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1-18 stope void(s) backfilling underground implementation plan

Working implementation plan

Revision 8 – Nov 19, 2013



Key points of implementation plan

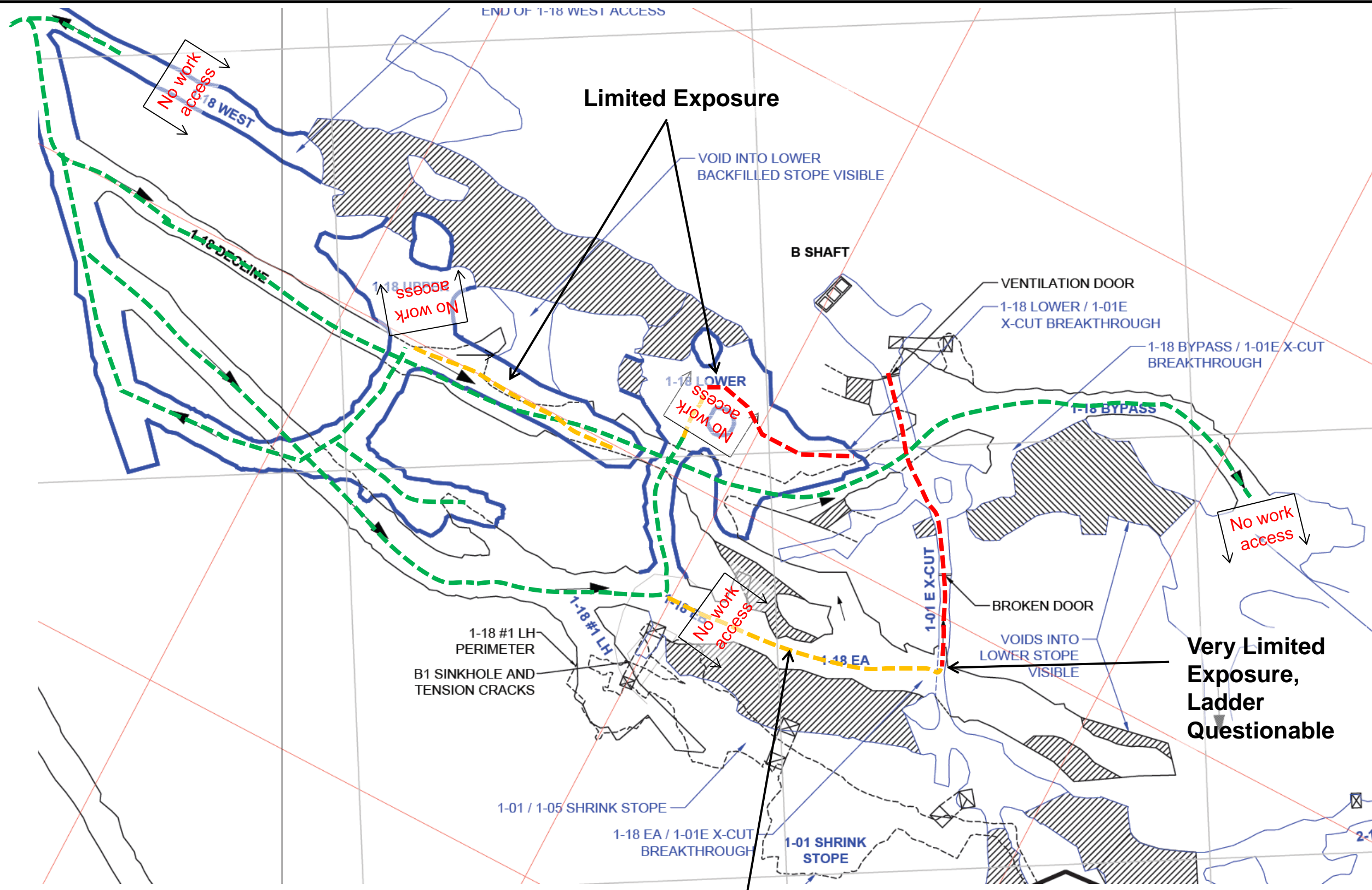
- No work and limited man access in stoping areas (wide spans and high backs)
 - adding extra surface drillholes for pumping paste into stoping areas
 - Using fixed underground and borehole cameras to manage the backfill process
- Simple, non-engineered paste fill barricades which act as formwork for cemented paste
 - management of paste design (cement content and slump) and filling rate (limit fill pour heights)
 - Administrative controls on personnel access under or near non-cured paste

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PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE			
PROJECT No. 10-1426-0010		PHASE No. 1000	
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
CHECK	DTK/FM	29OCT13	
REVIEW			



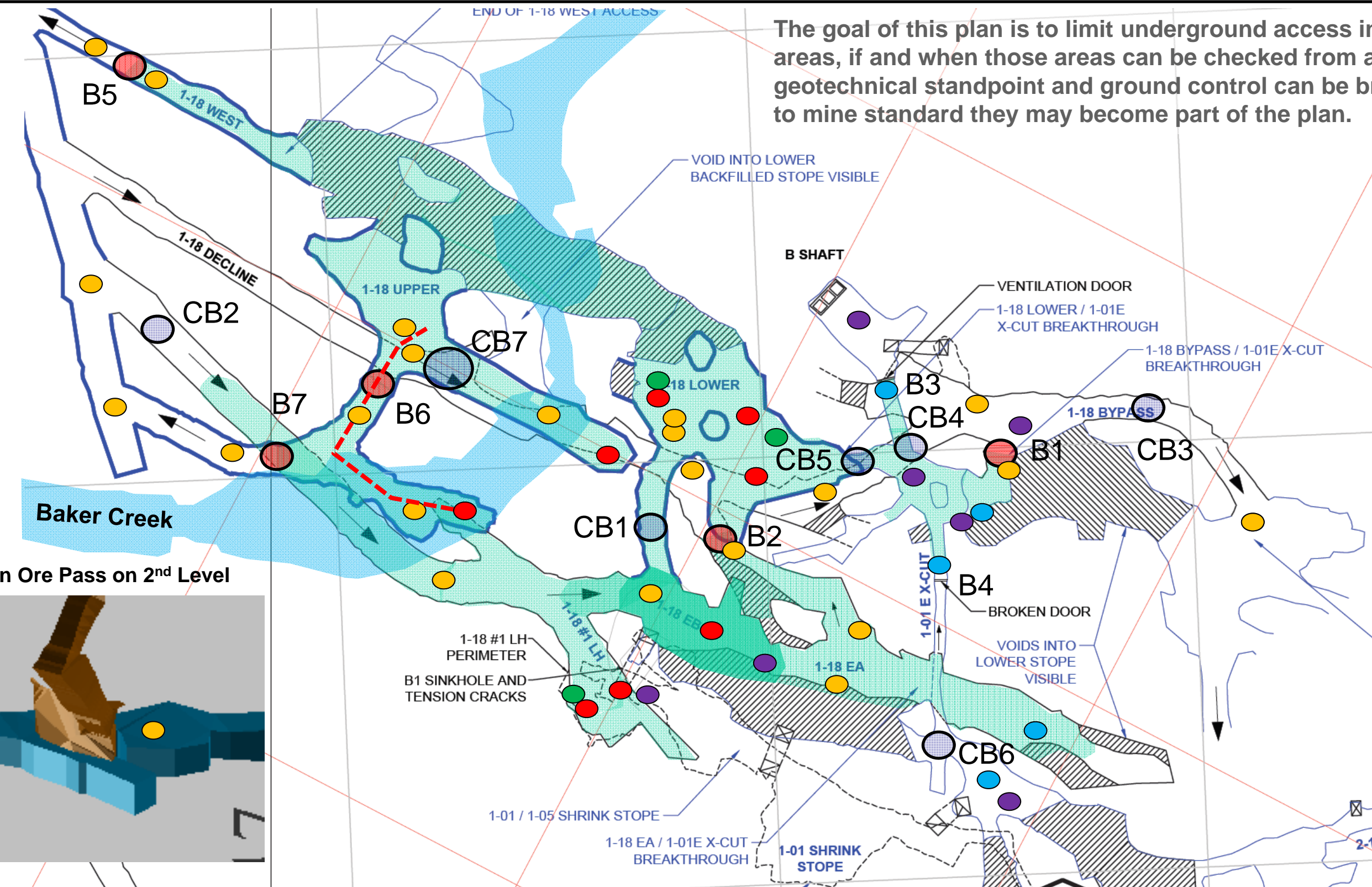
FILE: \\golder.gds\gal\burnaby\active\201311426\13-1426-0010 Giant Mining Support Services\1000 - MSS-003 Detailed Planning



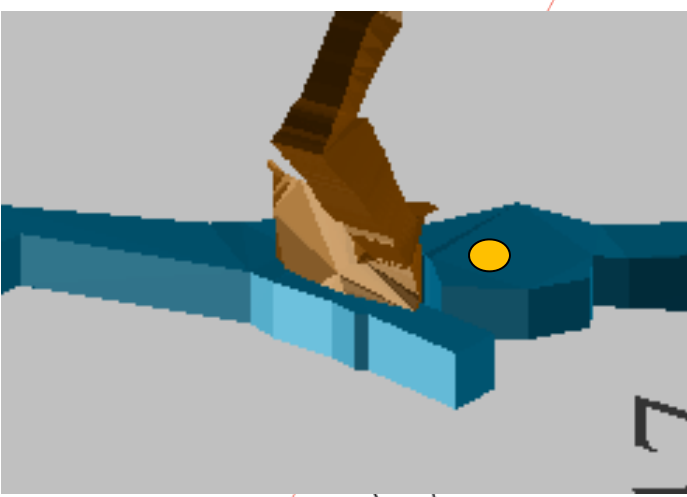
- - - Main travel way / work areas
- - - Inspection only areas
- - - Inspection and survey areas

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Underground Access (Sept. 30, 2013)	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
CHECK	DTK/FM	29OCT13	
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The goal of this plan is to limit underground access into stoping areas, if and when those areas can be checked from a geotechnical standpoint and ground control can be brought up to mine standard they may become part of the plan.



Inset – Main Ore Pass on 2nd Level

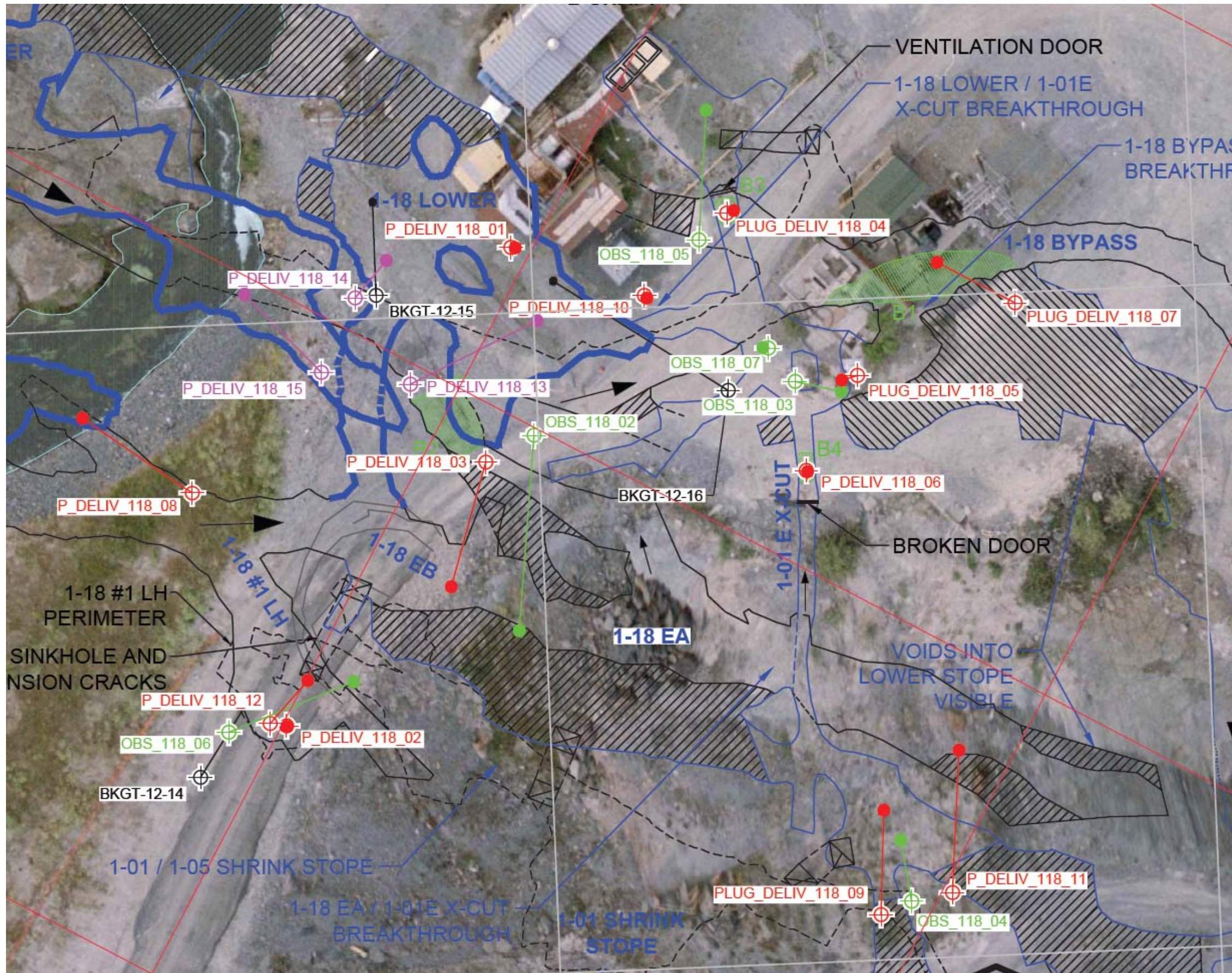






- Underground paste delivery pipe
- Conventional barricade
- Contingency barricade
- Sub-vertical primary fill delivery surface hole
- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade
- 2012 Geotechnical boreholes

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PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – All Components Shown	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
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REVIEW			
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-  P_Deliv_118_01
2013 DRILLED BOREHOLES - 200mm HOLES DIA.
-  OBS_118_01
2013 DRILLED BOREHOLES - 96.1mm HOLES DIA.
-  P_Deliv_118_14
2013 PLANNED BOREHOLES - 200mm HOLES DIA.
-  BKG_12_15
2012 GEOTECHNICAL DRILLING

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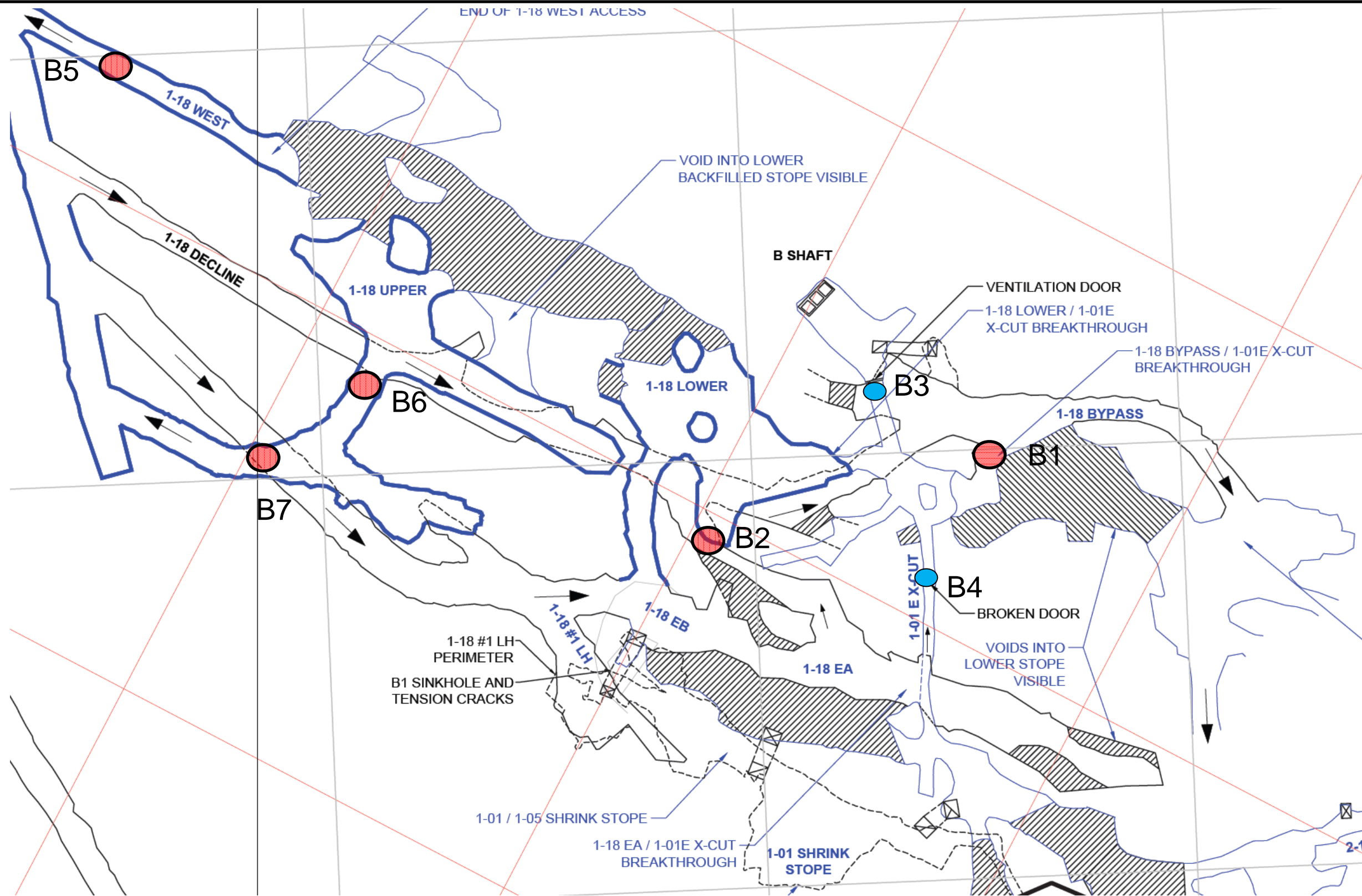
PROJECT PWGSC
GIANT MINE INTERIM U/G STABILIZATION PROJECT
YELLOWKNIFE, NWT

TITLE
B1-18 Stope
Borehole Plan (November 19, 2013)

PROJECT No. 10-1426-0010		PHASE No. 1000	
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
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● Conventional barricade

● Borehole low slump paste barricade / foam

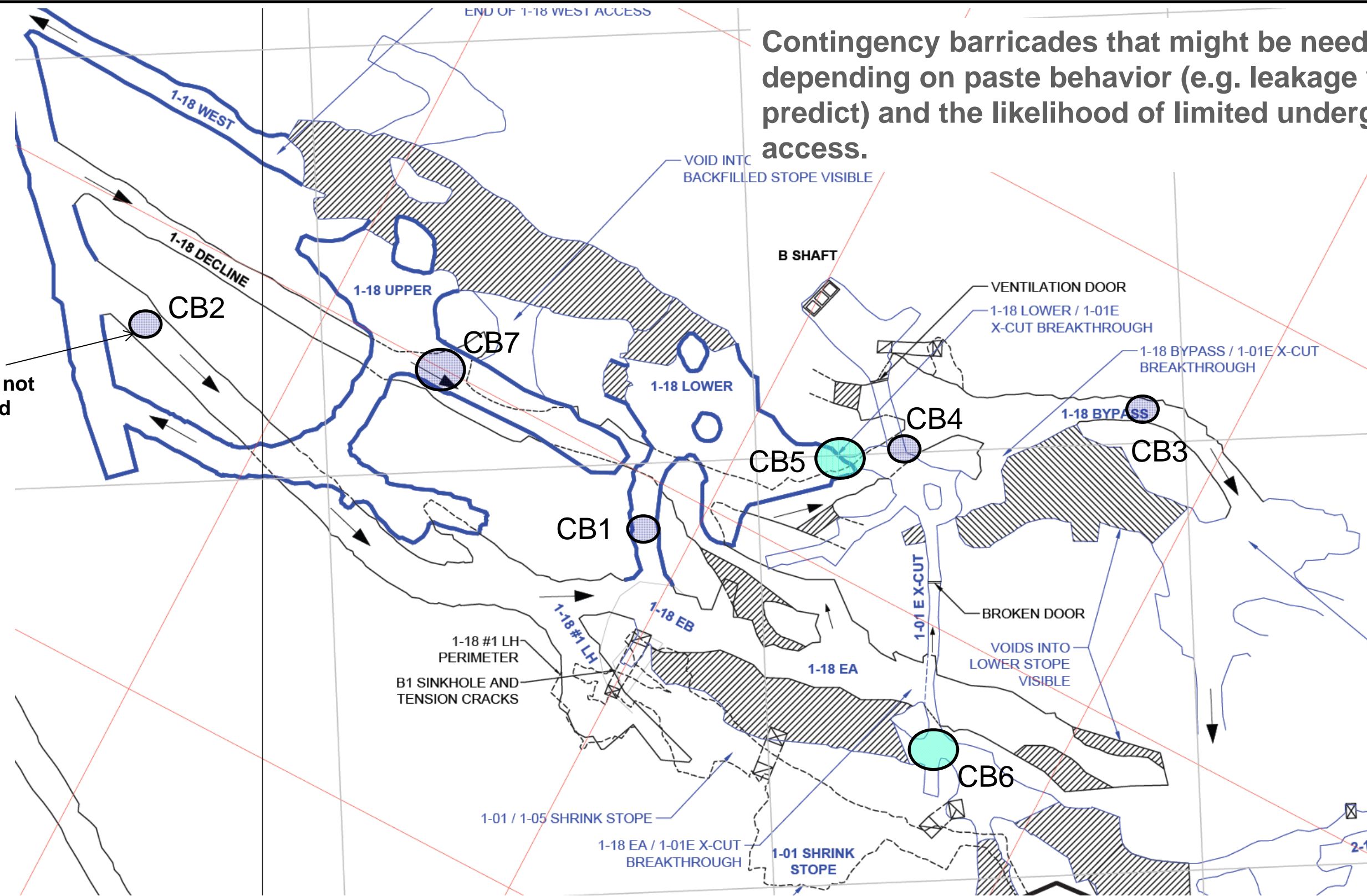
PROJECT PWGSC
GIANT MINE INTERIM U/G STABILIZATION PROJECT
YELLOWKNIFE, NWT

TITLE
**B1-18 Stope
Fill Barricade Locations**

PROJECT No. 10-1426-0010		PHASE No. 1000	
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
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Contingency barricades that might be needed depending on paste behavior (e.g. leakage we cant predict) and the likelihood of limited underground access.

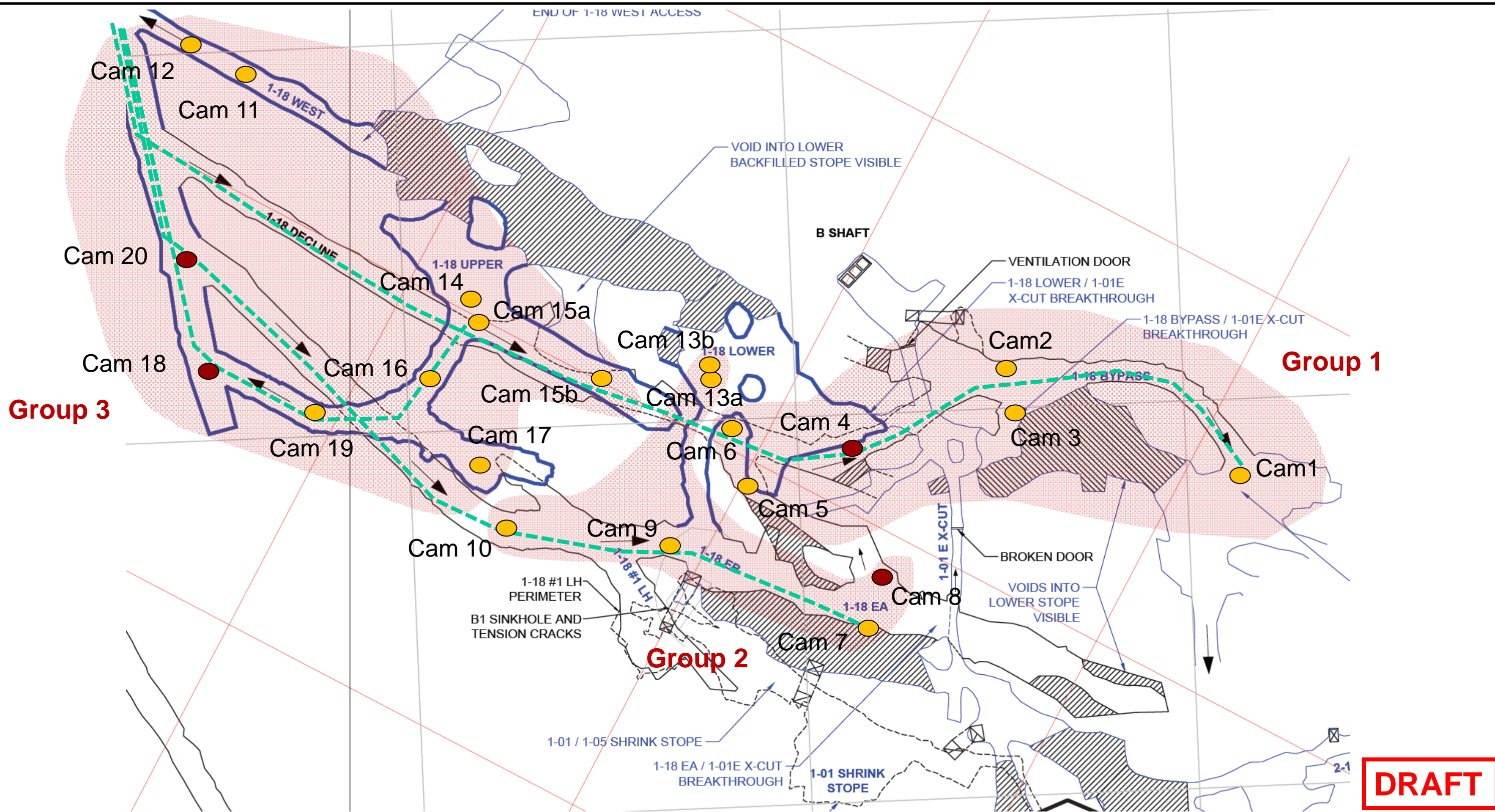
Likely not needed

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-  Contingency conventional barricade likely required if cannot keep paste from exiting 1-18 EA stope or barricade #1
-  Contingency borehole barricade likely required if cannot keep paste from exiting 1-18 EA stope

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Contingency Fill Barricade Locations	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
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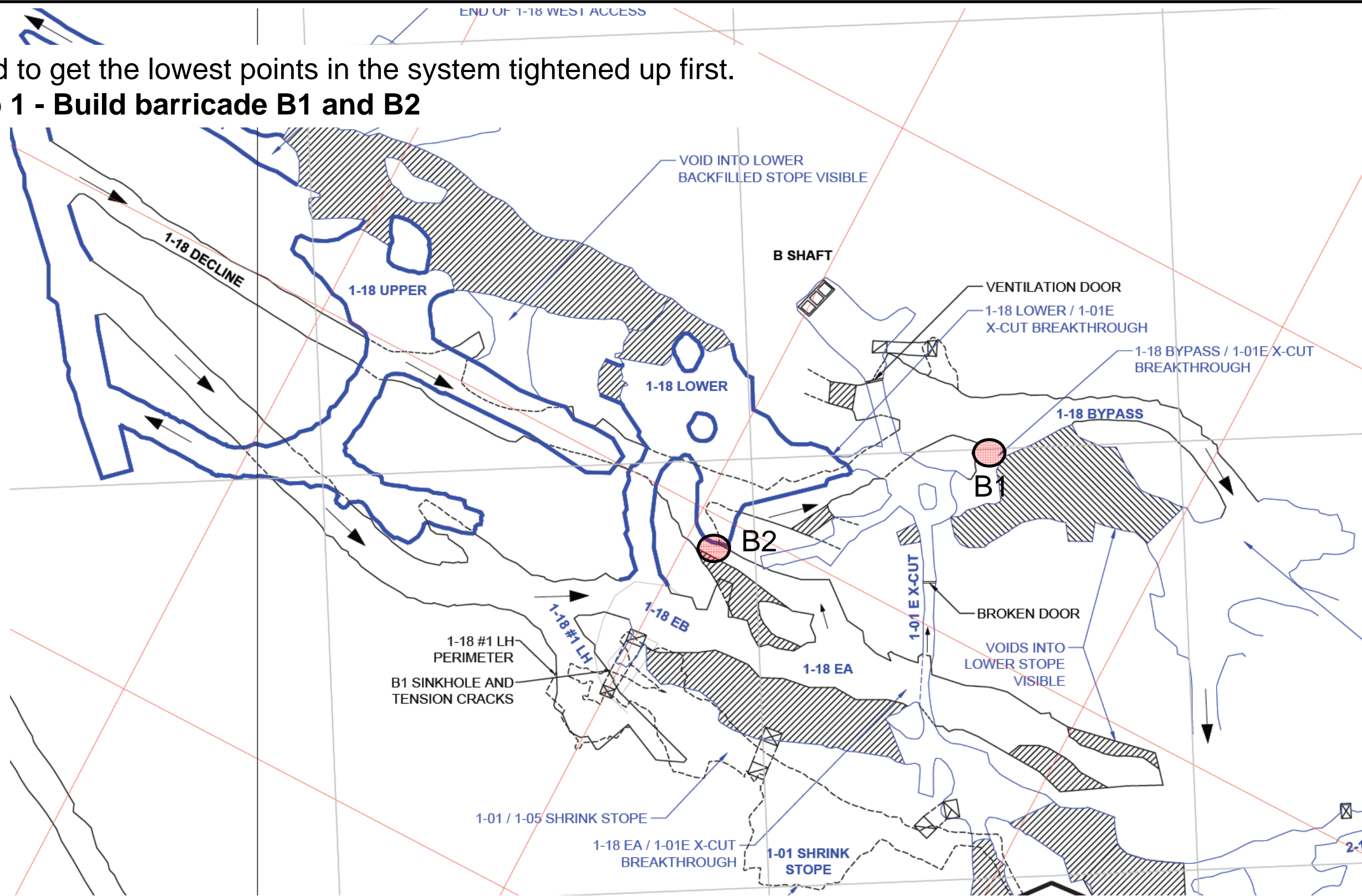


- U/G monitoring camera installed in-person - Critical
- U/G monitoring camera installed in-person - Secondary

- - - Main power supply (1 per Group)

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Camera Locations	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK 24SEP13	SCALE	N.T.S. REV. A
CADD	DTK/FM 04OCT13		
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REVIEW			
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- Need to get the lowest points in the system tightened up first.
- **Step 1 - Build barricade B1 and B2**



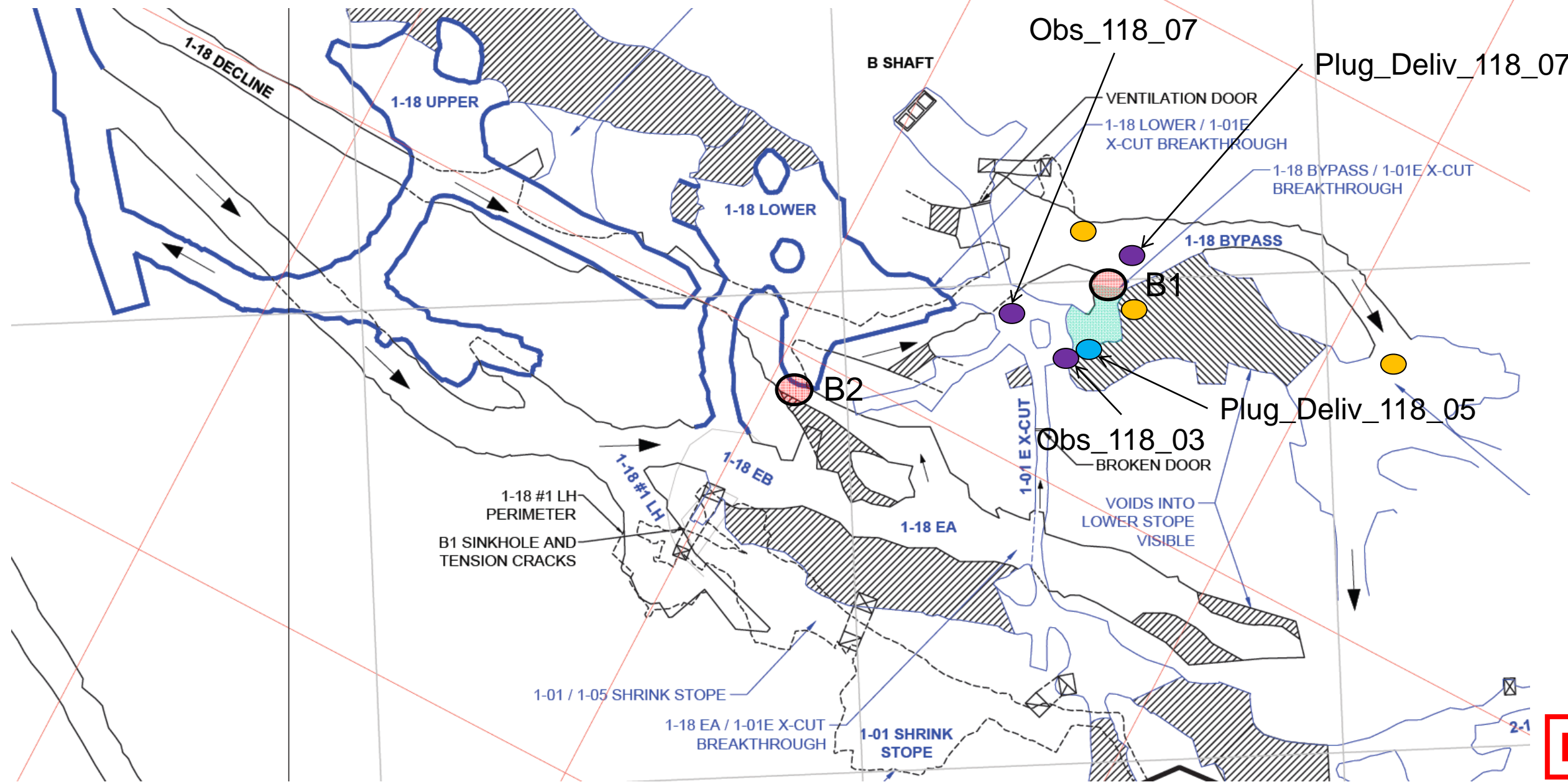
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- Underground paste delivery pipe
- Conventional barricade
- Sub-vertical primary fill delivery surface hole
- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 1	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
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REVIEW			



- Need to get the lowest points in the system tightened up first.
- **Step 2 - Inject low slump paste first, then possibly high slump paste into 118_05 to get fill behind the barricade, observe from Obs_118_03, Obs_118_07, D_118_07 and fixed cameras in the underground.**



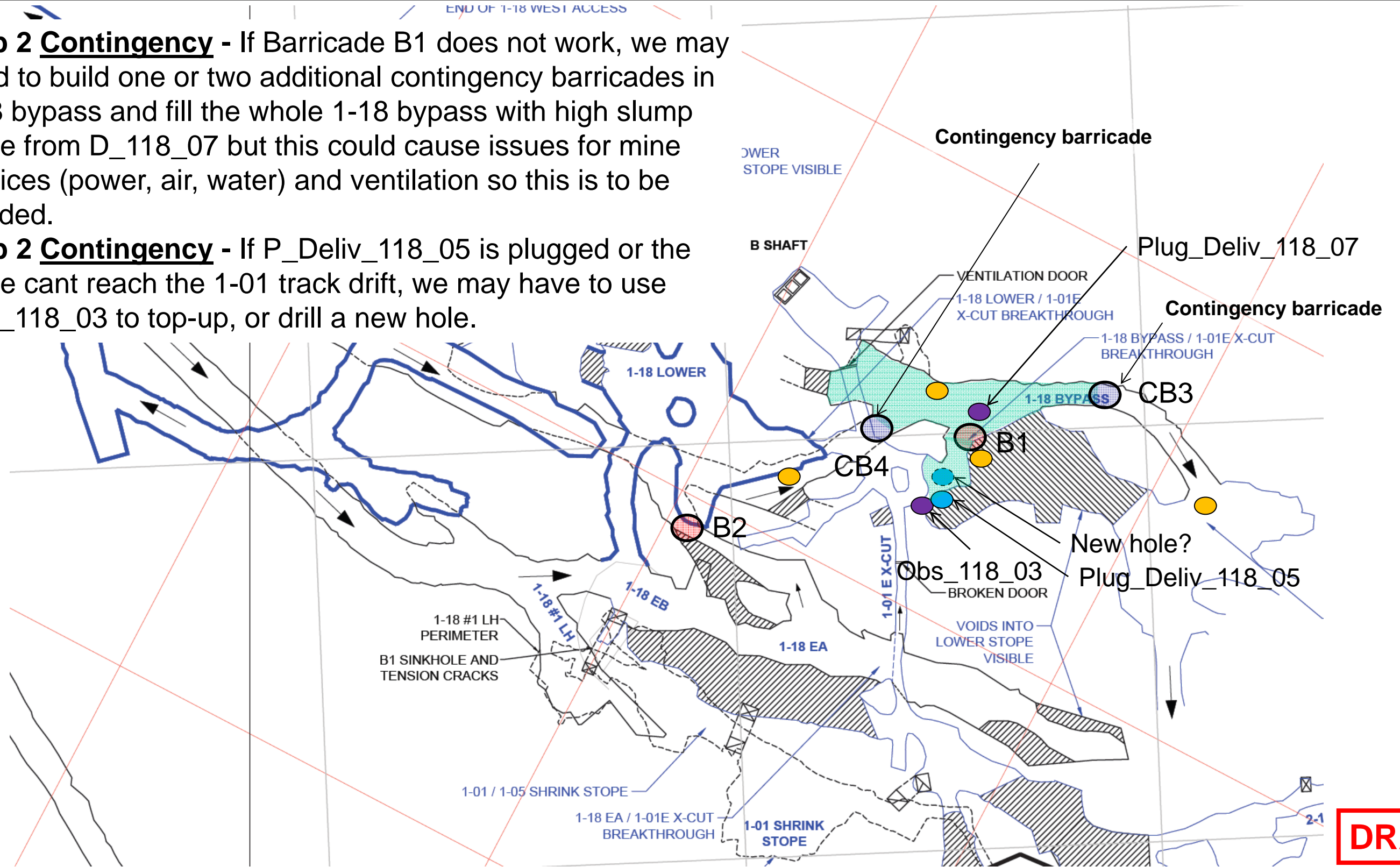
-  Underground paste delivery pipe
-  Conventional barricade
-  Sub-vertical primary fill delivery surface hole
-  U/G monitoring camera installed in-person
-  Borehole camera monitoring / secondary paste fill hole(s)
-  Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 2	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
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CHECK	DTK/FM	29OCT13	
REVIEW			



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- **Step 2 Contingency** - If Barricade B1 does not work, we may need to build one or two additional contingency barricades in 1-18 bypass and fill the whole 1-18 bypass with high slump paste from D_118_07 but this could cause issues for mine services (power, air, water) and ventilation so this is to be avoided.
- **Step 2 Contingency** - If P_Deliv_118_05 is plugged or the paste cant reach the 1-01 track drift, we may have to use Obs_118_03 to top-up, or drill a new hole.



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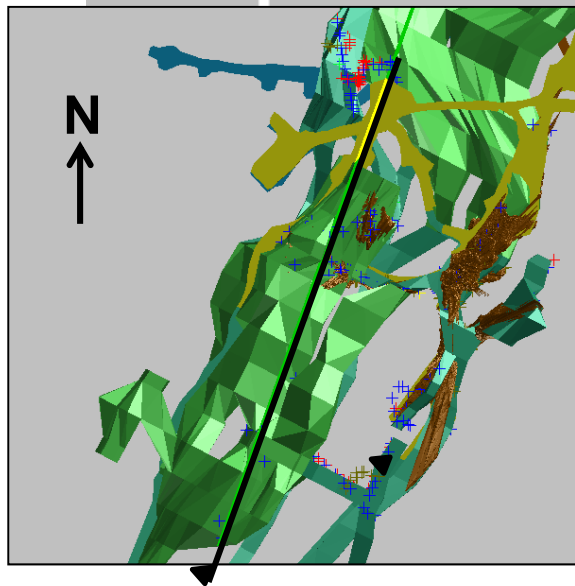
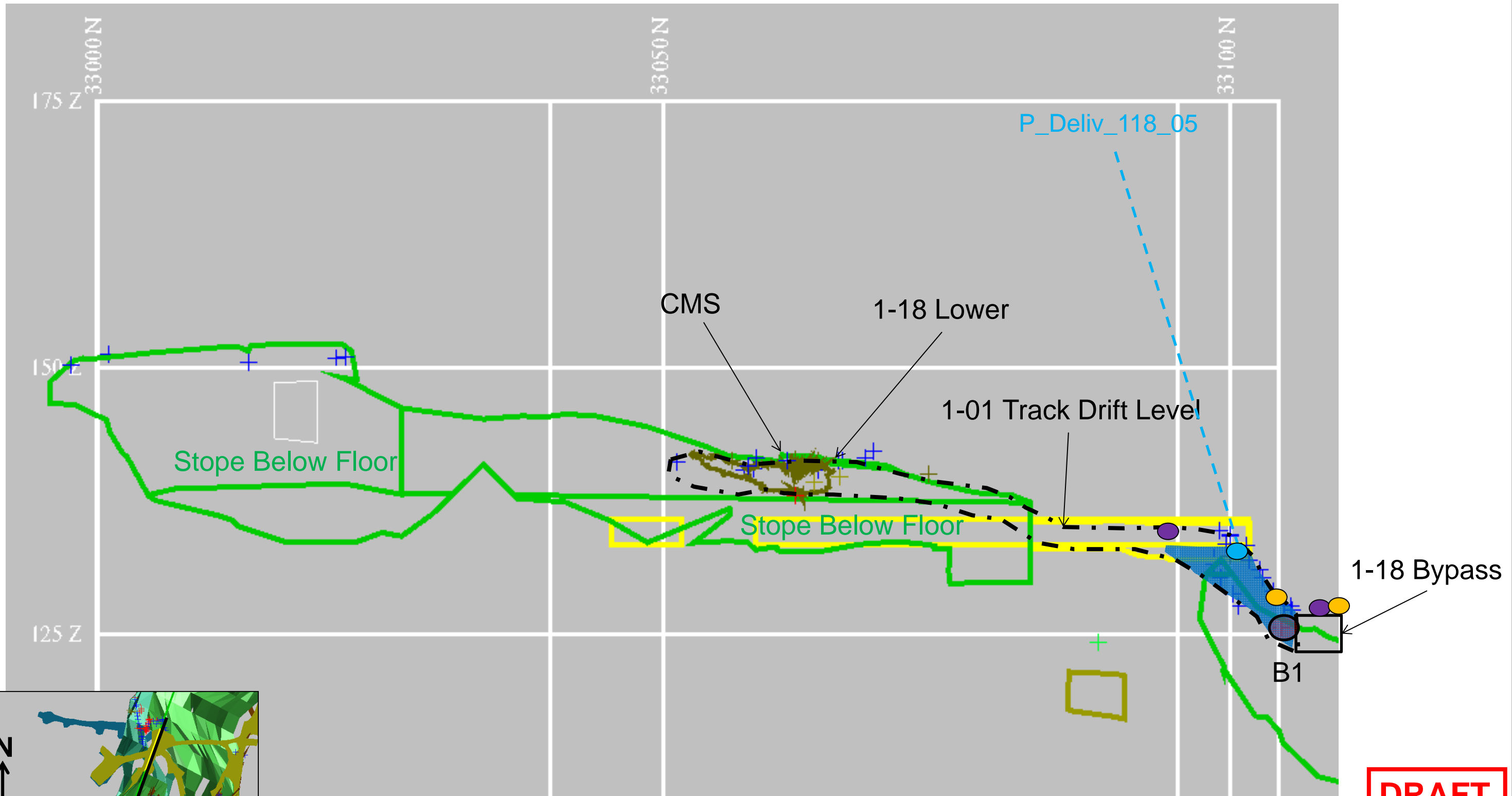
- Underground paste delivery pipe
- Conventional barricade
- Contingency barricade
- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 2 - Contingency	
PROJECT No.	10-1426-0010	PHASE No.	1000
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Approx. Void shape - - -

Low slump paste ■

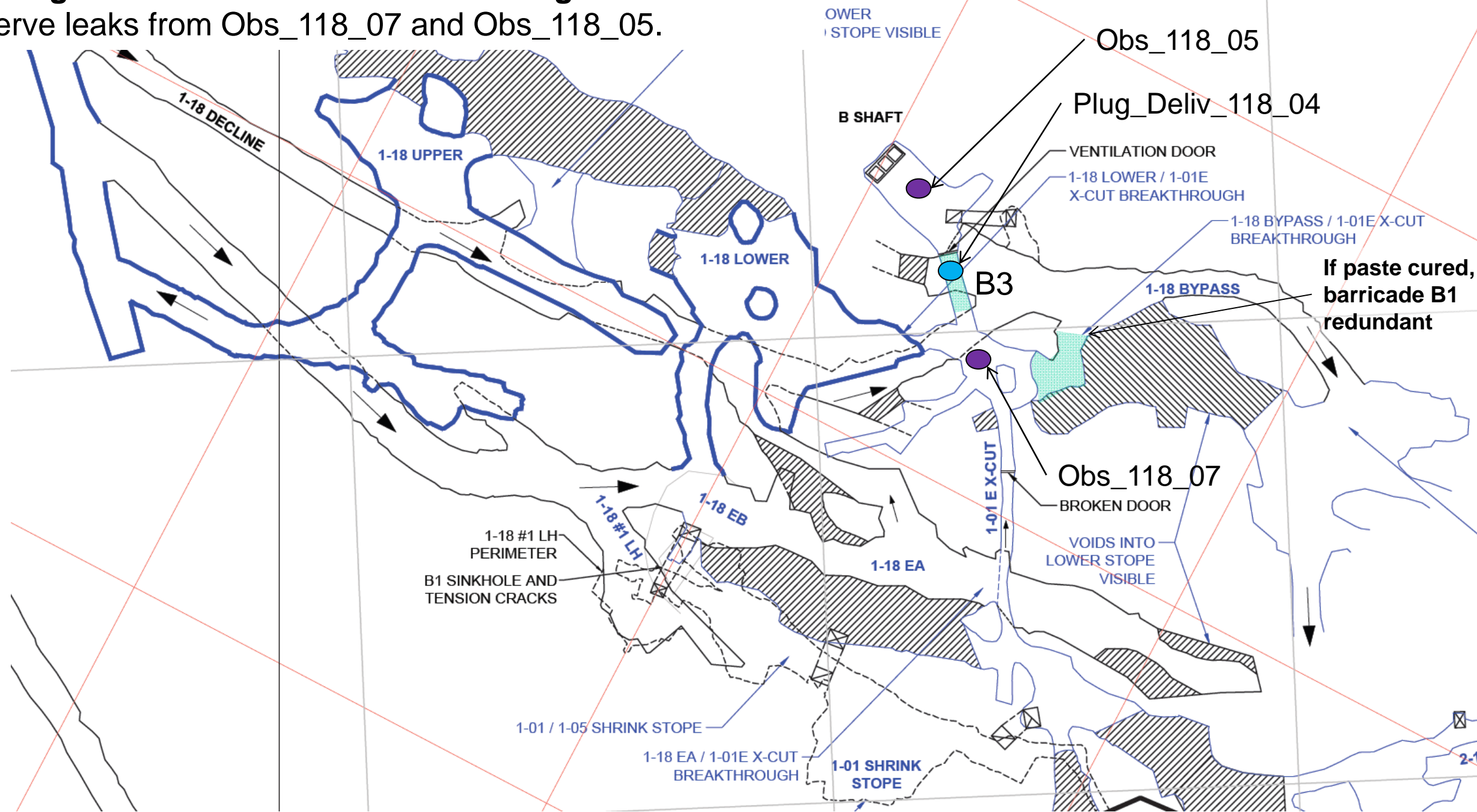
Observation hole ●

Delivery hole ●







Observation camera ●

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE			
B1-18 Stope Backfill Plan – Step 2			
PROJECT No. 10-1426-0010		PHASE No. 1000	
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
CHECK	DTK/FM	29OCT13	
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- **Step 3 - Build borehole barricade B3 using low slump paste and/or foam injected into D_118_04 so that paste cannot get into the B Shaft from later stages**
- Observe leaks from Obs_118_07 and Obs_118_05.



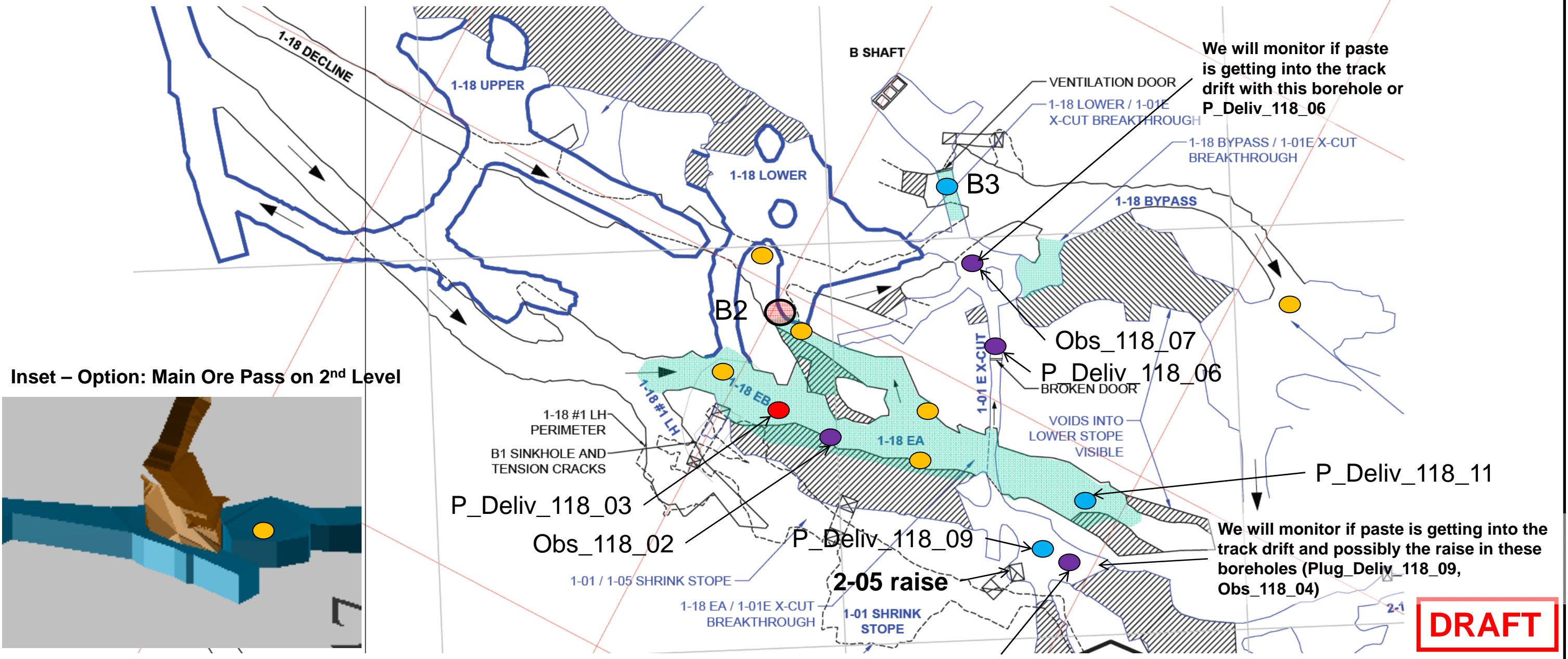
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-  Underground paste delivery pipe
-  Conventional barricade
-  Sub-vertical primary fill delivery surface hole
-  U/G monitoring camera installed in-person
-  Borehole camera monitoring / secondary paste fill hole(s)
-  Borehole low slump or foam barricade

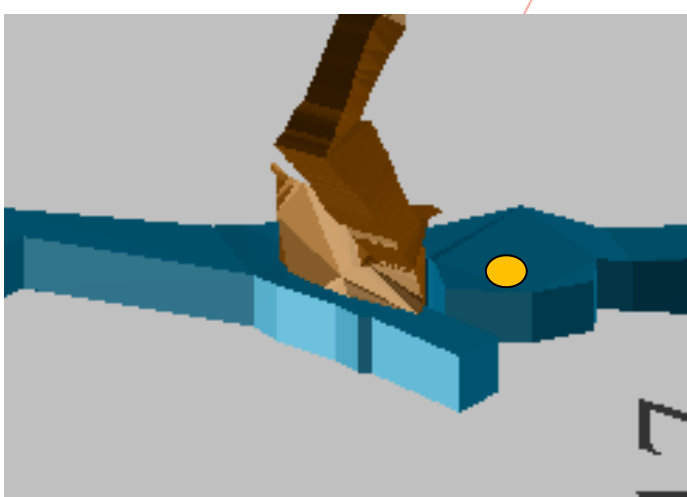
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GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
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






- **Step 4** - Start backfilling 1-18 EA from surface borehole D_118_03 with high slump paste.
- If this paste cant get to the north, we could also inject in D_118_11, Obs_118_02 and eventually D_118_06 later.
- We will use high slump paste to fill the lowest area up until the point where we think it is spilling out down the 2-05 raise, then stop and determine the next step.



Inset – Option: Main Ore Pass on 2nd Level

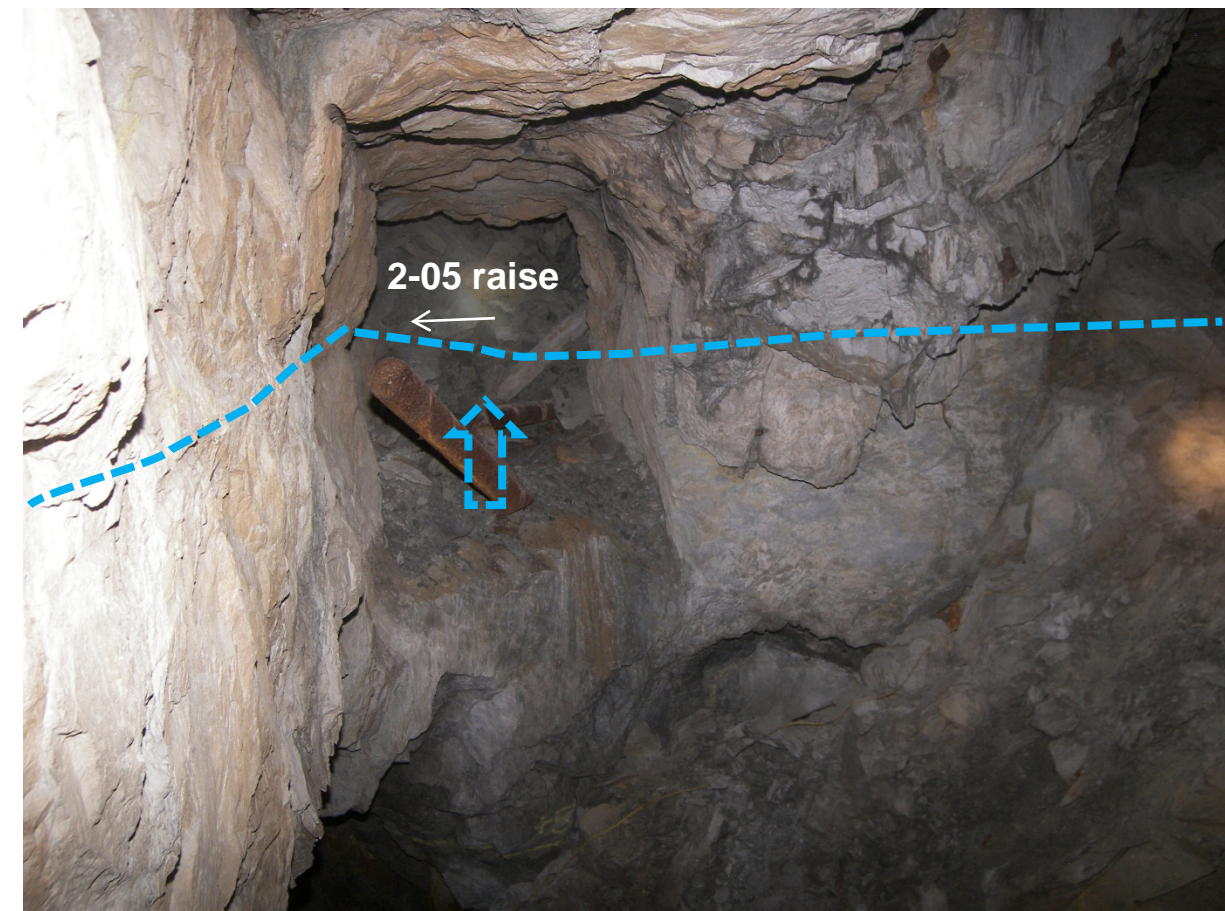


-  Underground paste delivery pipe
-  Conventional barricade
-  Sub-vertical primary fill delivery surface hole
-  U/G monitoring camera installed in-person
-  Borehole camera monitoring / secondary paste fill hole(s)
-  Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE			
B1-18 Stope Backfill Plan – Step 4			
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
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REVIEW			
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Maximum position of high slump paste before it starts to spill onto the eastern side of the track drift (blue arrow) where the 2-05 raise is



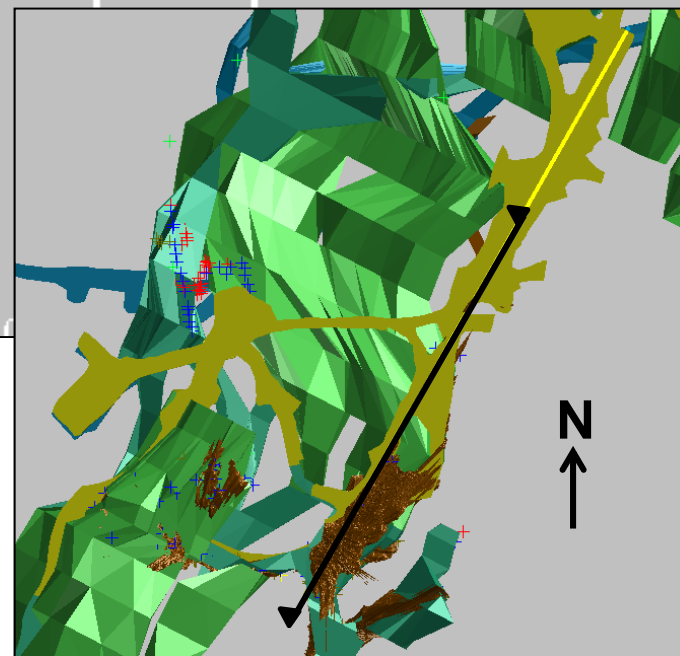
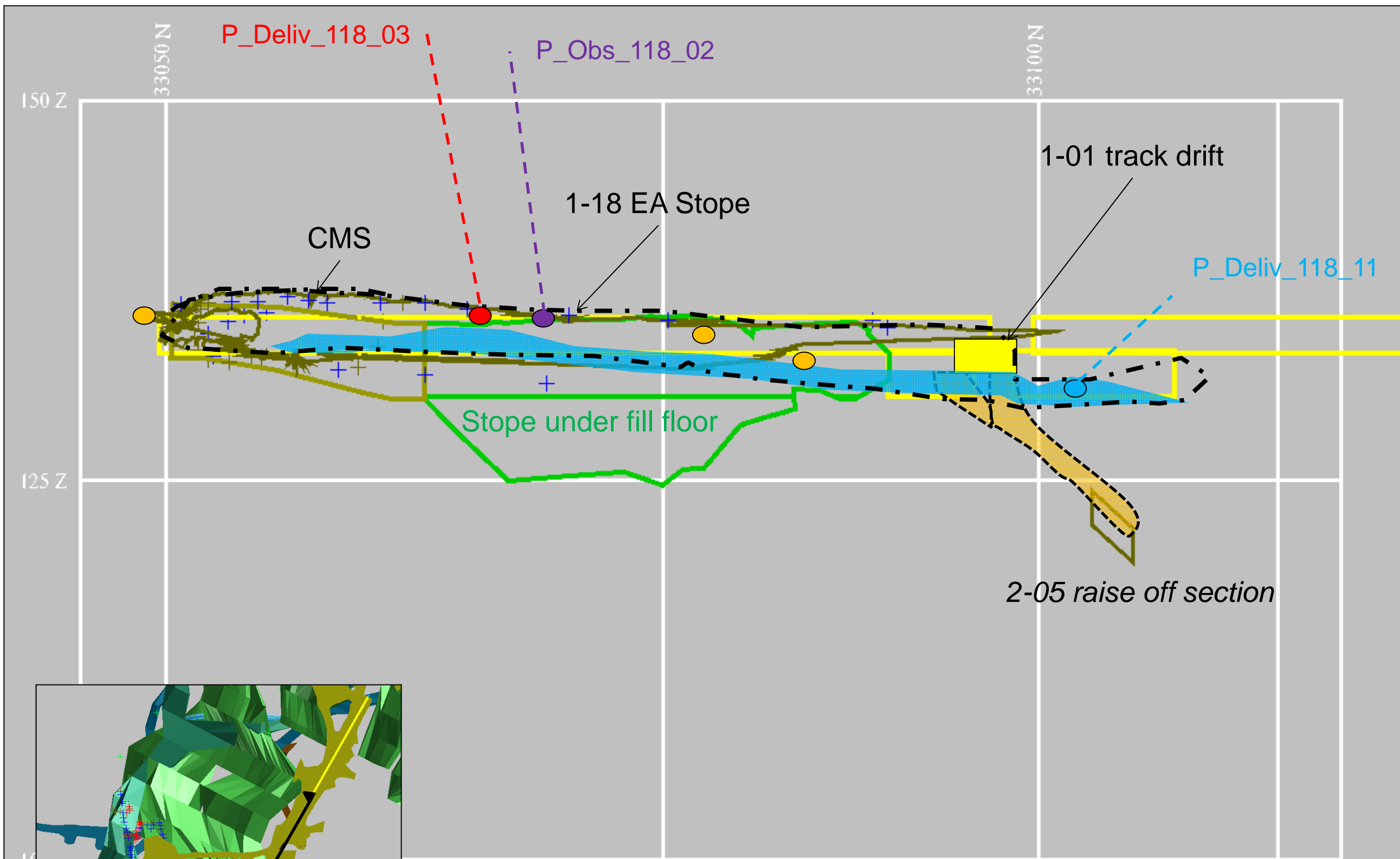
- Start backfilling 1-18 EA from surface boreholes
- Because we cant safely access the 2-05 raise area, we will use high slump paste to fill the lowest area up until the point where we think it is spilling out down the raise.
- We can get the fill into the northern portion of 1-18 EA where it goes under the track drift as seen in the photos
- Once the fill gets to the point of the blue line, it can spill down the track drift and we will need to stop pumping and let the paste setup.
- We will also have to have cameras on the 2nd level where the ore pass is intersected to check for paste entering the raise.

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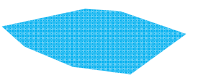




PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE			
B1-18 Stope Backfill Plan – Step 4			
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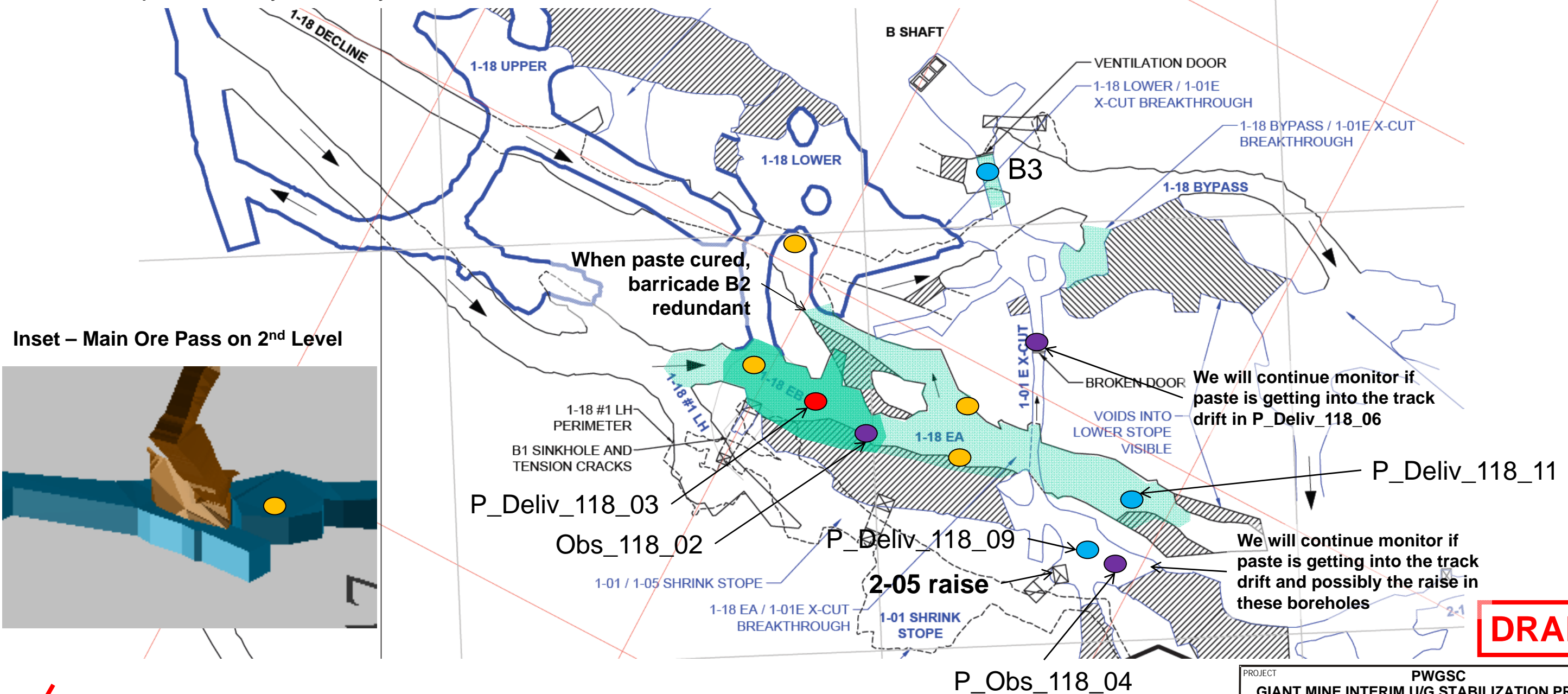
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- Approx. Void Shape - - -
- High slump paste 
- Observation camera 
- Observation hole 
- Delivery hole  

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 4	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK 24SEP13	SCALE	N.T.S. REV. A
CADD	DTK/FM 04OCT13		
CHECK	DTK/FM 29OCT13		
REVIEW			



- **Step 5** - Pump lower slump paste into P_Deliv_118_03 so that it does not flow into the track drift and the raise area into the north.
- This results in a partial filling of the northern portion of 1-18 EA but holes P_Deliv_118_11, Obs_118_02 and P_Deliv_118_06 can be used as complementary delivery holes later.

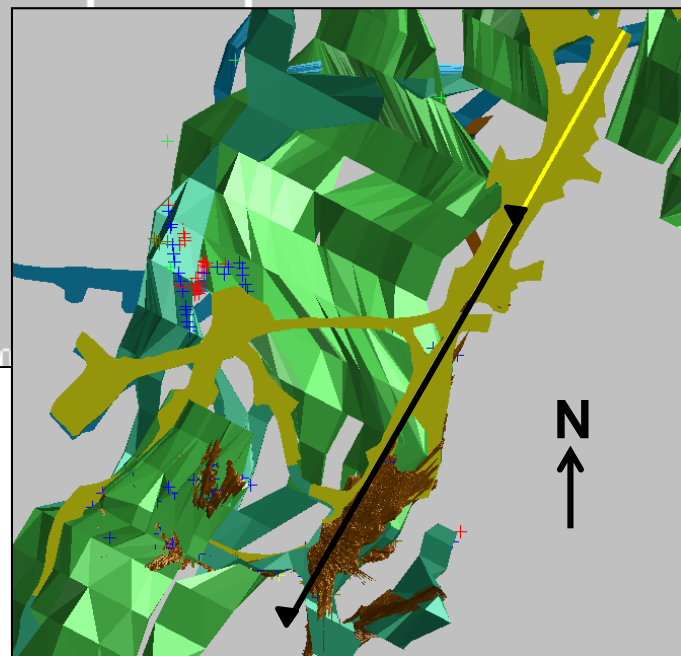
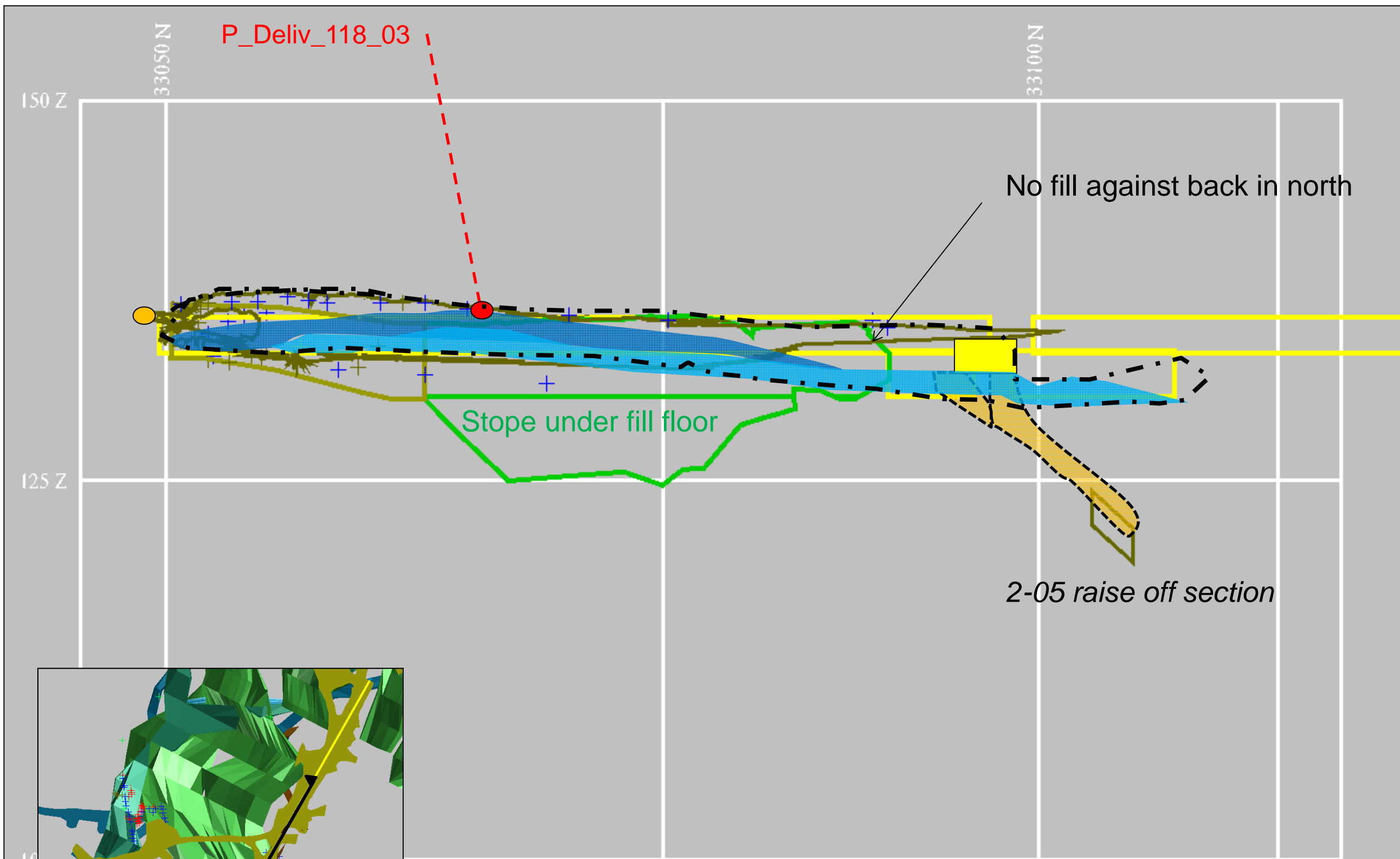


- Underground paste delivery pipe
- Conventional barricade
- Sub-vertical primary fill delivery surface hole
- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE			
B1-18 Stope Backfill Plan – Step 5			
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
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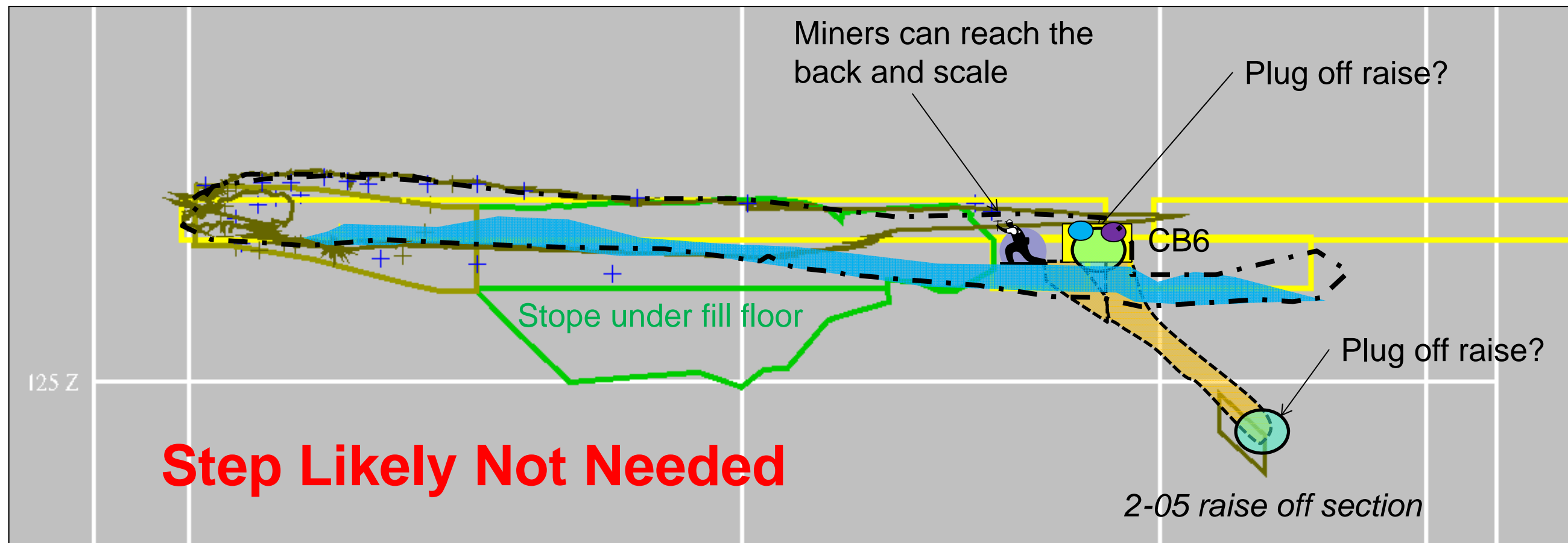
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- Approx. Void Shape
- High slump paste
- Lower slump paste
- Delivery hole
- Observation camera

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 5	
PROJECT No. 10-1426-0010		PHASE No. 1000	
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
CHECK	DTK/FM	29OCT13	
REVIEW			



- **Contingency Step 5a – Plug the 2-05 ore pass and backfill remainder of 1-18 EA stope with high slump paste – can only be done after geotechnical assessment and rehabilitation complete.**
- Once the paste gets to a higher level in the north end of 1-18 EA, allow miners to go into the stope because they might now be able to work off the fill, scale the back, re-gain access to the 2-05 raise area and plug the raise (barricade CB6), allowing us to continue on with filling high slump paste in this area to fill the entire stope fully.
- Alternatively the boreholes drilled from the pit Plug_Deliv_118_09 could be used to build a low slump plug at the raise area but because the mine plans are not complete in this area this is not likely to be a success.



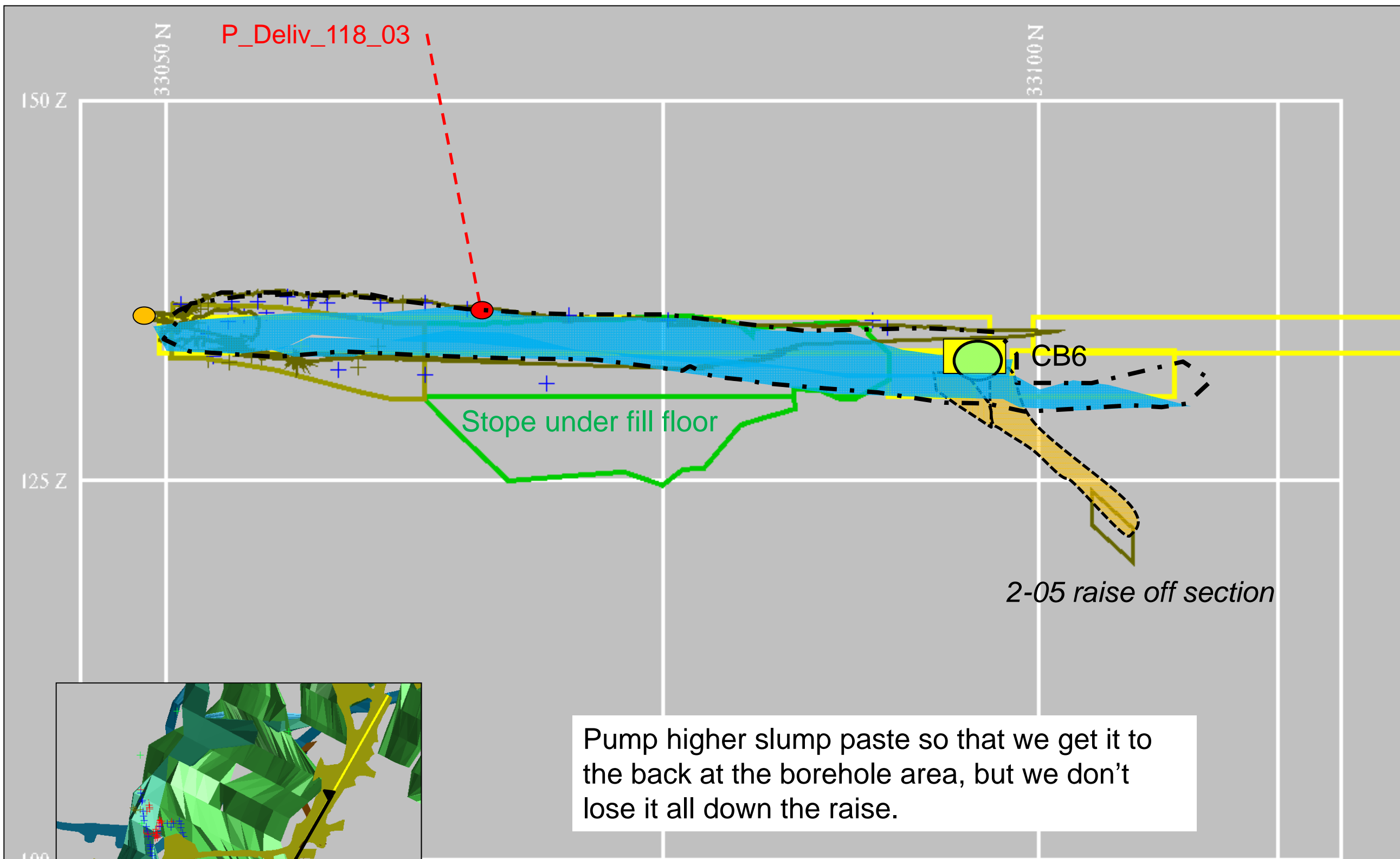
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- Last option: look at blocking raise on 2nd level (foam?) then drilling a hole to intersect the ore pass from B1 pit floor and slowly filling

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE			
B1-18 Stope Backfill Plan – Contingency Step 5a			
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
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REVIEW			

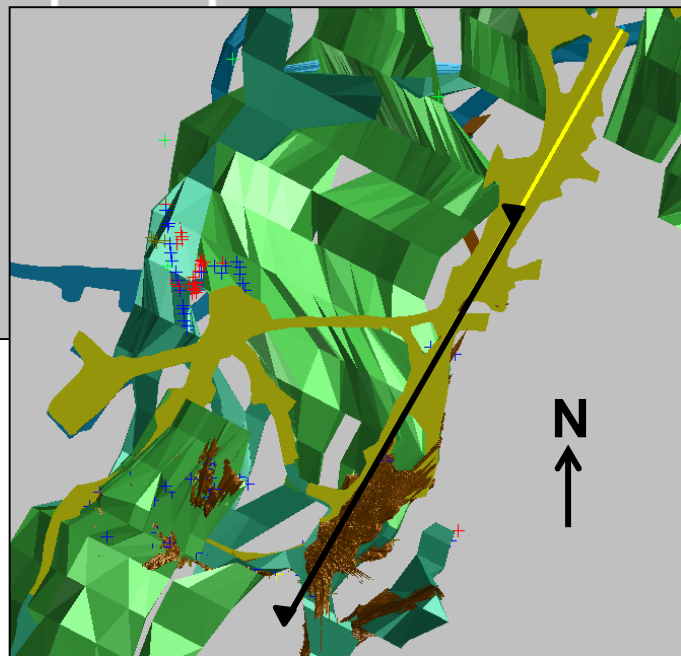


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Pump higher slump paste so that we get it to the back at the borehole area, but we don't lose it all down the raise.

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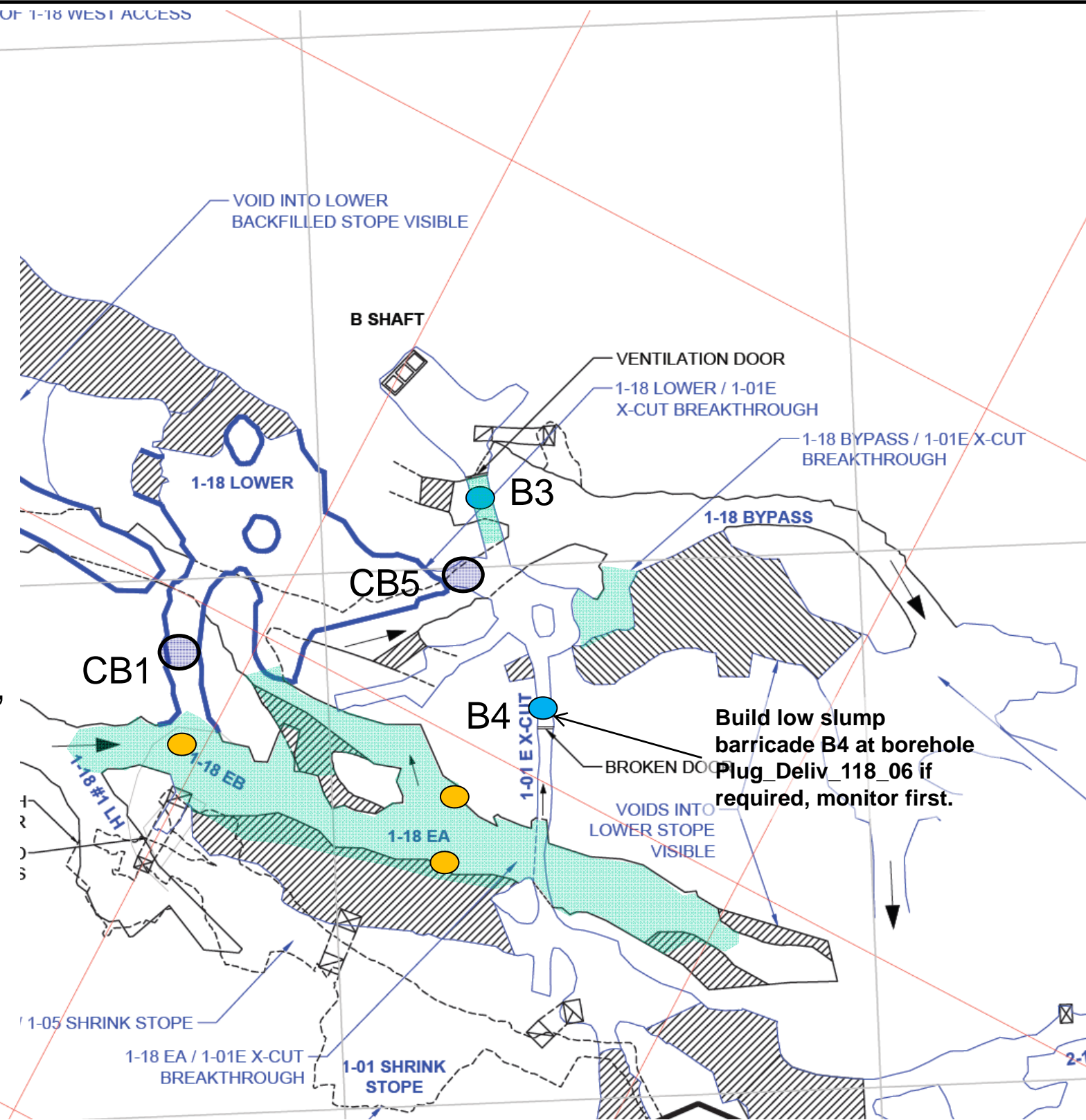
- Approx. Void Shape
- High slump paste
- Observation camera
- Delivery hole

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE			
B1-18 Stope Backfill Plan – Contingency Step 5a			
PROJECT No. 10-1426-0010		PHASE No. 1000	
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
CHECK	DTK/FM	29OCT13	
REVIEW			



• **Contingency Step 5b**

- If we cannot keep paste out of the raises, or we cannot complete step 5, we could build borehole bulkhead B4 and one or even two additional conventional barricade and abandon filling the remainder of 1-18 EA.
- We may not need barricade 4 as the paste might not flow this far and it likely remains a simple observation hole. We would delay building borehole barricade 4 until we see paste during 1-18 Lower, then build it only if necessary.
- Once the contingency barricades are built, go to the next step (1-18 Lower backfill).
- Also, if we can get a stability assessment and get suitable ground support designed and installed for 1-18 lower stope, we could eliminate the need for barricade B3 and B4 with barricade CB5 – but this has not yet been fully assessed.



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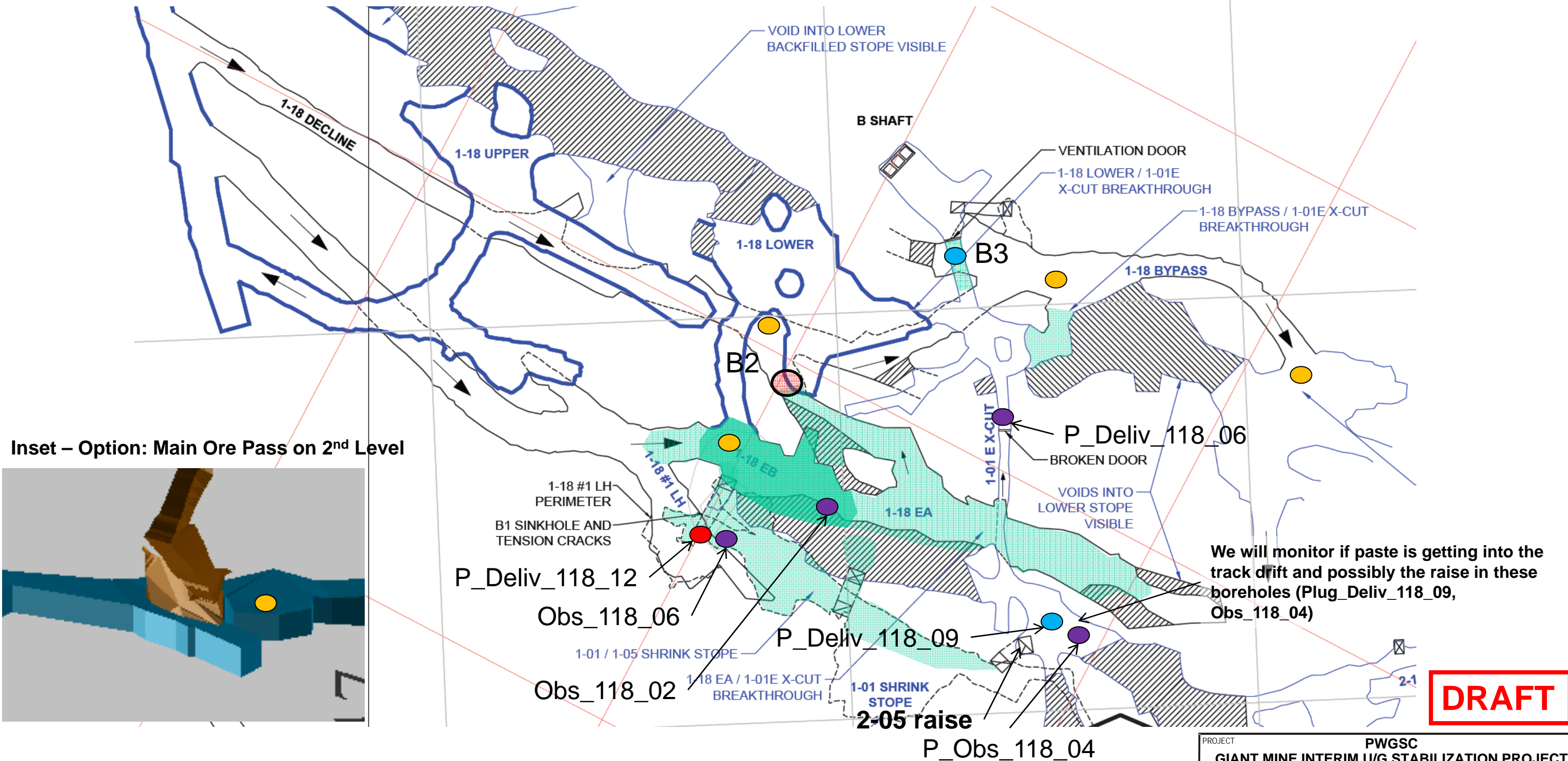
- Underground paste delivery pipe
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PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Contingency step 5b	
PROJECT No.	10-1426-0010	PHASE No.	1000
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REVIEW			

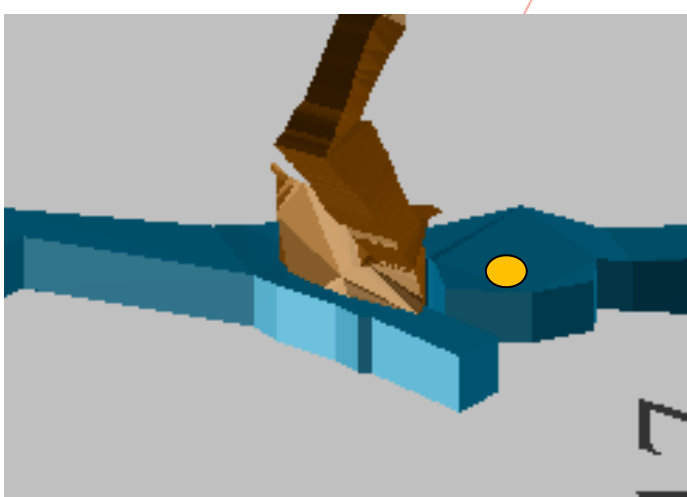


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- **Step 6** - Backfill 1-01 Shrink stope from P_Deliv_118_12 and observe from Obs_118_06 and Obs_118_02 (if accessible). Some paste will leak through the raises and fill some remaining voids in 1-18 EA.



Inset – Option: Main Ore Pass on 2nd Level

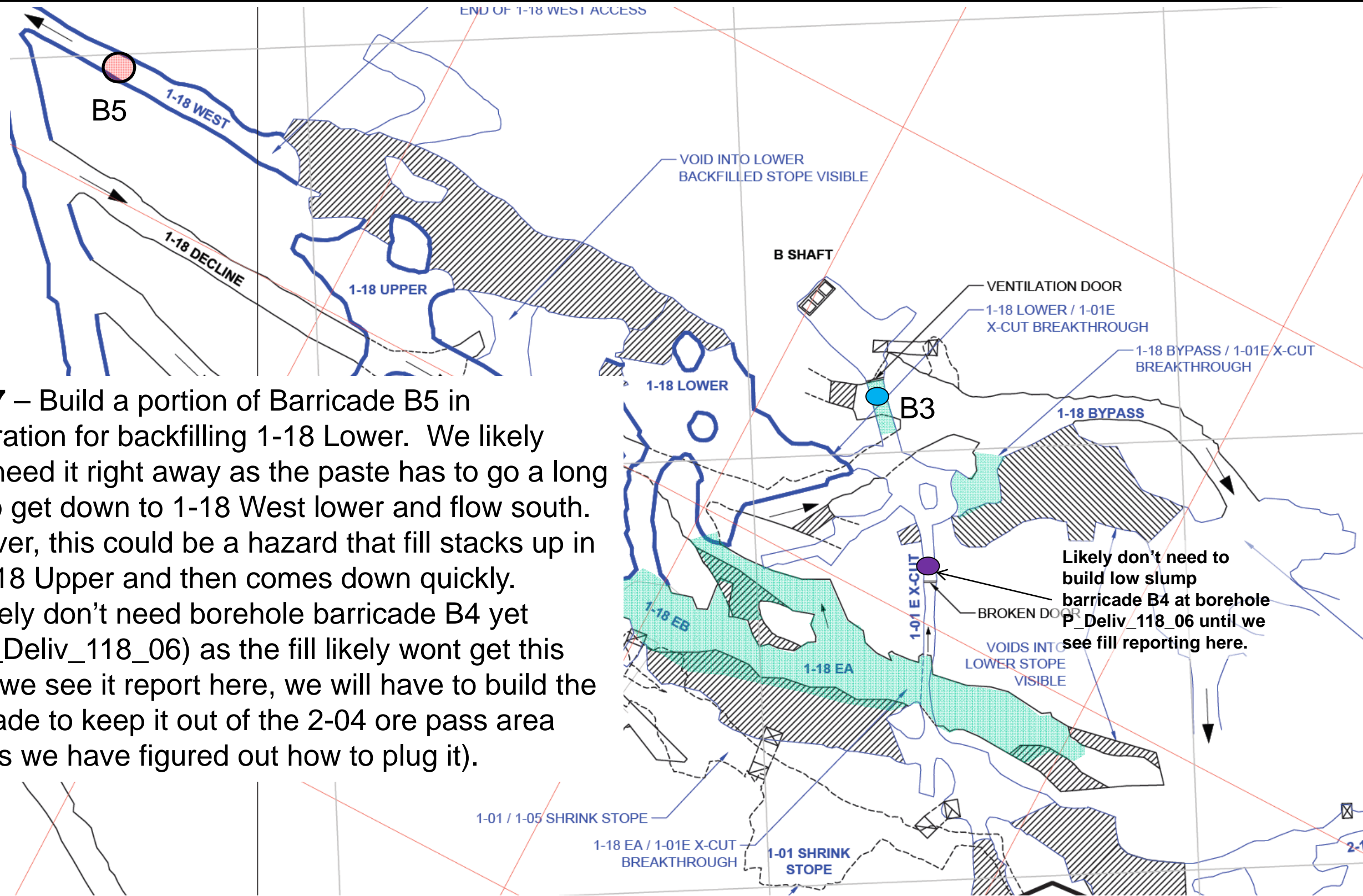


- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade
- Sub-vertical primary fill delivery surface hole
- Conventional barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 6	
PROJECT No.	10-1426-0010	PHASE No.	1000
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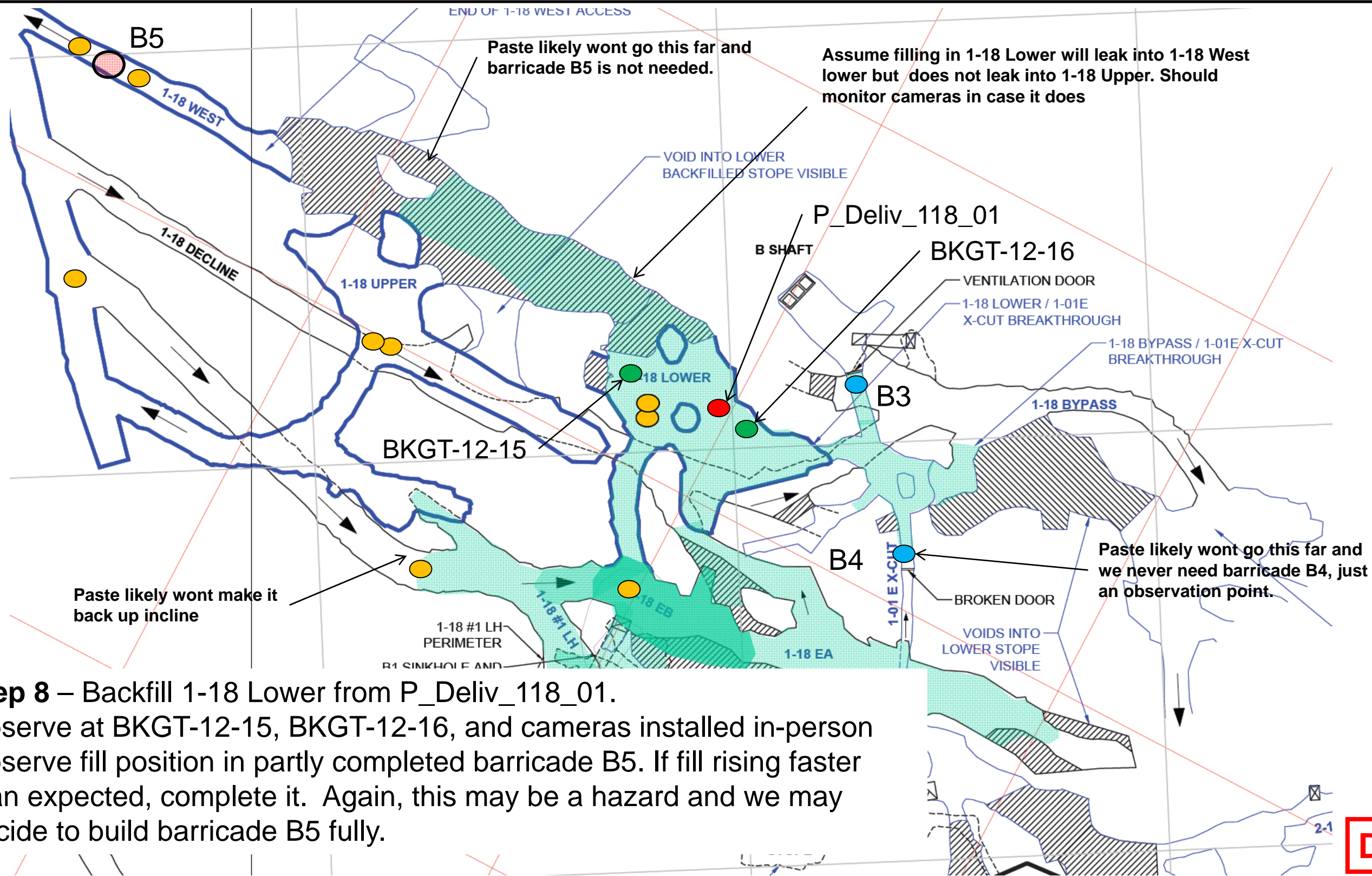


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- **Step 7** – Build a portion of Barricade B5 in preparation for backfilling 1-18 Lower. We likely don't need it right away as the paste has to go a long way to get down to 1-18 West lower and flow south. However, this could be a hazard that fill stacks up in the 1-18 Upper and then comes down quickly.
- We likely don't need borehole barricade B4 yet (Plug_Deliv_118_06) as the fill likely won't get this far. If we see it report here, we will have to build the barricade to keep it out of the 2-04 ore pass area (unless we have figured out how to plug it).

- Underground paste delivery pipe
- Conventional barricade
- Sub-vertical primary fill delivery surface hole
- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 7	
PROJECT No.	10-1426-0010	PHASE No.	1000
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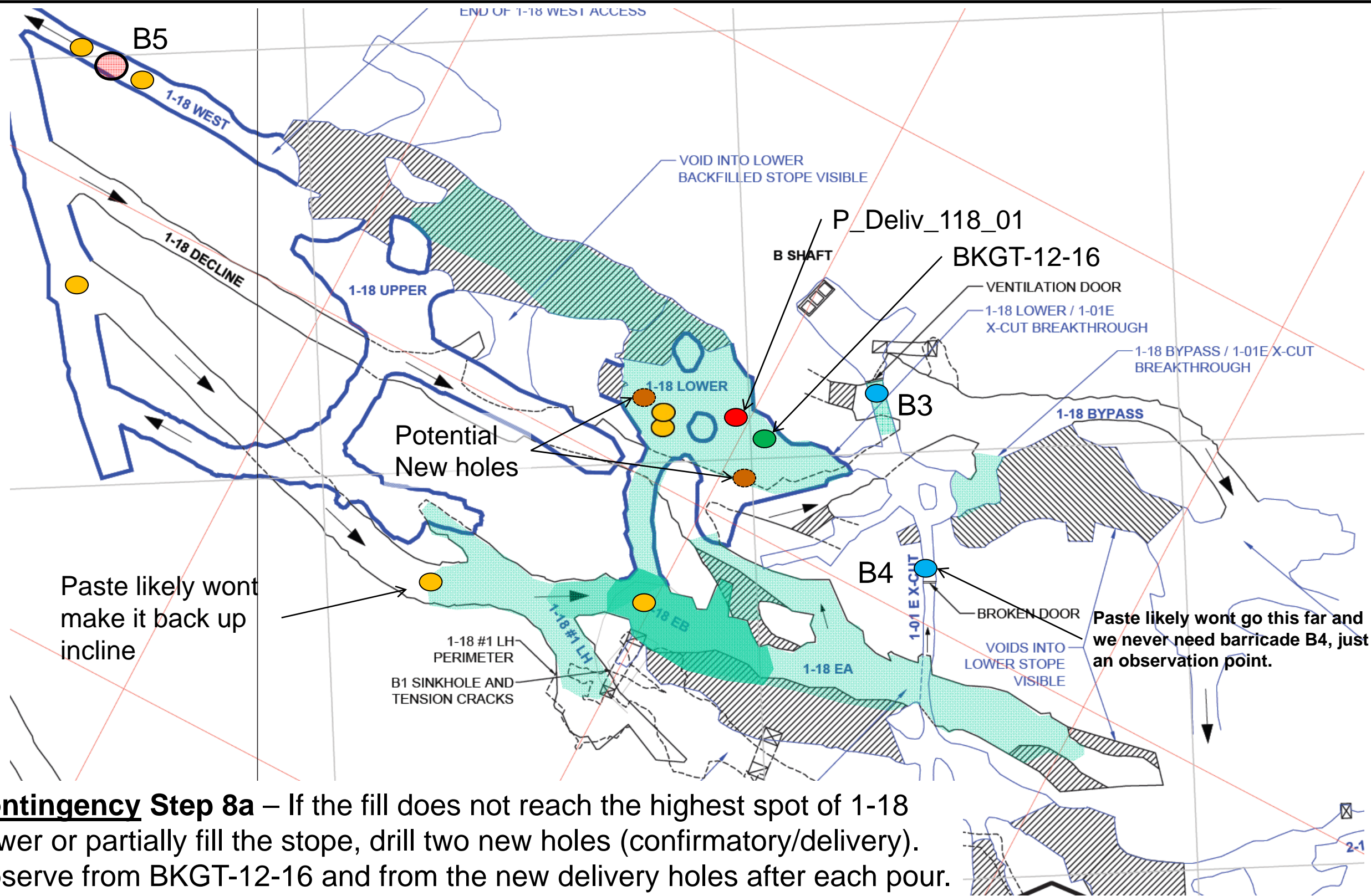


- **Step 8** – Backfill 1-18 Lower from P_Deliv_118_01.
- Observe at BKGT-12-15, BKGT-12-16, and cameras installed in-person
- Observe fill position in partly completed barricade B5. If fill rising faster than expected, complete it. Again, this may be a hazard and we may decide to build barricade B5 fully.







- Underground paste delivery pipe
- Conventional barricade
- Sub-vertical primary fill delivery surface hole
- U/G monitoring camera installed in-person
- 2012 Geotechnical boreholes
- Borehole low slump or foam barricade

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PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 8	
PROJECT No.	10-1426-0010	PHASE No.	1000
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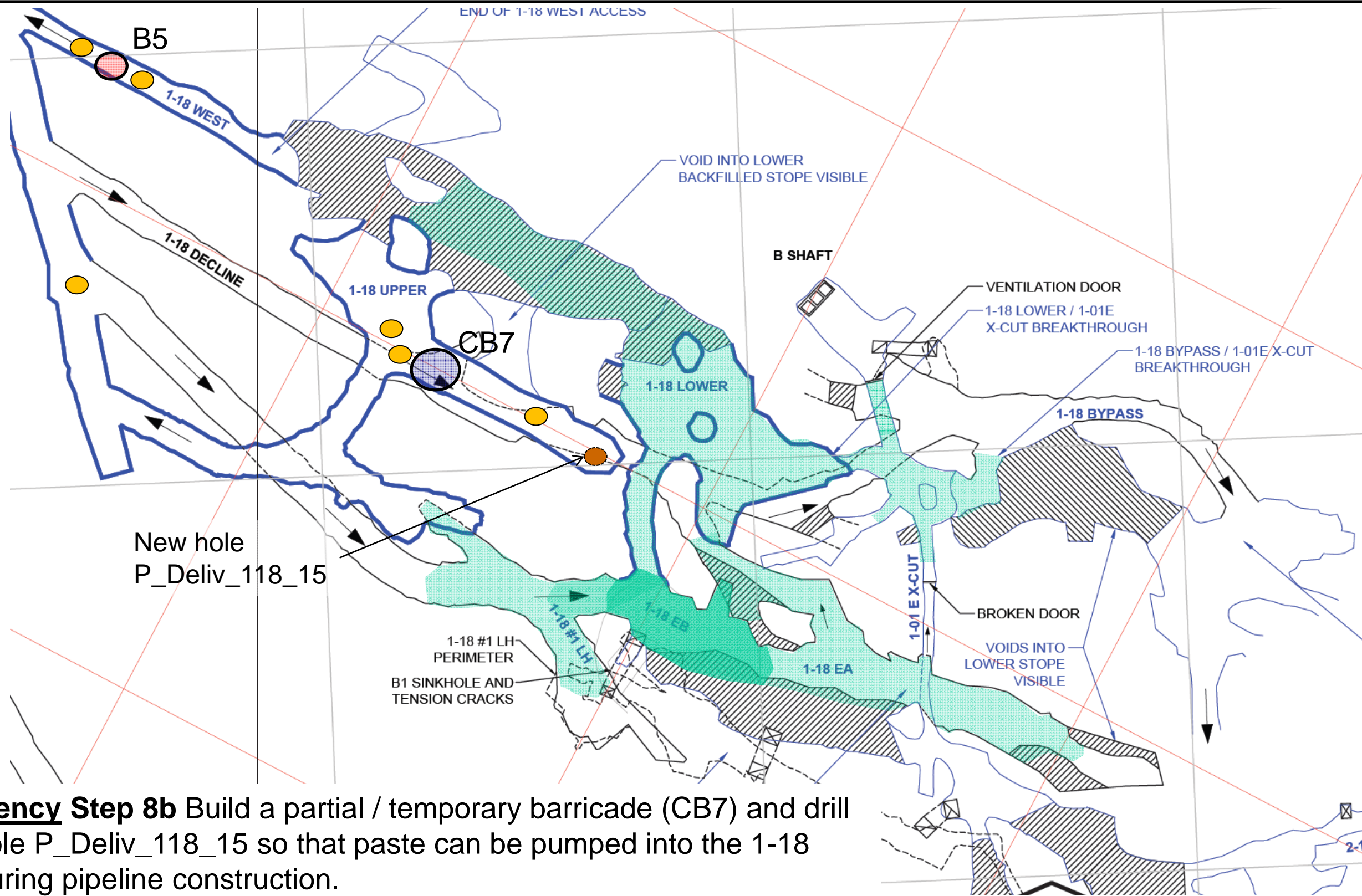
- **Contingency Step 8a** – If the fill does not reach the highest spot of 1-18 Lower or partially fill the stope, drill two new holes (confirmatory/delivery).
- Observe from BKG-12-16 and from the new delivery holes after each pour.

-  Underground paste delivery pipe
-  Conventional barricade
-  Sub-vertical primary fill delivery surface hole
-  U/G monitoring camera installed in-person
-  2012 Geotechnical boreholes
-  Borehole low slump or foam barricade

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PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Contingency Step 8a	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
CHECK	DTK/FM	29OCT13	
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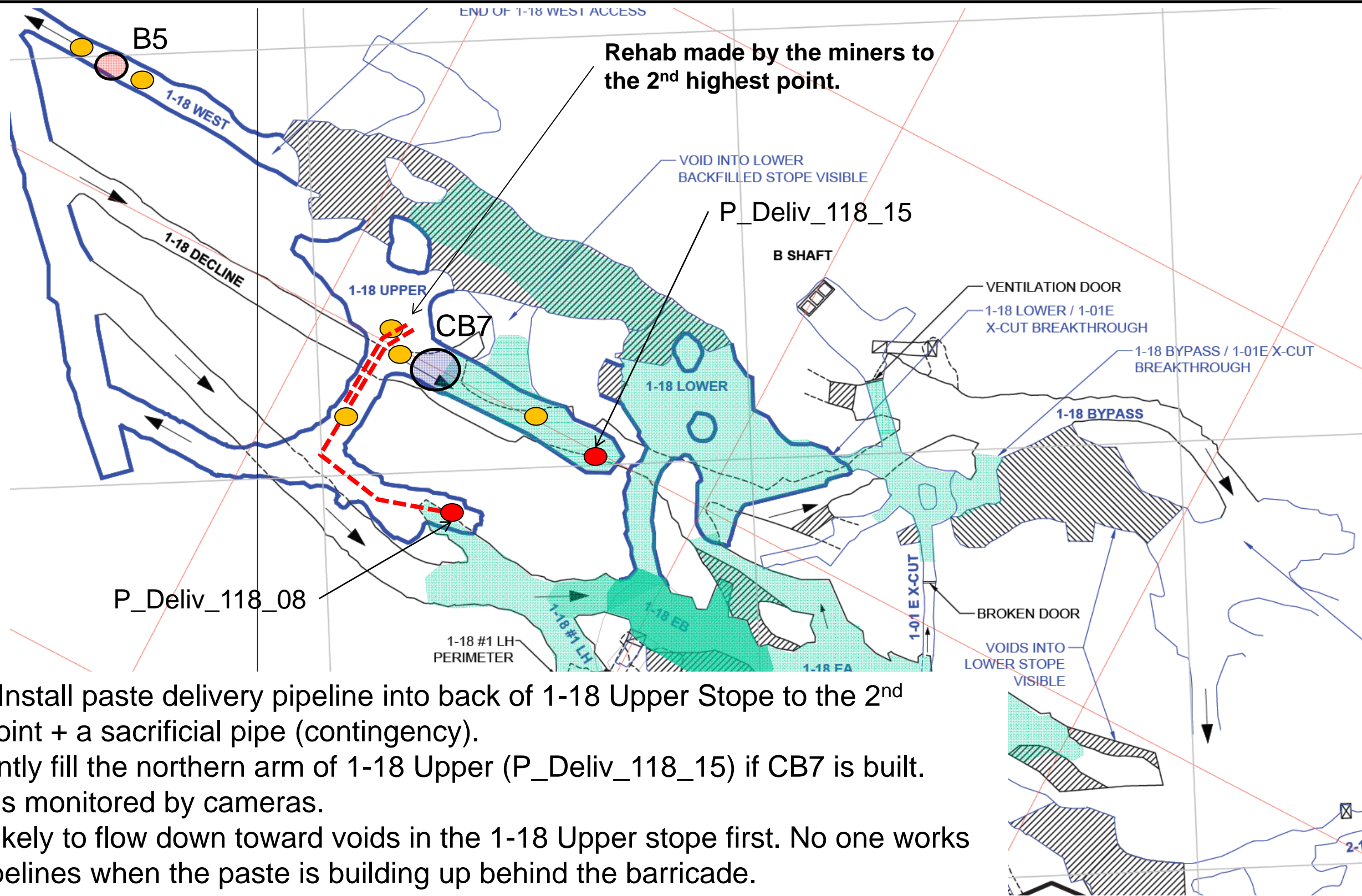
Contingency Step 8b Build a partial / temporary barricade (CB7) and drill a new hole P_Deliv_118_15 so that paste can be pumped into the 1-18 Upper during pipeline construction.

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-  Underground paste delivery pipe
-  Contingency-temporary barricade
-  Sub-vertical primary fill delivery surface hole
-  U/G monitoring camera installed in-person
-  2012 Geotechnical boreholes
-  Borehole low slump or foam barricade







PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE			
B1-18 Stope Backfill Plan – Contingency Step 8b			
PROJECT No.	10-1426-0010	PHASE No.	1000
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CHECK	DTK/FM	29OCT13	
REVIEW			






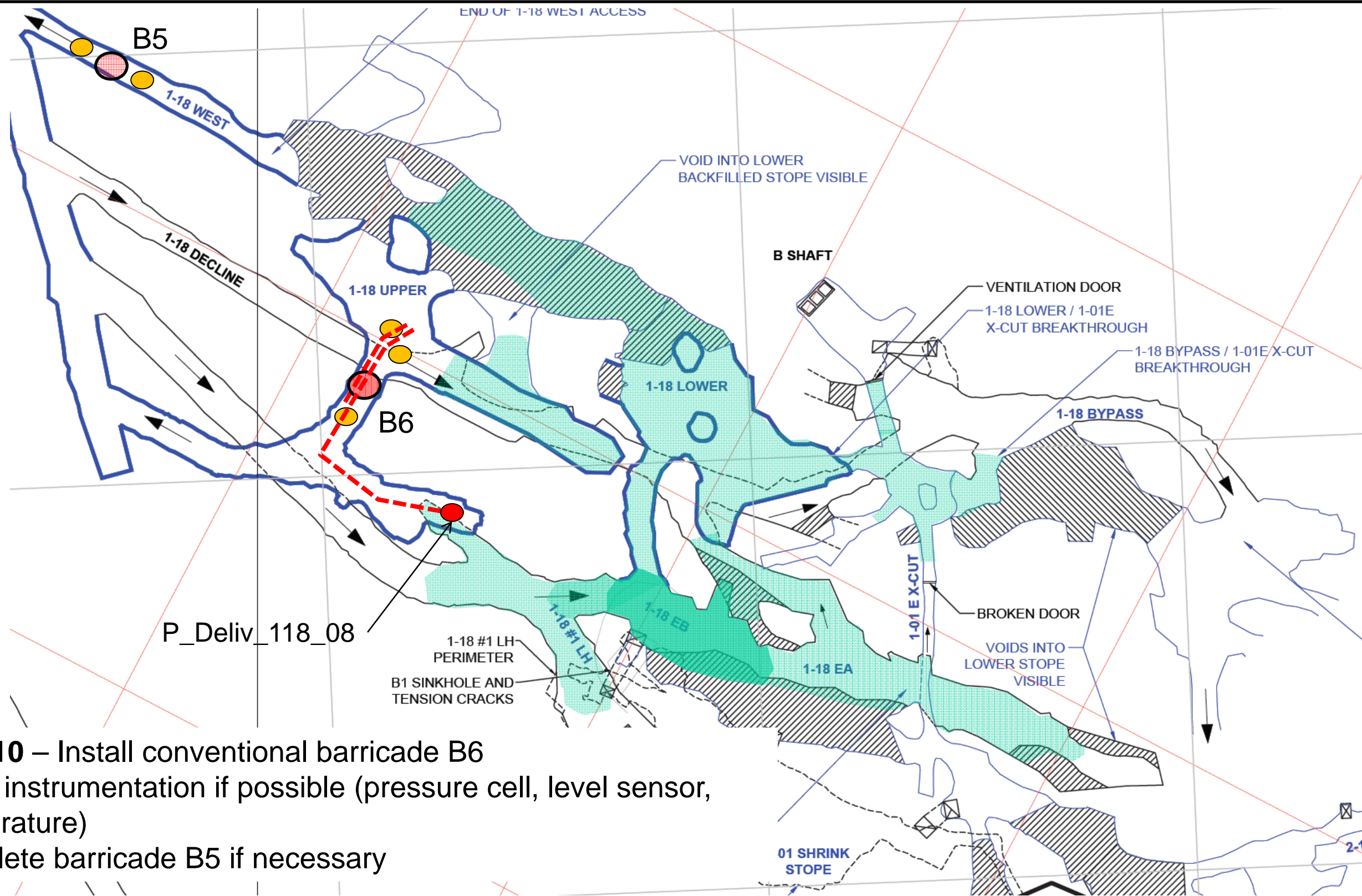
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



Step 9 – Install paste delivery pipeline into back of 1-18 Upper Stope to the 2nd highest point + a sacrificial pipe (contingency). Concurrently fill the northern arm of 1-18 Upper (P_Deliv_118_15) if CB7 is built. Paste fill is monitored by cameras. Paste is likely to flow down toward voids in the 1-18 Upper stope first. No one works on the pipelines when the paste is building up behind the barricade.


-  Underground paste delivery pipe
-  Conventional barricade
-  Sub-vertical primary fill delivery surface hole
-  U/G monitoring camera installed in-person
-  Borehole camera monitoring / secondary paste fill hole(s)
-  Borehole low slump or foam barricade

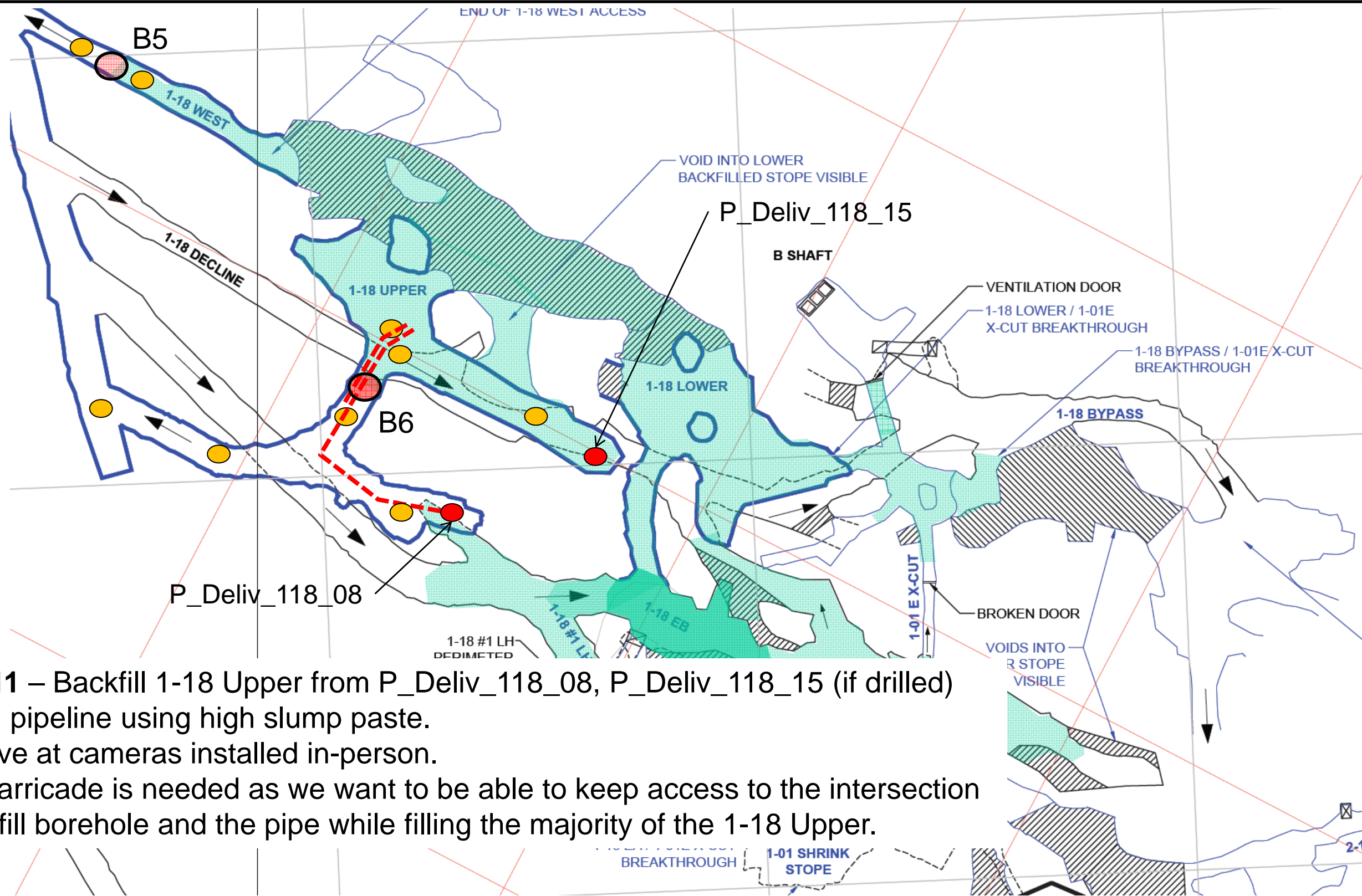
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GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 9	
PROJECT No.	10-1426-0010	PHASE No.	1000
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REVIEW			
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-  Underground paste delivery pipe
-  Conventional barricade
-  Sub-vertical primary fill delivery surface hole
-  U/G monitoring camera installed in-person
-  Borehole camera monitoring / secondary paste fill hole(s)
-  Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 10	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
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REVIEW			
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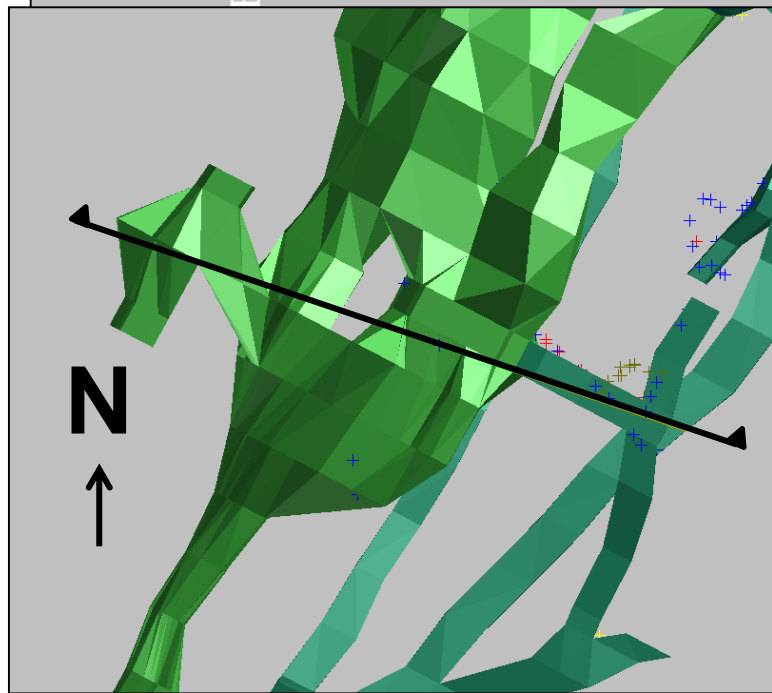
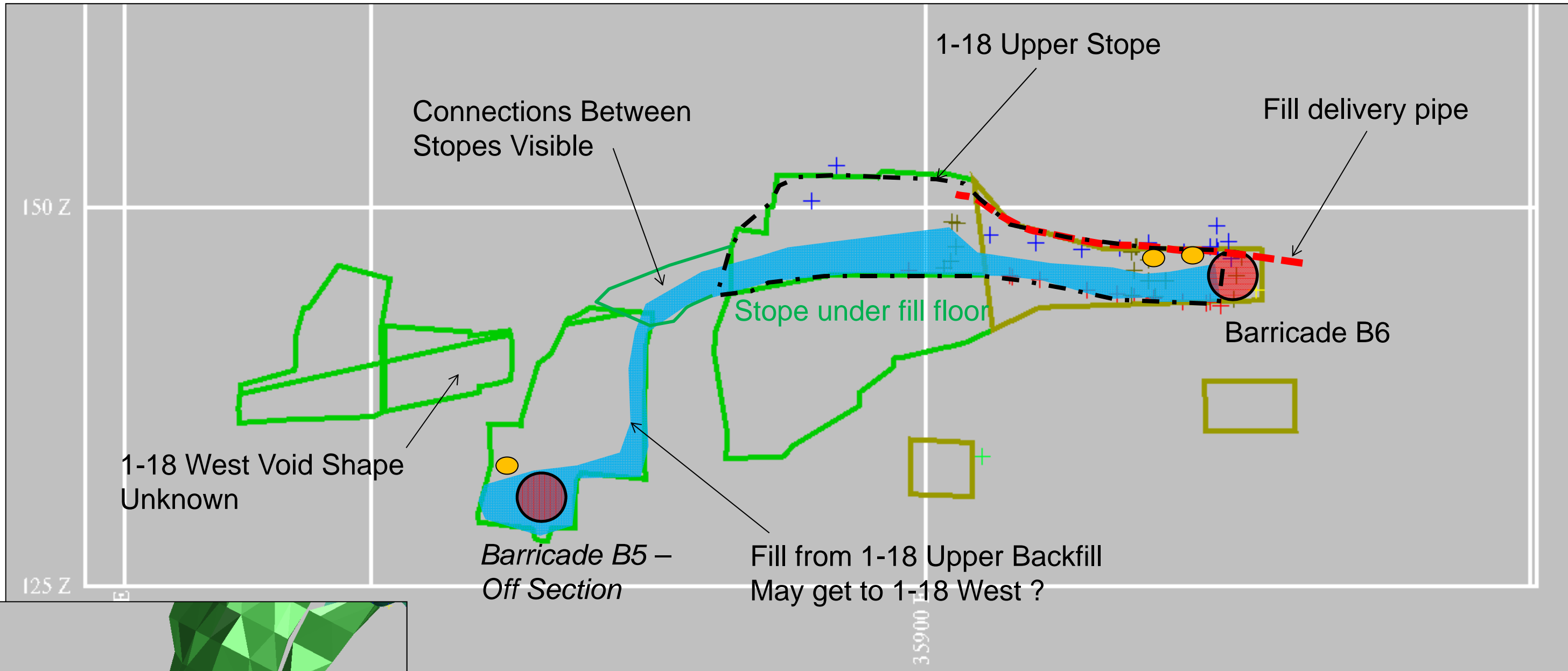
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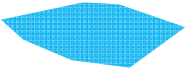

- **Step 11** – Backfill 1-18 Upper from P_Deliv_118_08, P_Deliv_118_15 (if drilled) and fill pipeline using high slump paste.
- Observe at cameras installed in-person.
- This barricade is needed as we want to be able to keep access to the intersection of the fill borehole and the pipe while filling the majority of the 1-18 Upper.

- Underground paste delivery pipe
- Conventional barricade
- Sub-vertical primary fill delivery surface hole
- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 11	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
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- Approx. Void Shape - - -
- High slump paste 
- Observation camera 

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PROJECT		PWGSC		
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT				
TITLE		B1-18 Stope Backfill Plan - Step 11		
PROJECT No.		10-1426-0010	PHASE No. 1000	
DESIGN	DTK	24SEP13	SCALE	N.T.S. REV. A
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Paste cured, barricade 5 - redundant




Break paste pipeline at barricade




Paste cured, barricade 6 - redundant

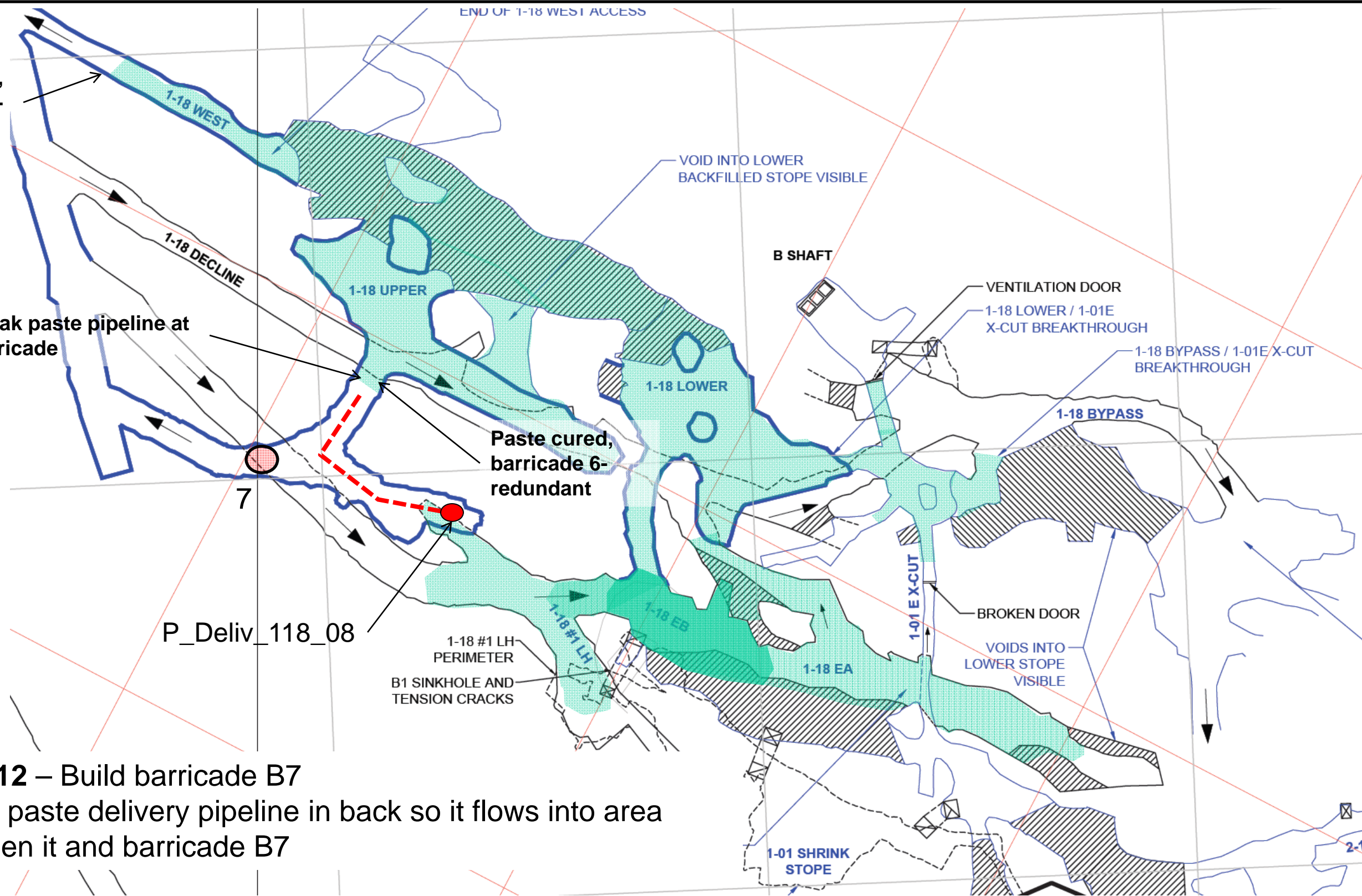
P_Deliv_118_08

1-18 #1 LH PERIMETER
B1 SINKHOLE AND TENSION CRACKS

- **Step 12** – Build barricade B7
- Break paste delivery pipeline in back so it flows into area between it and barricade B7

-  Underground paste delivery pipe
-  Conventional barricade
-  Sub-vertical primary fill delivery surface hole

-  U/G monitoring camera installed in-person
-  Borehole camera monitoring / secondary paste fill hole(s)
-  Borehole low slump or foam barricade

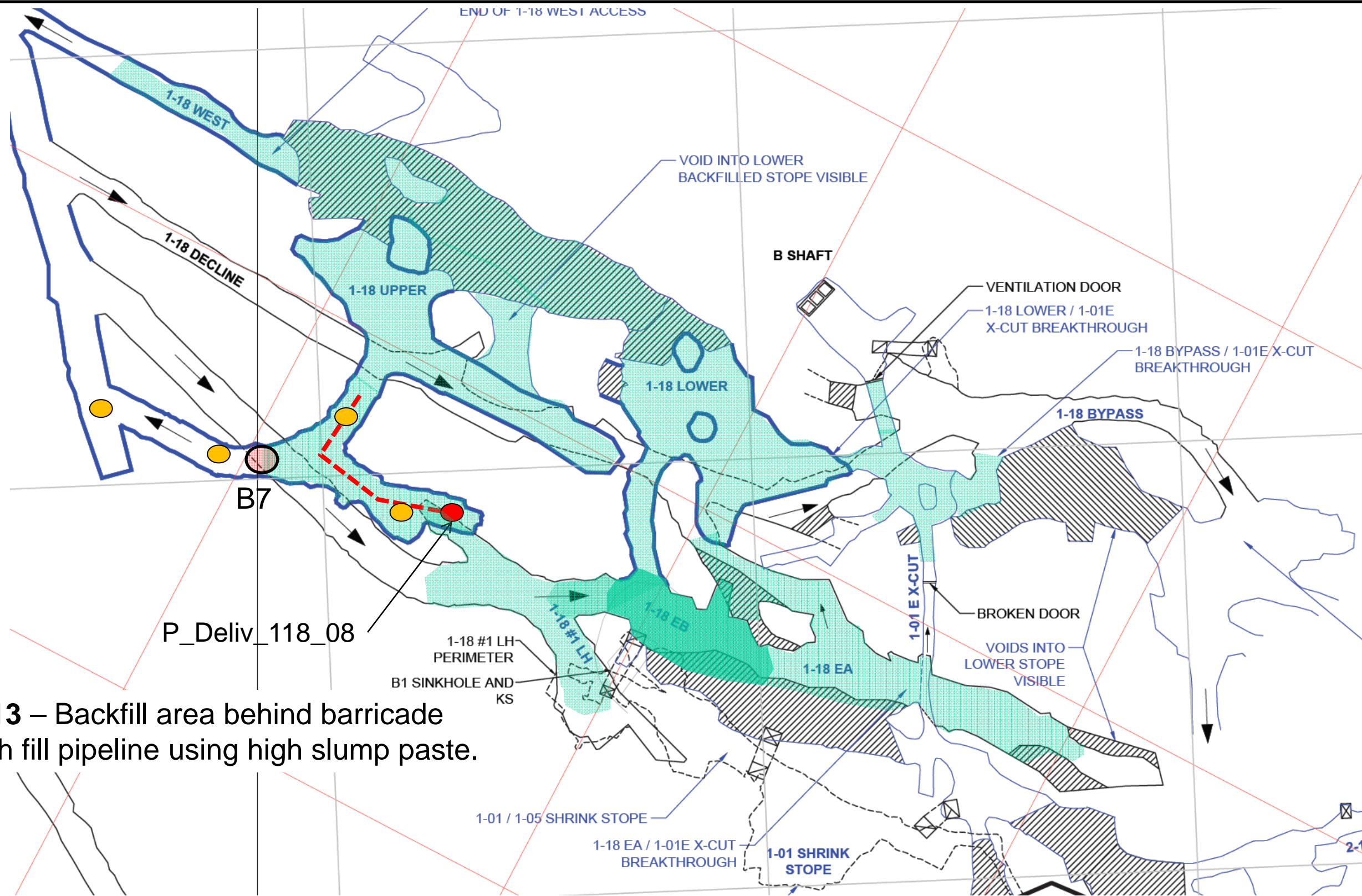


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PROJECT		PWGSC	
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TITLE		B1-18 Stope Backfill Plan – Step 12	
PROJECT No.	10-1426-0010	PHASE No.	1000
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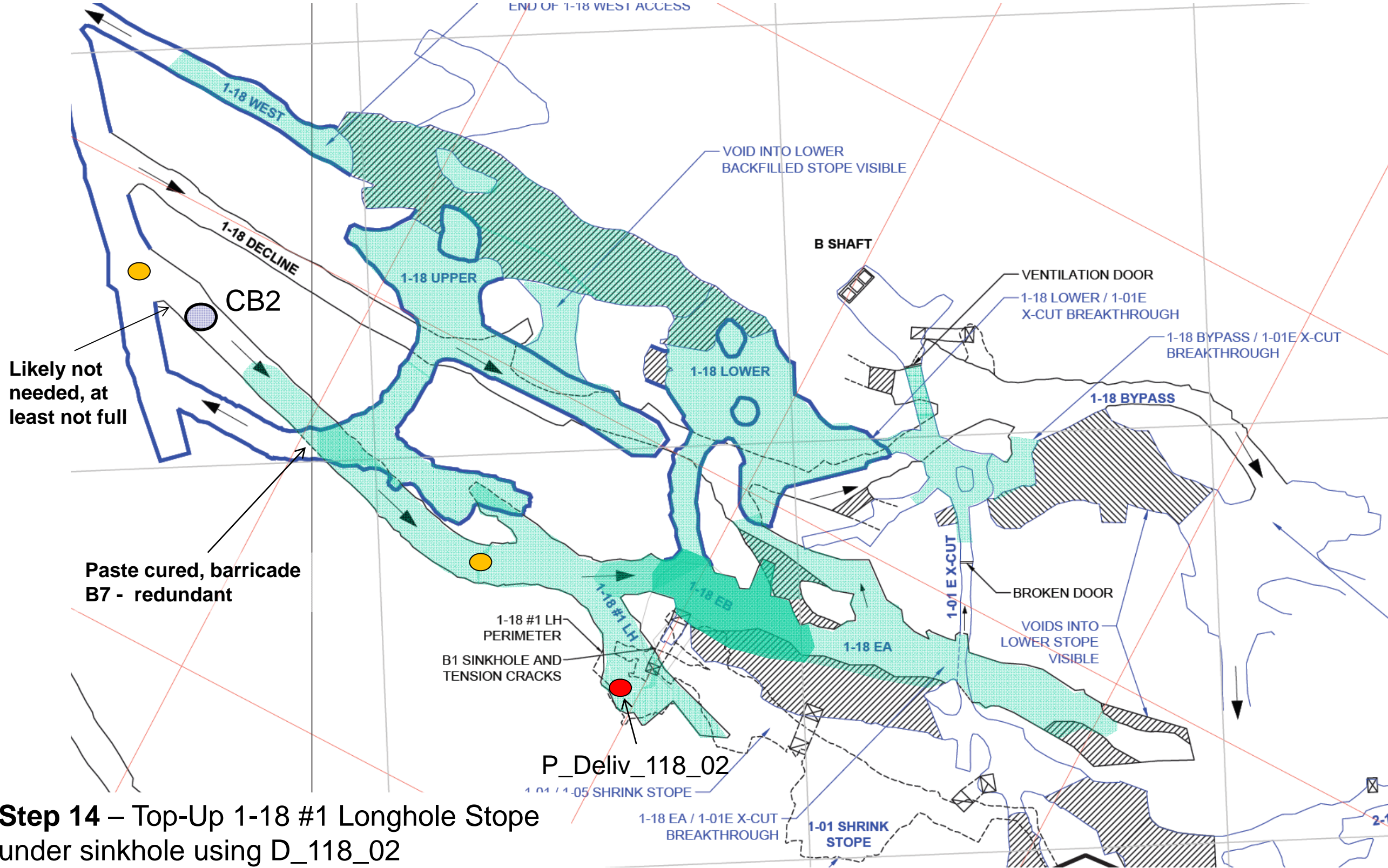
- **Step 13** – Backfill area behind barricade B7 with fill pipeline using high slump paste.

- Underground paste delivery pipe
- Conventional barricade
- Sub-vertical primary fill delivery surface hole
- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 13	
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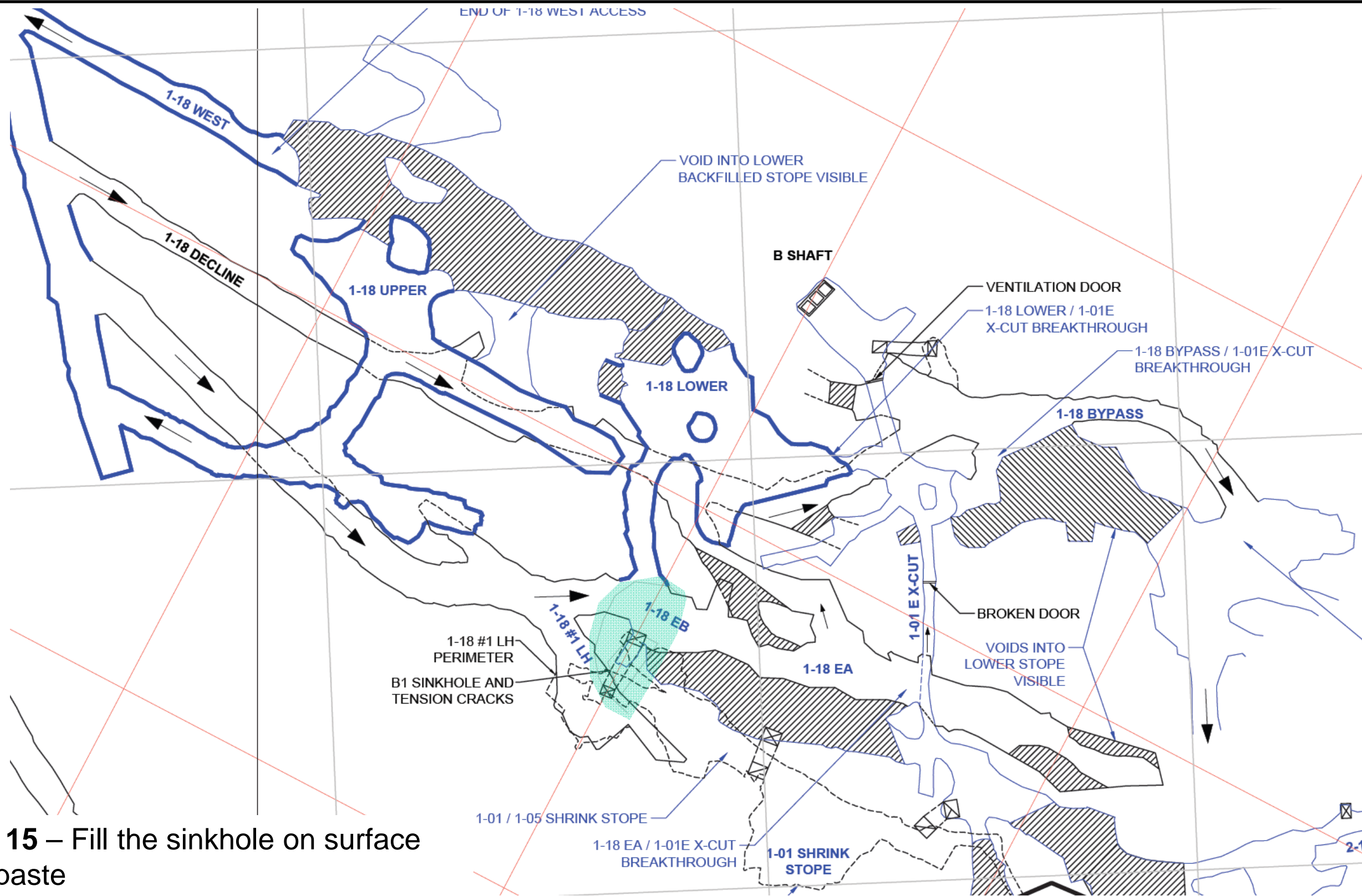
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- **Step 14 – Top-Up 1-18 #1 Longhole Stope under sinkhole using D_118_02**

- Contingency barricade
- Conventional barricade
- Sub-vertical primary fill delivery surface hole
- U/G monitoring camera installed in-person
- Borehole camera monitoring / secondary paste fill hole(s)
- Borehole low slump or foam barricade

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 14	
PROJECT No.	10-1426-0010	PHASE No.	1000
DESIGN	DTK	24SEP13	SCALE N.T.S. REV. A
CADD	DTK/FM	04OCT13	
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- **Step 15** – Fill the sinkhole on surface with paste

PROJECT		PWGSC	
GIANT MINE INTERIM U/G STABILIZATION PROJECT YELLOWKNIFE, NWT			
TITLE		B1-18 Stope Backfill Plan – Step 15	
PROJECT No.	10-1426-0010	PHASE No.	1000
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