quality assurance/quality control of construction of the reclamation covers for tailings, excavation of the spillway channel, excavation of the outlet channel and cover and relocating Reservoir shoreline tailings. Detailed construction information will include the following information:

- cover thickness, compaction, moisture content and grain size distribution;
- grades and elevations for the spillway, channel and drainage swales;
- side slopes of spillway and channel excavations;
- material present in base of spillway and channel excavation (bedrock versus overburden); and,
- bedding and rip rap materials placed for erosion protection.

Monitoring of instrumentation will be conducted at the required frequency noted in Table 19, subject to their date of installation.

The schedule for water quality monitoring at Station 159-4 (outflow for the Polishing Pond) through the Reclamation Period will remain the same as is required under the current Water Licence. Hence, daily monitoring of flow and field parameters (pH, temperature, conductivity) plus weekly monitoring of chemical parameters (total metals, sulphate and total suspended solids), will be undertaken. Analyses for total metals and sulphate will be performed at an accredited, off-site laboratory since the on-site assay laboratory will no longer be operational.

8.2 Closure Period Monitoring

Monitoring during the closure period will focus on collecting necessary information to evaluate the performance and effectiveness of reclamation works. This will include the collection of ground temperature and water quality information, as well as observing the physical condition of the reclamation works.

The monitoring schedule for the Closure Period is detailed in Table 20. The monitoring schedule is planned to be reduced through the Closure Period in anticipation of the data verifying the effectiveness and satisfactory performance of the reclamation works. All thermistors will be monitored quarterly during the five year period. Frost gauges will be read every two weeks for years 1 to 3. Geotechnical inspections will occur in the spring and fall for year 1 reducing to once per year for years 2 through 5. During the geotechnical inspection, visual observations of cover deformation, performance of spillway and channel excavation side slopes will be recorded. In-situ samples of the armour sand and gravel, shale and underlying tailings will be collected to assess the performance of the reclamation cover. The results of the performance monitoring program will be documented and submitted to the Nunavut Water Board as a component of the annual environmental report.

The schedule for water quality monitoring at Station 159-4 through years 1 and 2 of the Closure Period is reduced in recognition of the completion of reclamation activities. The schedule calls for weekly monitoring of flow and field parameters (pH, temperature, conductivity) plus monitoring every two weeks for chemical parameters (total metals, sulphate and total suspended solids). Analyses for total metals and sulphate will be performed at an accredited, off-site laboratory since the on-site assay laboratory will no longer be operational.

The schedule for water quality monitoring at Station 159-4 through years 3 to 5 of the Closure Period is reduced slightly in anticipation of good water quality. The schedule calls for monitoring of flow and field parameters (pH, temperature, conductivity) plus monitoring for chemical parameters (total metals, sulphate and total suspended solids) every two weeks. Analyses for total metals and sulphate will be performed at an accredited, off-site laboratory since the on-site assay laboratory will no longer be operational.

Implicitly included in the monitoring program is the climatic data recorded at the Nanisivik AES Station. Yearly records of temperature and precipitation values will be assessed as context for evaluating the performance of the reclamation works.

9.0 CONTINGENCY PLANS

Several contingency plans have been developed in order to address performance issues that may be identified during the reclamation and closure monitoring periods. Potential issues with the following reclamation works have been developed as outlined below:

- Talik freeze-back;
- Physical performance of reclamation covers;
- Physical condition of West Twin Dike;
- Water quality;
- Physical performance of West Twin Dike Spillway;
- Physical performance of West Twin Outlet Channel and overflow weir; and
- Physical performance of Reservoir shoreline erosion protection.

The consequences of each issue and suggested mitigation approaches are identified in Table 21. Common to all suggested mitigation measures is identification of the root cause and appropriate reaction to limit the environmental consequences of each issue. The mitigation measures range between performing localized maintenance of the covers to treatment of Reservoir water.

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TABLES

Table 1: Summary of Component Closure Plan Reports

Water License Reference	Report
Part G, Item 3	Final Closure and Reclamation Plan
Part G, Item 4	Reclamation Cover Designs
Part G, Item 5	West Twin Disposal Area Talik Investigation
Part G, Item 6	Borrow Areas Development and Closure Plan
Part G, Item 7	West Twin Disposal Area Surface Cell Spillway Design
Part G, Item 8	Waste Rock and Open Pit Closure Plan
Part G, Item 9	Reclamation and Closure Monitoring Plan
Part G, Item 12	Annual Review of Reports G3 to G9 and Submission, for Approval, of Proposed Modifications
Part G, Item 13	Report on Environmental Site Assessment (ESA) Program
Part G, Item 14	Human Health and Ecological Risk Assessment (HHERA)
Part G, Item 15	West Twin Disposal Area Closure Plan
Part G, Item 16	Underground Mine Solid Waste Disposal Plan
Part G, Item 17	Landfill Closure Plan
Part G, Item 20	Annual Review of Reports G15 to G17 and Submission, for Approval, of Proposed Modifications
Part G, Item 21	Annual Reclamation Liability Cost Update
Part G, Item 22	2007 Terms of Reference for Comprehensive Assessment of Mine Site Remediation

Table 4: Summary of Lab Test Results

				Nanisivik Mine Lab				Almor Laboratory Testing							
Borehole	Location	Depth Below Grade (m)	Soil Type	Bulk Density (kg/m³)	Moisture Content (%)	% Sand and Gravel	% Silt and Clay	Moisture Content (%)	% Gravel	% Sand	% Silt	% Clay	Gs	$Is_{(50)}$ Diametral/ Axial (MPa)	Atterberg Limits
BGC02-01	Surface Cell	10.0	Tailings		19.6	39.0	61.0		0.0	9.3	90.7	0.0	4.02		
		11.3	Tailings		20.1	44.5	55.5								
		15.2	Tailings		23.8	9.8	90.2								
BGC02-02		13.1	Tailings		17.8	78.7	21.3		0.0	13.5	86.5	0.0	4.02		
		14.6	Tailings		16.1	29.3	70.7								
		15.2	Lake Bed Sediments		16.3	92.4	7.6								
		15.8	Dolostone											5.2/ 9.9	
BGC02-03		16.2	Tailings		22.0	28.3	71.7								
		16.5	Dolostone											4.9/ 9.2	
BGC02-06		3.8	Tailings	2675	24.7	14.6	85.4								
		4.0	Tailings	2525	20.8	48.2	51.8								
		14.6	Tailings	2542	19.5	8.0	92.0		0.0	4.3	95.7	0.0	4.10		
		17.4	Dolostone											4.6/ 9.5	
BGC02-07		24.4	Lake Bed Sediments		20.7	93.0	7.0								
BGC02-11		2.1	Tailings	2795	18.5	41.1	58.9								
		6.1	Tailings	2887	18.9	25.9	74.1		0.0	30.1	69.9	0.0	4.15		
		7.9	Tailings	3224	16.0	83.3	16.7								
		9.4	Tailings	2861	19.6	13.4	86.6		0.0	6.6	90.4	3.0	3.99		
		24.7	Dolostone											5.7/ 8.6	
BGC02-12		24.1	Lake Bed Sediments		23.8	87.7	12.3		0.0	64.8	28.1	7.1	2.69		
		24.7	Dolostone											5.4/ 10.4	
BGC02-13		1.8	Tailings	3526	19.6	42.0	58.0								
		4.0	Tailings	3208	17.8	72.7	27.3		0.0	74.6	25.4	0.0	4.46		
		6.4	Tailings	2673	17.5	65.8	34.2								
		26.0	Tailings		13.2	91.4	8.6								
BGC03-01		2.3	Tailings		17.5										
		6.9	Tailings		17.2										
		9.9	Tailings		20.0										
BGC03-02		0.8	Tailings		13.7	91.9	8.1								
		1.1	Tailings		12.4	84.1	15.9								
		3.8	Tailings		14.4	77.6	22.4								
		5.0	Tailings		16.4	76.3	23.7								
		5.3	Tailings		13.4	85.0	15.1								
		8.4	Tailings		13.3	68.3	31.7								
BGC03-07		1.4	Tailings		11.6	84.3	15.7								
		2.9	Tailings		15.2	59.1	40.9								
		3.2	Tailings		19.7	86.8	13.2								
		5.9	Tailings	2558	26.1	35.5	64.5								
		9.0	Tailings		38.7	96.7	3.4								
		11.7	Tailings		32.7	61.6	38.4								
		13.3	Tailings		20.2	75.7	24.3								
		16.4	Tailings	2337	21.1	58.5	41.5								
		17.5	Tailings	2724	21.4	33.3	66.7								
		23.9	Lake Bed Sediments					10.3	18.9	57.2	19.8	4.1	2.83		
		24.5	FSB												
BGC03-08		1.3	Tailings		14.2	79.8	20.2								
		2.9	Tailings		16.5	78.3	21.8								
		3.6	Tailings		18.2	49.8	50.2								
		5.6	Tailings		15.6	81.9	18.1								
BGC03-09		1.4	Tailings		14.0	86.6	13.4								
		2.3	Tailings		15.8	77.3	22.7								
		4.4	Tailings		18.3	81.2	18.8								
		5.9	Tailings		17.4	30.3	69.7								
		8.1	Tailings		19.8	33.8	66.3								
		10.5	Tailings		19.2	45.7	54.3								
BGC03-10		1.7	Tailings	2849	13.4	57.2	42.9								
		3.2	Tailings	2581	15.6	32.2	67.8								
		4.4	Tailings	3075	14.8	73.4	26.6								
		27.6	Tailings		12.3	82.3	17.7								
		28.2	Tailings		11.7	68.7	31.3								
BGC03-11		1.7	Tailings		11.2	92.5	7.5								
		2.8	Tailings		12.8	67.2	32.8								
		4.1	Tailings		15.5	83.7	16.3								
		19.7	Tailings		8.0	87.4	12.6								
		20.6	Tailings		13.4	92.4	7.6								
		20.6	Tailings		11.8	92.0	8.0								
		24.4	Bedrock												
BGC03-12		0.7	Tailings		4.9	80.0	20.0								
		4.4	Tailings	2743	17.2	72.0	28.0								
		5.0	Tailings		15.7	57.0	43.0								
		5.9	Tailings	2823	17.3	60.5	39.6								
		8.2	Tailings		17.0	43.7	56.3								
		10.2	Tailings	2809	14.1	75.4	24.6								
		12.0	Tailings	2790	15.8	28.8	71.2								

Table 4 Cont.: Summary of Lab Test Results

				Nanisivik Mine Lab				Almor Laboratory Testing							
Borehole	Location	Depth Below Grade (m)	Soil Type	Bulk Density (kg/m^3)	Moisture Content (%)	% Sand and Gravel	% Silt and Clay	Moisture Content (%)	% Gravel	% Sand	% Silt	% Clay	Gs	$Is_{(50)}$ Diametral/ Axial (MPa)	Atterberg Limits
BGC03-13	Surface Cell	0.8	Tailings	2462	15.7	76.3	23.7								
		2.9	Tailings		11.4	89.2	10.8								
		3.5	Tailings		16.3	81.9	18.1								
		5.0	Tailings		13.3	81.1	18.9								
		7.2	Tailings					17.8							
		16.1	Tailings	2562	23.0	31.3	68.8								
		16.3	Lake Bed Sediments					10.9							
		16.4	Dolostone												
BGC03-14		1.1	Tailings		13.8	41.9	58.1								
		2.9	Tailings		15.1	83.5	16.5								
		4.7	Tailings		14.7	91.2	8.8								
		8.1	Tailings			75.9	24.1								
		13.0	Tailings		18.6	86.5	13.6								
BGC03-15		2.3	Tailings		14.6	85.3	14.7								
		2.9	Tailings		14.5	88.5	11.5								
		10.6	Tailings		16.3	84.6	15.4								
		11.4	Tailings	2744	19.6	44.2	55.8								
		14.3	Tailings		19.0	53.0	47.0								
		16.3	Tailings	2608	18.8	25.8	74.2								
		16.5	Dolostone												
BGC03-20		1.8	Tailings			80.5	19.6								
		2.1	Tailings		17.9	57.5	42.5								
		4.5	Tailings		21.2	31.9	68.1								
		5.3	Tailings			36.3	63.7								
		5.6	Tailings					14.0							
		8.7	Tailings		24.3	16.0	84.0								
		8.4	Tailings		21.9	16.1	83.9								
		10.6	Tailings					15.7	0.0	25.0	73.4	1.6	3.9		
		19.7	Lake Bed Sediments		21.1	92.8	7.2								
		20.0	Lake Bed Sediments		19.0	83.7	16.3								
BGC03-21		1.5	Ice and Tailings			67.5	32.5								
		1.7	Ice and Tailings		69.9	17.1	82.9								
		4.1	Tailings		15.1	89.2	10.8								
		5.0	Tailings		17.4	69.1	30.9								
		5.6	Tailings		19.3	66.2	33.8								
		8.8	Tailings		30.4	30.2	69.9								
		10.3	Tailings					18.5	0.0	7.5	90.1	2.4	3.9		
		14.5	Tailings					12.0	81.6		18.4				
BH 10		4.75	Tailings			30.3	69.7								
		14.4	Tailings			81.2	18.8								
		30.2	Lake Bed Sediments			96.4	3.6								
BGC02-08	Toe of WT Dike	1.5	Tailings	3366	18.5	34.2	65.8								
		3.0	Tailings	2748	31.3	18.6	81.4		0.0	5.3	92.7	2.0	4.14		
		4.0	Tailings		17.1	15.9	84.1								
		4.6	Lake Bed Sediments		9.0	85.6	14.4								
		6.1	Lake Bed Sediments		9.9	84.7	15.3								
BGC02-10		4.9	Tailings	3102	23.9	10.1	89.9								
		5.2	Tailings	3190	21.5	28.7	71.3								
BGC03-18		1.7	Tailings		16.8	83.5	16.5								
		2.9	Tailings		26.2	89.1	10.9								
		4.1	Tailings		16.7	84.6	15.4								
		6.0	Tailings		22.9	45.5	54.5								
		6.9	Lake Bed Sediments		31.6	81.1	18.9								
		8.4	Dolostone												
BGC03-19		1.4	Tailings			29.8	70.2								
		2.7	Tailings		17.1	81.0	19.0								
		3.5	Tailings		19.2	83.2	16.8								
		4.2	Tailings		23.4	98.9	1.1								
		5.1	Tailings		24.2	30.8	69.2								
		5.9	Tailings		16.5	84.2	15.8								
		7.5	Tailings		15.8	80.9	19.1								
		9.3	Tailings		16.3	47.6	52.4								
		9.6	Lake Bed Sediments					36.7							
BGC02-09	TC Dike	7.0	Tailings	2988	15.0	93.9	6.1								
		8.8	Tailings	3062	14.9	95.9	4.1								
		10.1	Tailings	3192	15.6	95.6	4.4								
		13.7	Tailings	2141	15.4	68.2	31.8								
		14.3	Tailings	2128	17.2	16.7	83.3								
		29.9	Tailings		13.3	67.3	32.7								
BGC03-22		4.1	Tailings		10.4	88.7	11.3								
		4.4	Tailings		5.2	93.0	7.0								
		5.3	Tailings		12.0	71.5	28.5								
		7.0	Tailings			83.3	16.7								
		9.0	Tailings		11.0	92.3	7.8								
		11.7	Tailings		11.0	84.6	15.4								
		16.3	Tailings												
		17.8	Tailings		14.5	65.4	34.6								
		27.4	Lake Bed Sediments		50.8	77.4	22.7								

Table 5: Results of pH/Conductivity Testing on Pore Water samples from Surface Cell

	Jul-99		2001		September 2002		19-Aug-03	
Monitoring Well/ Station	**pH**	**Conductivity (μS/cm)**	**pH**	**Conductivity (μS/cm)**	**pH**	**Conductivity (μS/cm)**	**pH**	**Conductivity (μS/cm)**
BGC02-04					10.7	> 20,000		
BGC02-05					10.4	>20,000		
BGC03-12							9.2	4110
BGC03-14							10.4	6230
TC13 (seepage)	6.7	3700						
TC18 (seepage)	6.6	5350						
Station 159-2 (Reclaim Pump House)			8.8 to 12.2	3450 to 5500				

Table 6: Summary of Water Quality Testing

	Water	Ice
pH	8.73 to 10.7	-
SO_4	575 mg/L to 1390 mg/L	<1 mg/L to 14 mg/L
$Cu_{(T)}$	0.014 mg/L to 0.09 mg/L	0.842 mg/L
$Cu_{(D)}$	<0.006 mg/L	-
$Fe_{(T)}$	1.68 mg/L to 30 mg/L	38.3 mg/L
$Fe_{(D)}$	<0.006 mg/L to 0.013 mg/L	-
$Pb_{(T)}$	0.517 mg/L to 3.32 mg/L	14.0 mg/L
$Pb_{(D)}$	<0.025 mg/L	-
$Zn_{(T)}$	0.250 mg/L to 4.75 mg/L	5.36 mg/L
$Zn_{(D)}$	0.013 mg/L to 0.025 mg/L	-

Note: **(D) – Dissolved Value**
(T) – Total Value

Table 7: Summary of Material Volumes Required for WTDA Reclamation Covers

Area	Shale (Cover) (m^3)	Twin Lakes Sand and Gravel (Armour) (m^3)	Rip Rap (m^3)	Bedding (m^3)
Surface Cell tailings and crest of West Twin Dike	400,000	95,000	-	-
Downstream face of West Twin Dike	5,000	11,000	-	-
Tailings at the toe of West Twin Dike	33,500	7,500	-	-
Transition zone tailings at the toe of West Twin Dike	2,500	-	750	200
Test Cell tailings and Test Cell Dike	144,000	26,000	-	-
Transition zone tailings at toe of Test Cell Dike	5,000	-	3250	550

Note: All quantities are neat and in-place.

Table 8: Key Water Levels – West Twin Lake After Closure

Water Level during PMP conditions (MWL):	Elev. 370.8 m
Water Level during 100-year Storm:	Elev. 370.4 m
Normal Water Level (NWL):	Elev. 370.2 m
Minimum (Low) Water Level (LWL):	Elev. 370.0 m

Table 9: Wave Height Calculations and Shoreline Erosion Protection

Parameters	Reservoir (West Twin Lake)
Effective Fetch (km)	0.32
Design Wind Speed (km/h)	112.6
Design Wave Height (m)	0.40
Bank Slope	**Required Mean Stone Size (mm)**
4H:1V	200

Notes:

1. Constructed slopes steeper than 4H:1V are not recommended for long-term stability. If in the field, it is understood that a steeper slope is required locally, appropriate design details will have to be developed for the specific application.

2. For slopes flatter than 4H:1V somewhat smaller rip rap could be used. However, for simplicity, a single gradation is recommended.

3. Design wind speed source: Environment Canada.
4. Wind speed correction factor is 1.07, due to fetch length.
5. Median stone size calculated considering specific gravity = 2.65.

Reference: Smith (1995).

Table 10: Rip Rap and Bedding Material Grain Size Specifications

Particle Diameter (mm)	Material Type and Percent Passing			
	Type 1 Rip Rap (D_{50} – 300 mm)	**Type 1A Rip Rap (D_{50} – 200 mm)**	**Type 2 Bedding /Erosion Protection (D_{50} – 100 mm)**	**Type 3 Filter Sand and Gravel (D_{50} – 25 mm)**
Maximum Particle Size (mm)	600	450	300	300
Median Particle Size, D_{50} (mm)	300 min.	200 min.	100 min.	See below
15% Finer than, D_{15} (mm)	450 max.	150 max.	75 max.	

Note:

1. The fraction finer than 75 mm, shall have less than 5% passing the US No. 200 sieve (0.075mm).

2. The gradation specification for the shale and Twin Lakes sand and gravel is provided in the Reclamation Covers Design report.

Type 3 Filter	
Sieve Size (mm)	Percent Passing
75	100-75
25.4	70-40
19	67-40
12.5	55-25
9.5	45-12
4.75	35-0
2.36	30-0
1.18	23-0
0.300	13-0
0.150	8-0
0.075	5-0

Table 11: Peak Flow Conditions – West Twin Outlet Channel

Parameter	Precipitation Condition	
	100-yr	PMP
Inputs:		
Peak flow (m^3/s)	*1.7*	*6.5*
Channel Slope (%)	*0%*	*0%*
Width (m)	*7*	*7*
Peak Flow Depth (m)	0.20	0.60
Peak Flow Velocity (m/s)	1.5	1.5

Table 12: Erosion Protection Requirements – West Twin Outlet Channel

Material Exposed	Erosion Protection Layers (Thickness)
Intact Rock	none
Frost Shattered Rock	Type 1A (0.45 m) ON Type 2 (0.30 m)
Overburden	Type 1A (0.45 m) ON Type 2 (0.30 m) ON Type 3 (0.15 m)

Notes:

1. Thicknesses are measured perpendicular to slope
2. Material Descriptions
   - Type 1A – Rip Rap, D_{50} = 200 mm
   - Type 2 – Bedding Material, D_{50} = 100 mm
   - Type 3 – Filter – Sandy Gravel
3. D_{50} – mean particle size