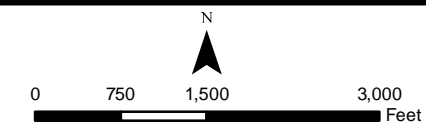


Map/Data Source: Barr Engineering

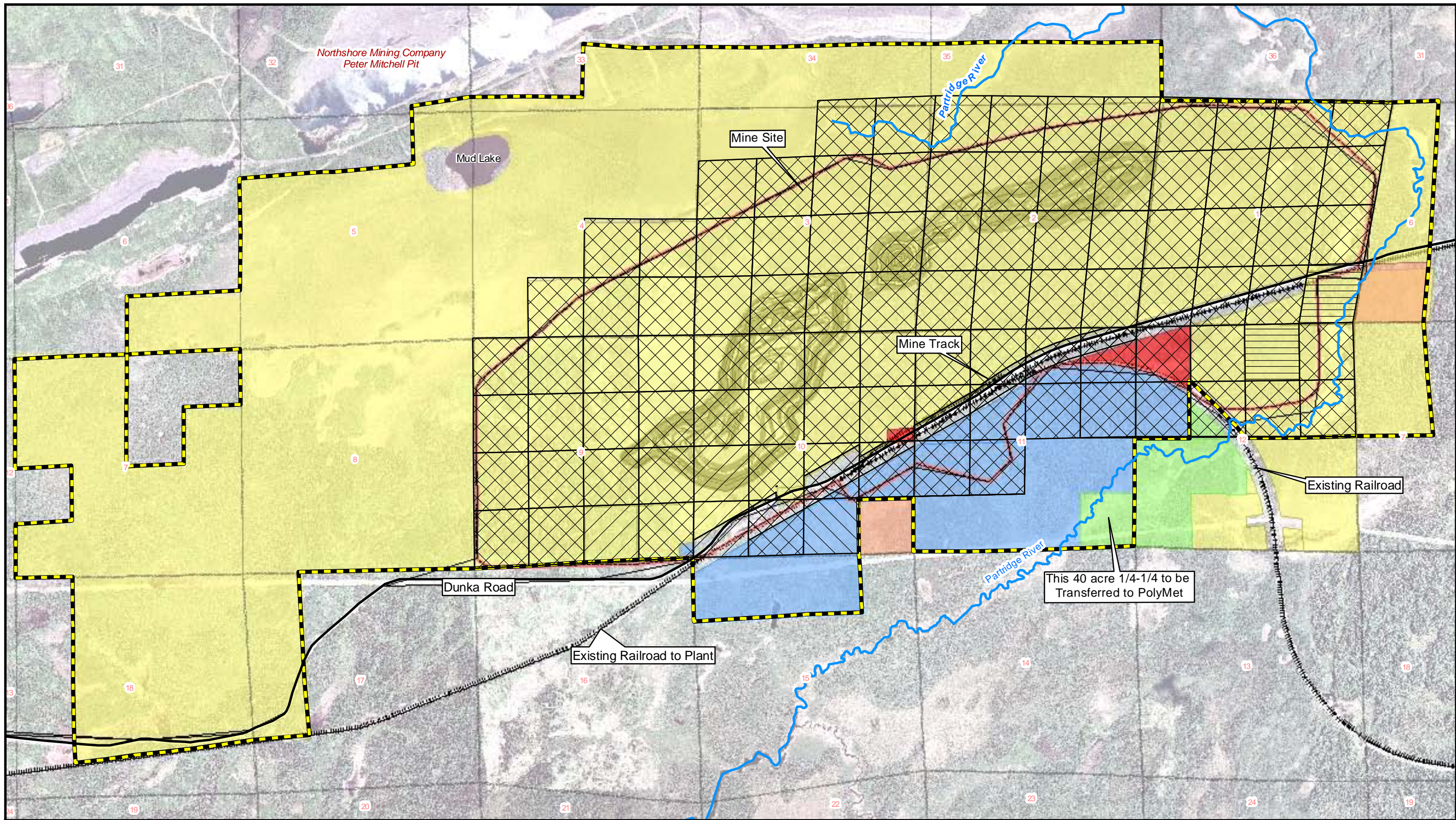
- Dunka Road
- Railroad
- Mine to Plant Pipeline
- Pit Contours
- Stockpile Contours
- Powerlines**
- New 13.8KV Mine Power Distribution
- Existing 138KV Transmission Line
- Public Land Survey Section
- Stockpile Sumps
- Mine Site



**Figure 3.1-1
Mine Site Layout Map (Proposed Action)**

**NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota**

October 2009



Map Source: Barr Engineering

<ul style="list-style-type: none"> ==== Railroad — Partridge River — Dunka Road 13 Section Lines 	Mineral Ownership <ul style="list-style-type: none"> Longyear Mesaba RGGS State of MN USA 	Surface Ownership <ul style="list-style-type: none"> To be Transfer From USFS to PolyMet PolyMet Cliffs Erie SKCG, LLC State of Minnesota PolyMet Owned or Obtained
--	--	--

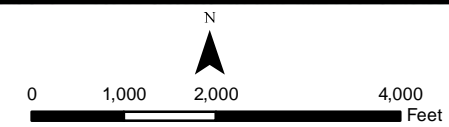
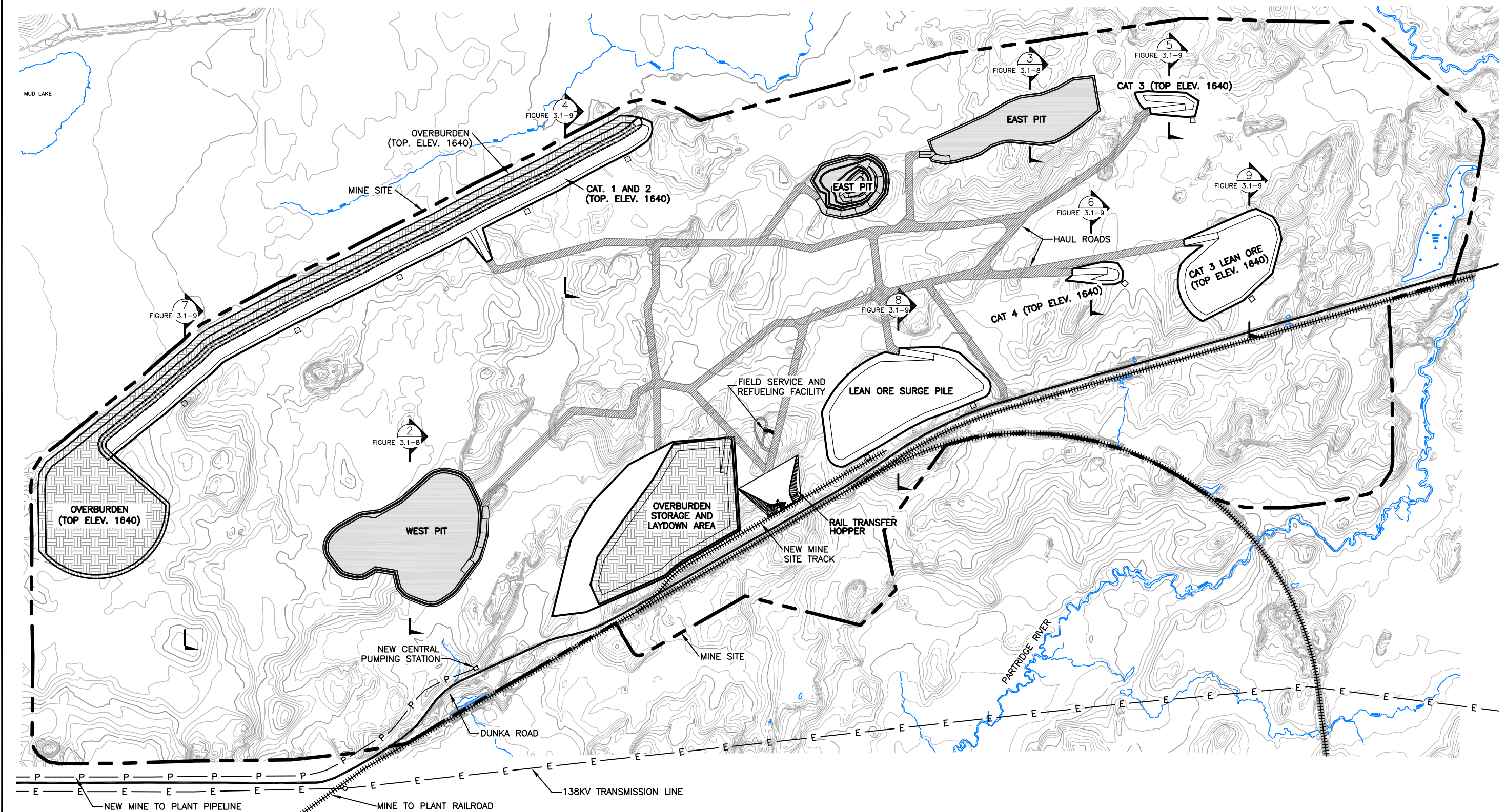


Figure 3.1-2
Mine Site Surface and Mineral Ownership
(All Actions)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

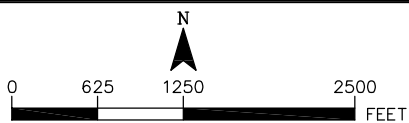
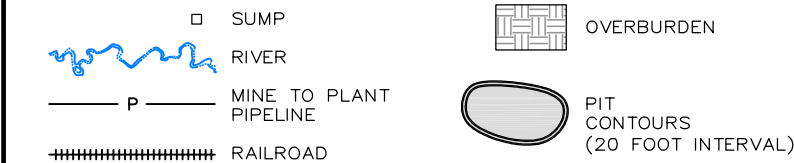
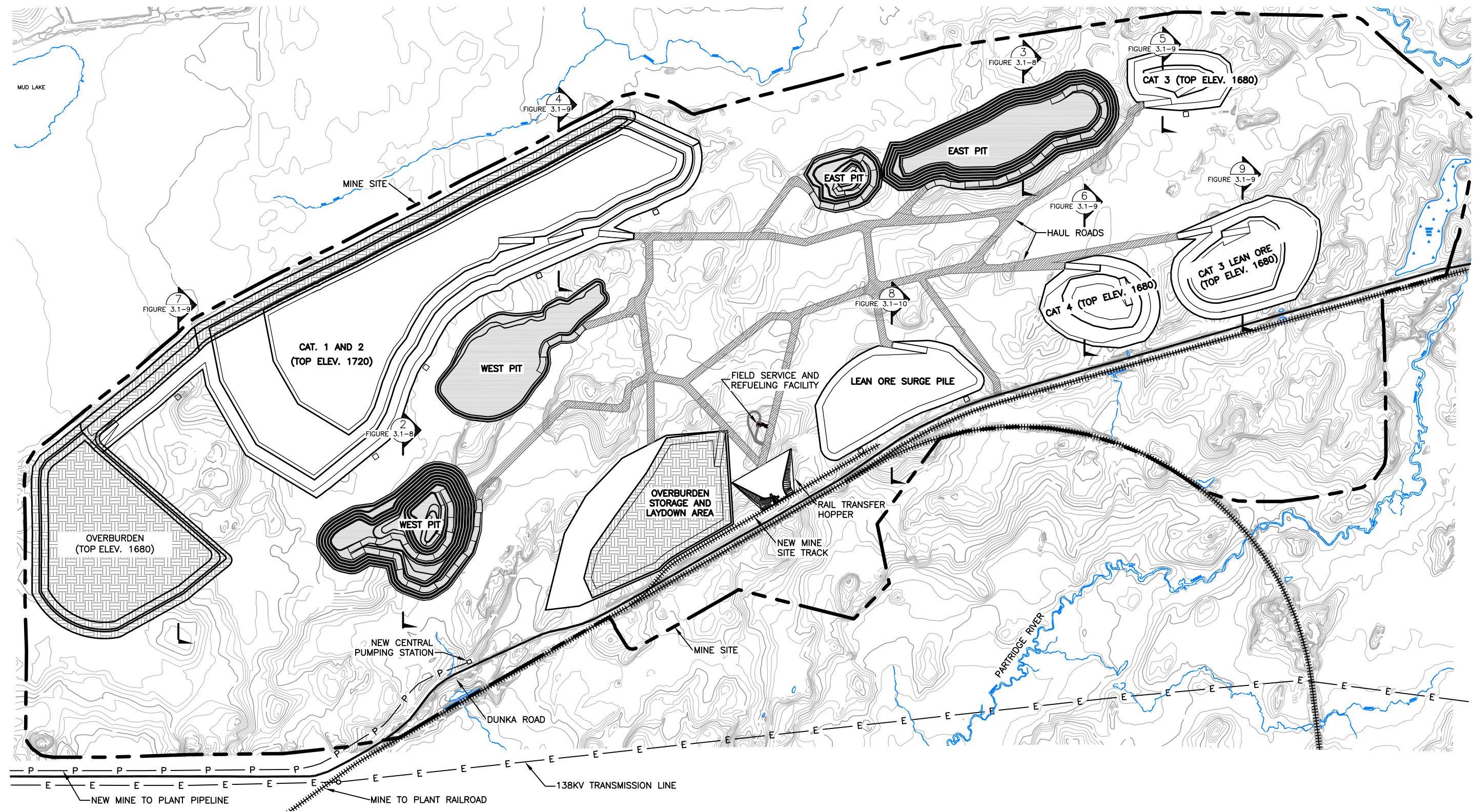


Figure 3.1-3
Mine Plan Map - Year 1 (Proposed Action)

NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

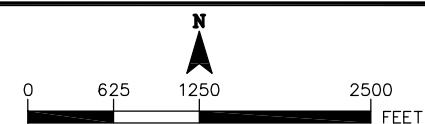
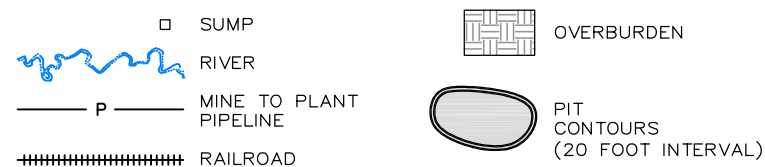
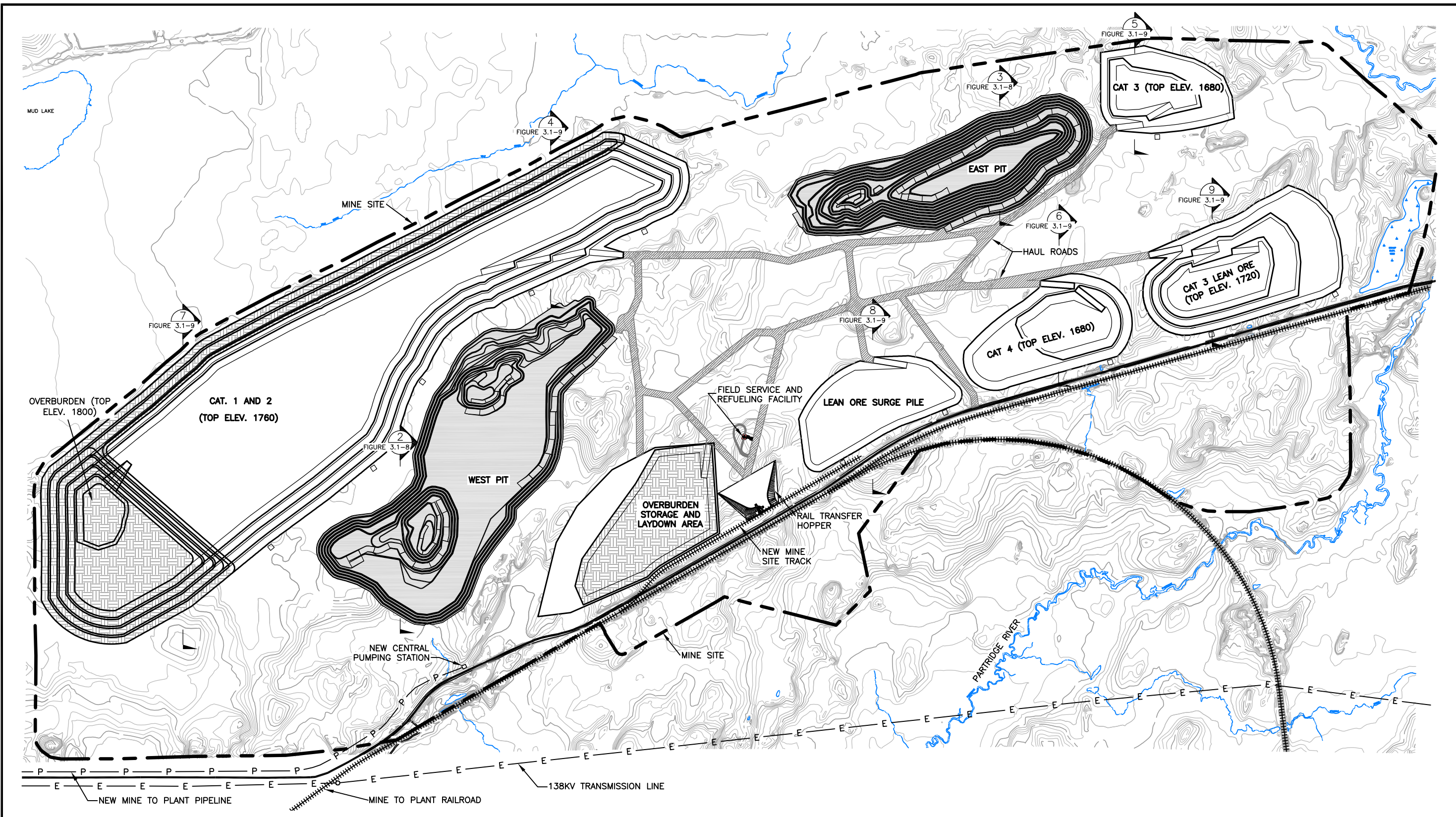


Figure 3.1-4
Mine Plan Map - Year 5 (Proposed Action)

NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

- SUMP
- RIVER
- MINE TO PLANT PIPELINE
- RAILROAD
- OVERBURDEN
- PIT CONTOURS (20 FOOT INTERVAL)

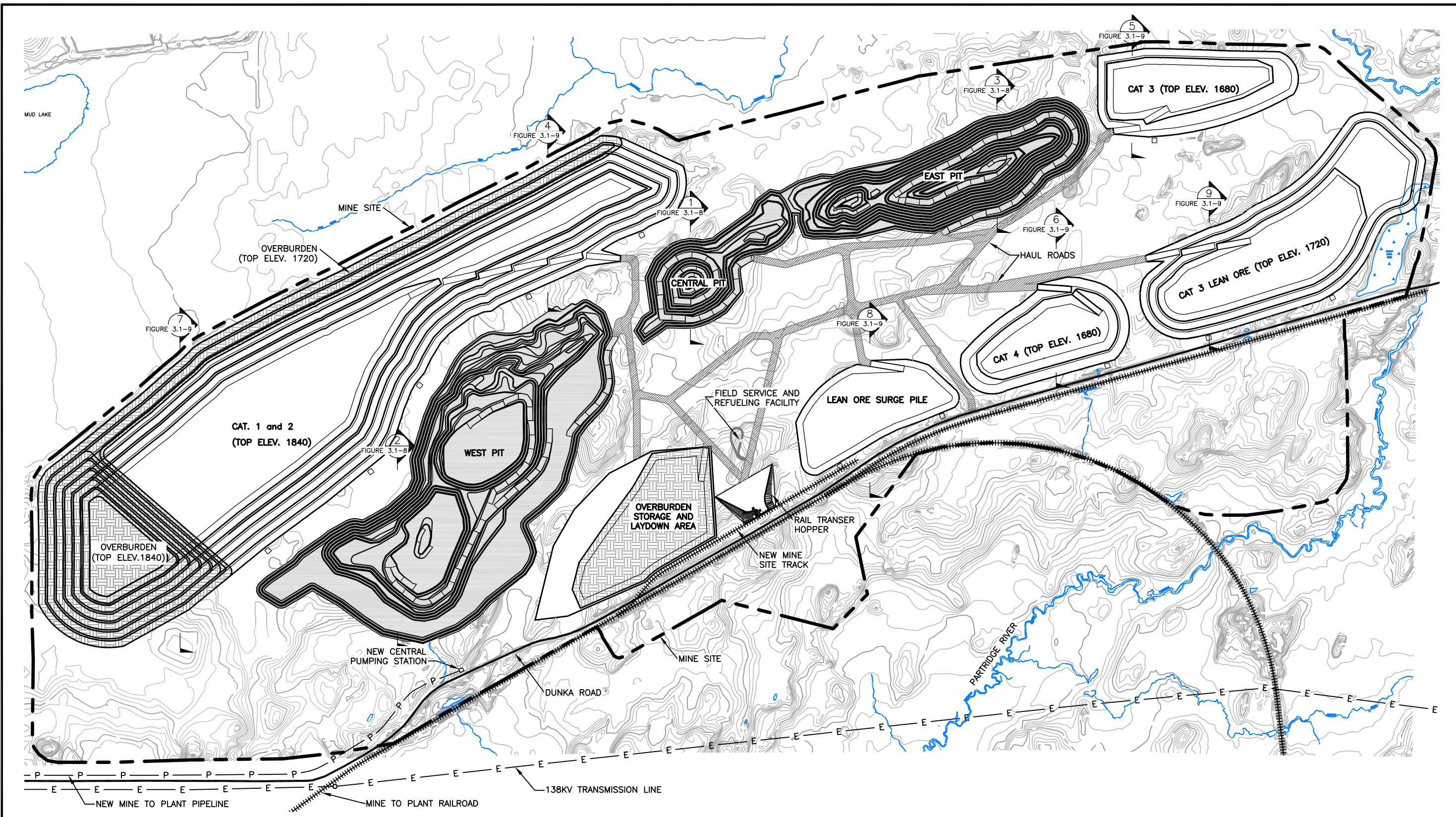
N

0 625 1250 2500 FEET

Figure 3.1-5
Mine Plan Map - Year 10 (Proposed Action)

NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

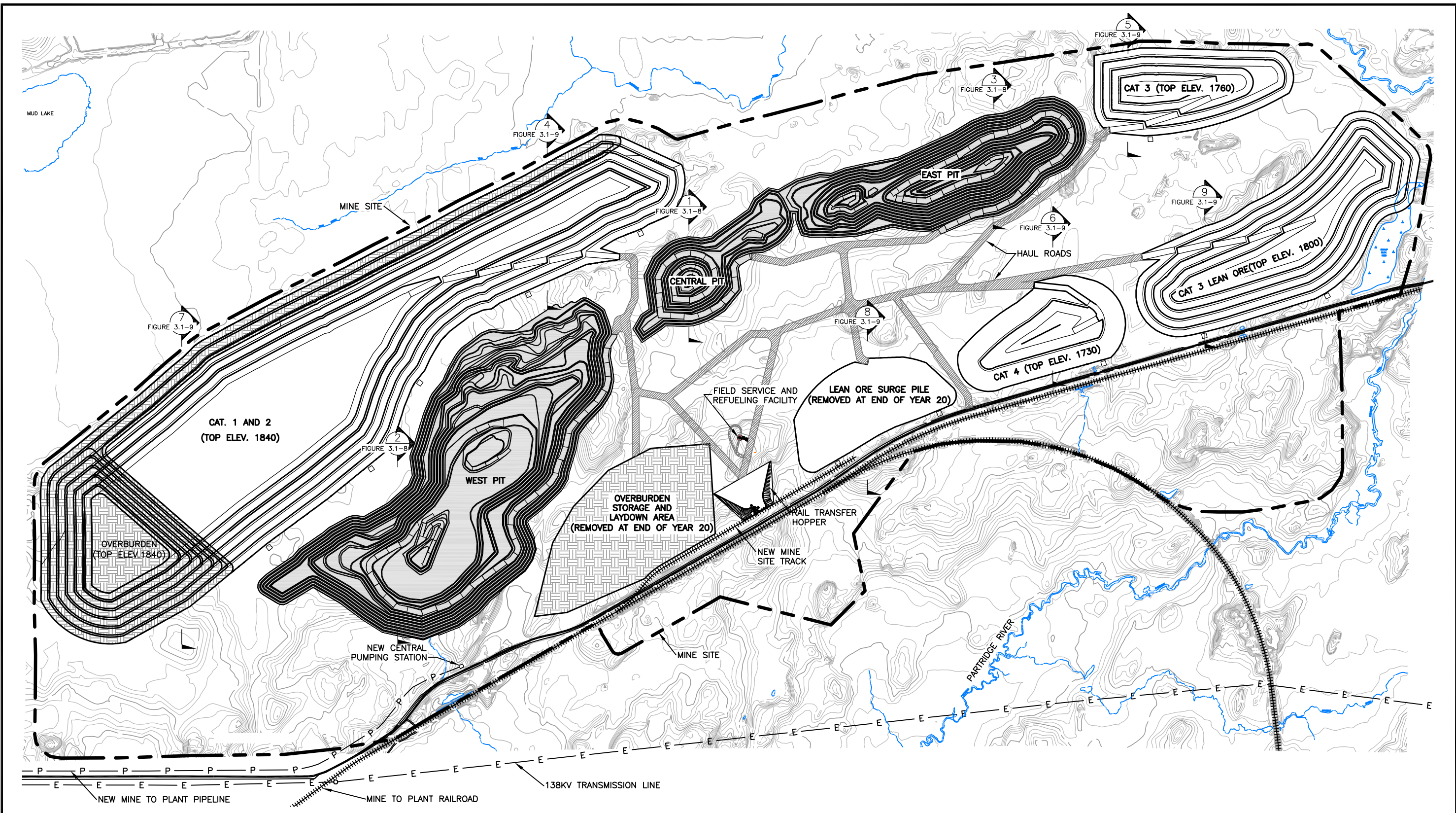
- SUMP
- RIVER
- MINE TO PLANT PIPELINE
- RAILROAD
- OVERBURDEN
- PIT CONTOURS (20 FOOT INTERVAL)

Note:
Figure shows maximum size of each pit at Year 15. In reality the East Pit would reach maximum by Year 11, and backfilling with waste rock and water would have been occurring since Year 12. The Central Pit reaches maximum capacity by Year 13, with backfilling occurring since Year 14.

Figure 3.1-6
Mine Plan Map - Year 15 (Proposed Action)

NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

- SUMP
- RIVER
- MINE TO PLANT PIPELINE
- RAILROAD
- OVERBURDEN
- PIT CONTOURS (20 FOOT INTERVAL)

Note:
Figure shows maximum size of the East and Central Pit prior to filling with water and waste rock.

0 625 1250 2500 FEET

Figure 3.1-7
Mine Plan Map - Year 20 (Proposed Action)

NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009

FIGURE 3.1-6 to 3.1-7 **1 SECTION: CENTRAL PIT**
2:1 VERTICAL EXAGGERATION

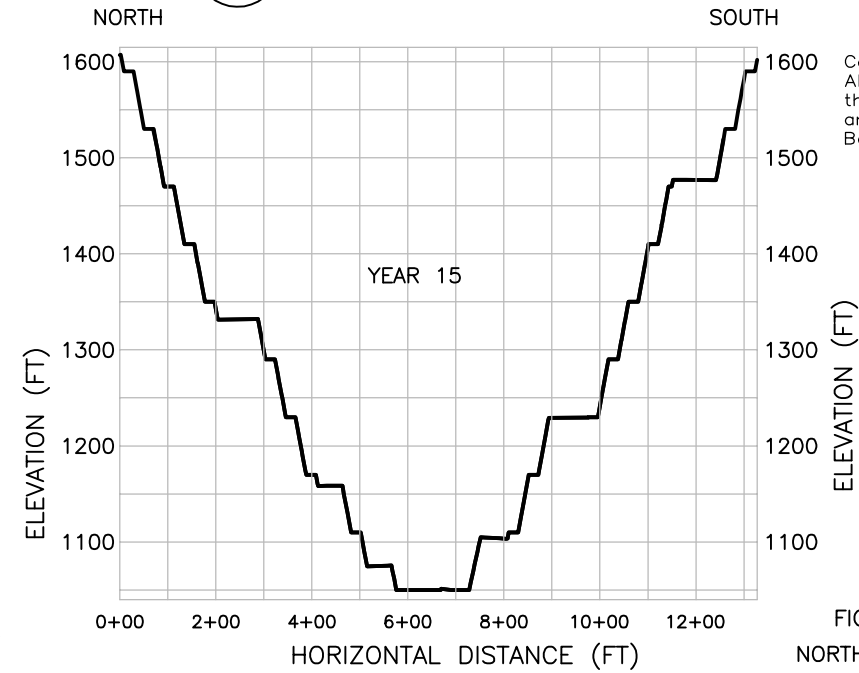


FIGURE 3.1-3 to 3.1-7 **2 SECTION: WEST PIT**
2:1 VERTICAL EXAGGERATION

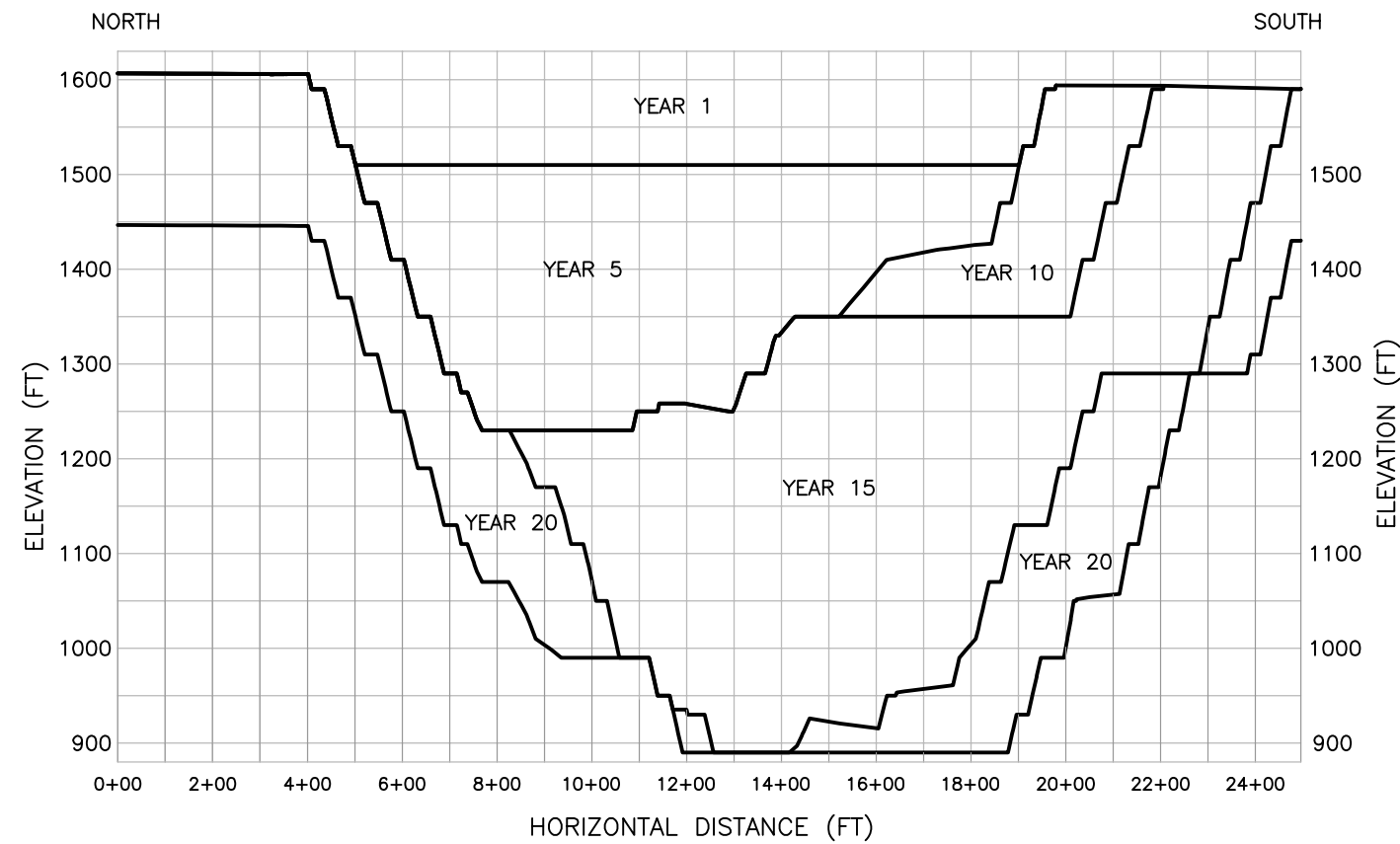
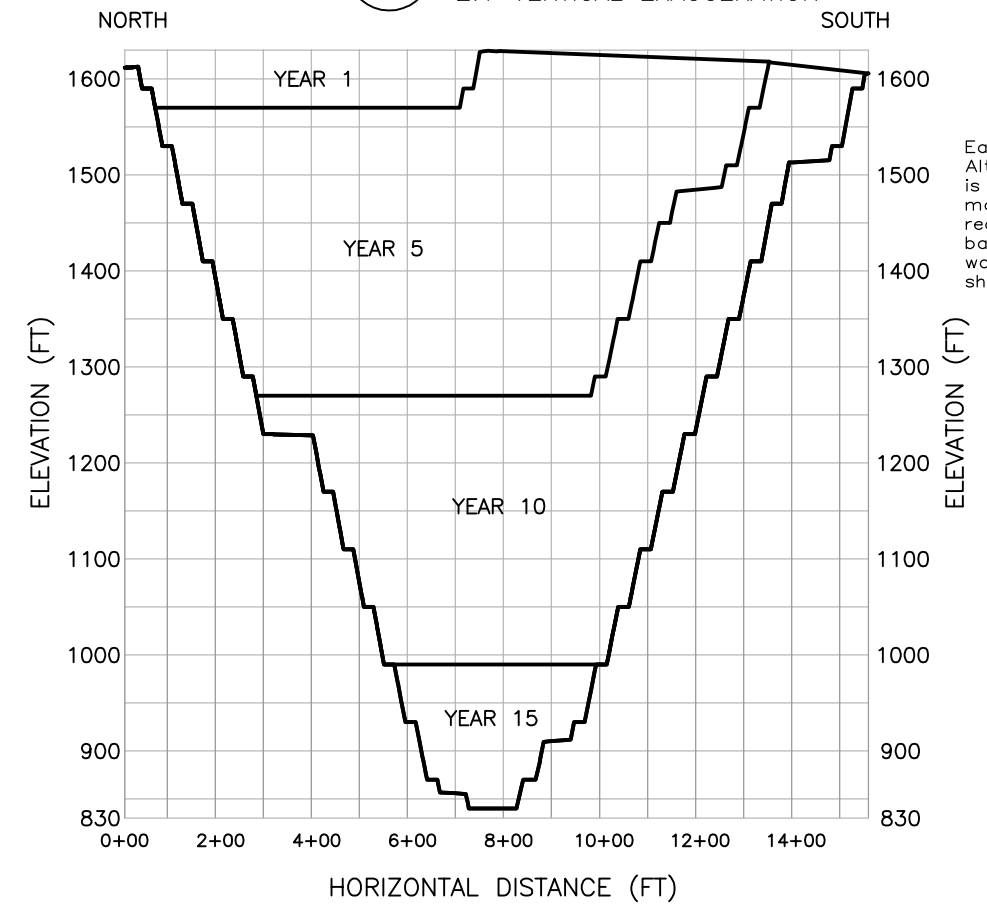
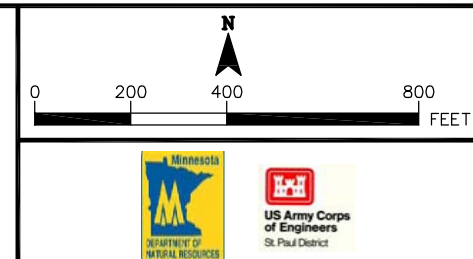


FIGURE 3.1-3 to 3.1-7 **3 SECTION: EAST PIT**
2:1 VERTICAL EXAGGERATION



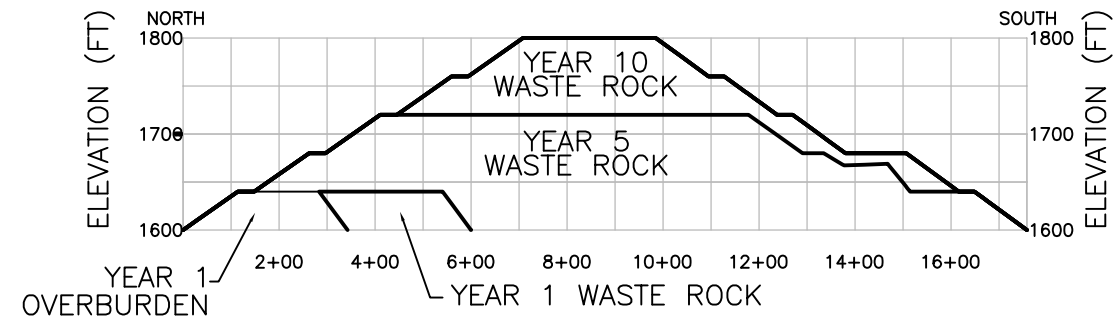
Map Source: Barr Engineering



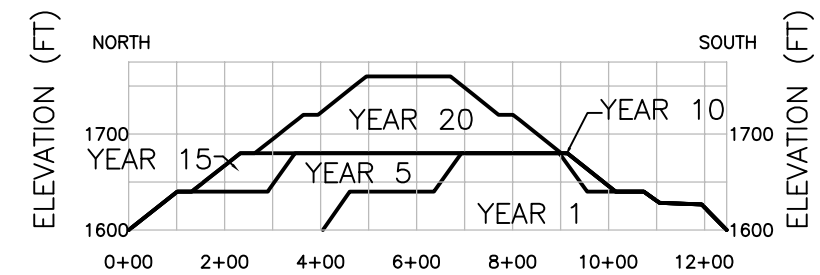
**Figure 3.1-8
Pit Cross Sections (Proposed Action)**

**NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota**

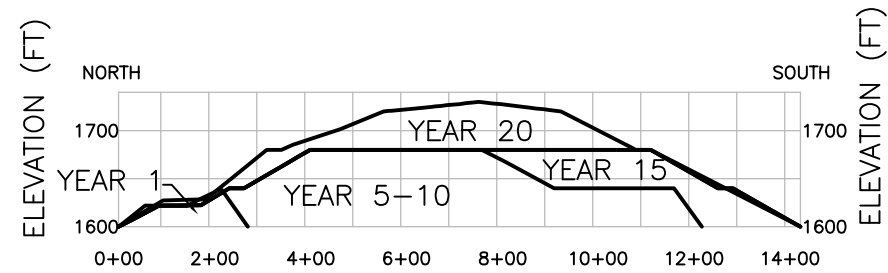
October 2009



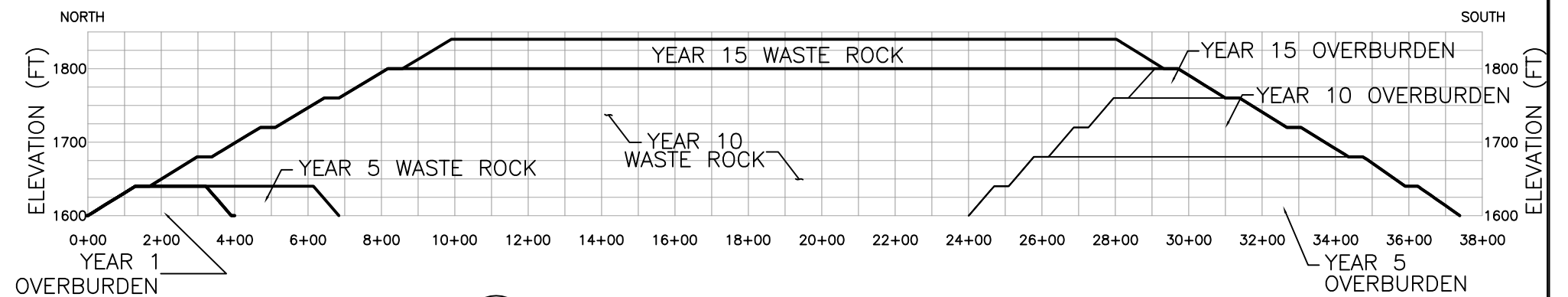
4 SECTION: CATEGORY 1 and 2 STOCKPILE
FIGURE 3.1-3 to 3.1-7 2:1 VERTICAL EXAGGERATION



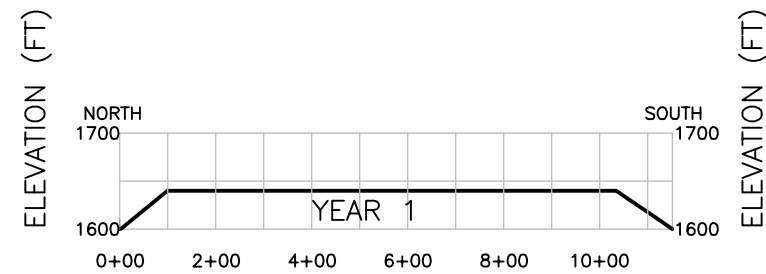
5 SECTION: CATEGORY 3 STOCKPILE
FIGURE 3.1-3 to 3.1-7 2:1 VERTICAL EXAGGERATION



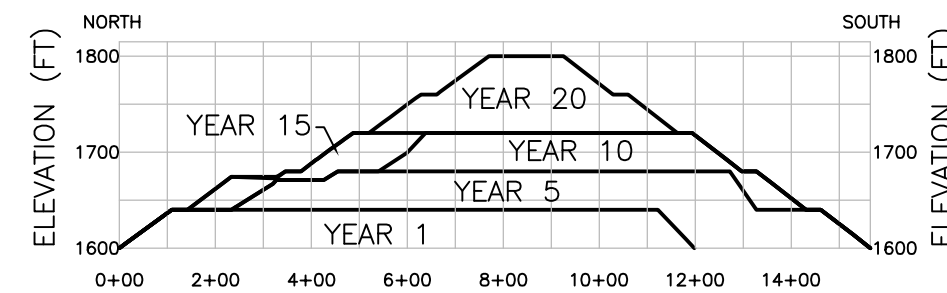
6 SECTION: CATEGORY 4 STOCKPILE
FIGURE 3.1-3 to 3.1-7 2:1 VERTICAL EXAGGERATION



7 SECTION: CATEGORY 1 and 2 STOCKPILE
FIGURE 3.1-3 to 3.1-7 2:1 VERTICAL EXAGGERATION

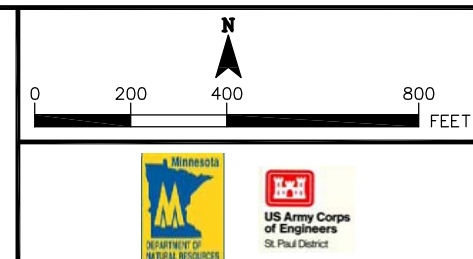


8 SECTION: LEAN ORE SURGE PILE
FIGURE 3.1-5 to 3.1-7 2:1 VERTICAL EXAGGERATION



9 SECTION: CATEGORY 3 LEAN ORE STOCKPILE
FIGURE 3.1-3 to 3.1-7 2:1 VERTICAL EXAGGERATION

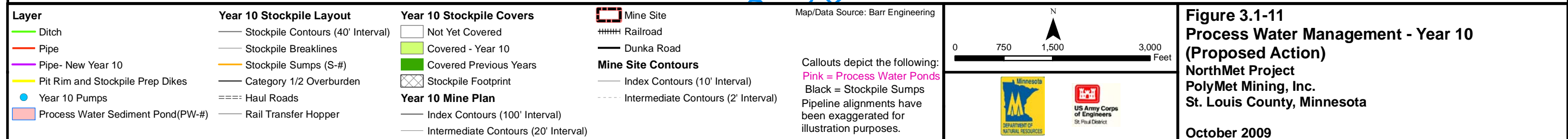
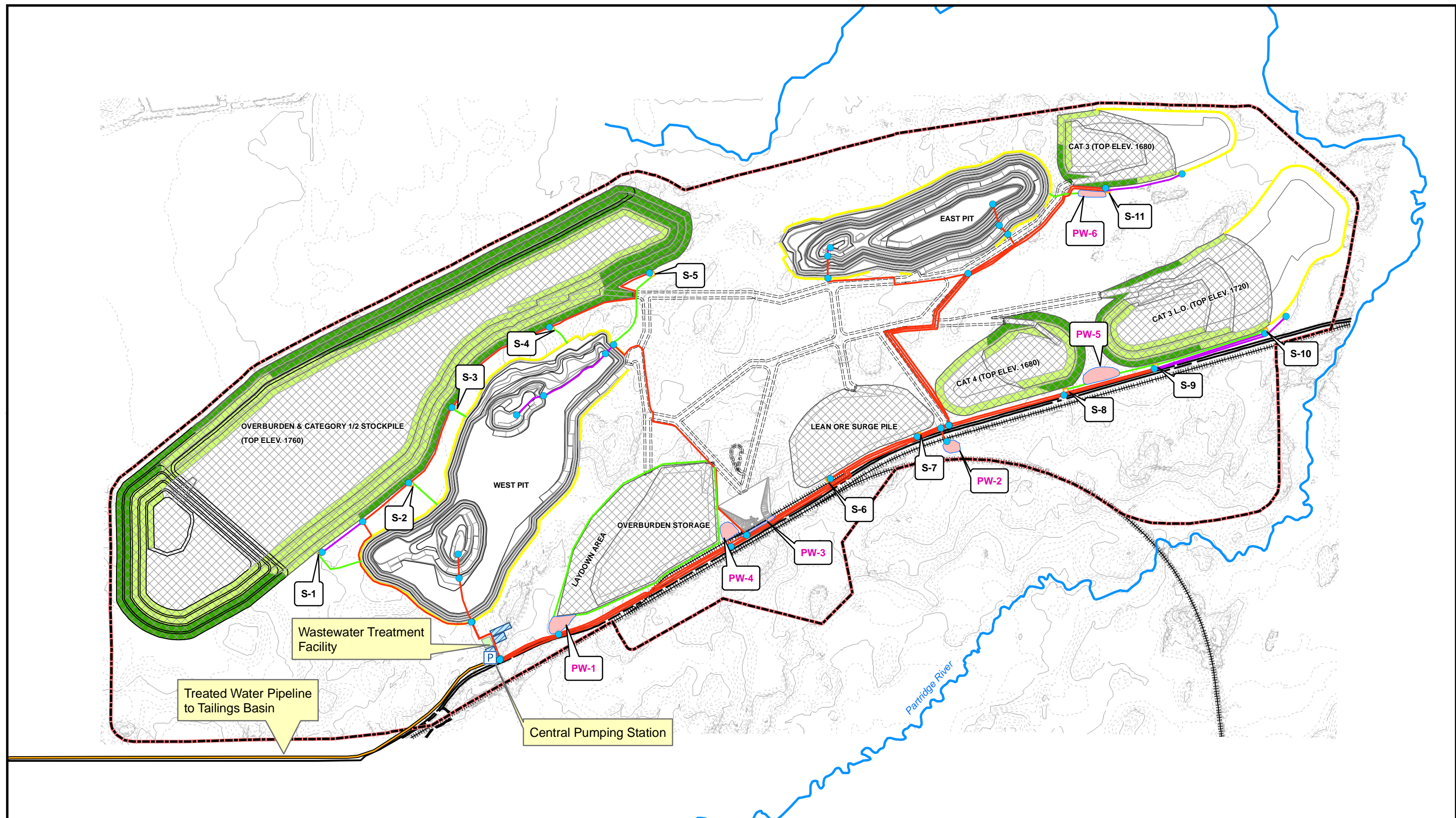
Map Source: Barr Engineering

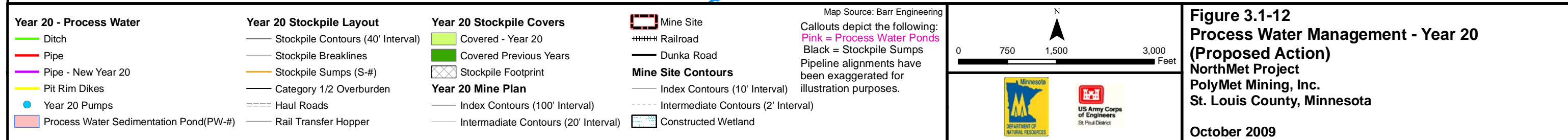
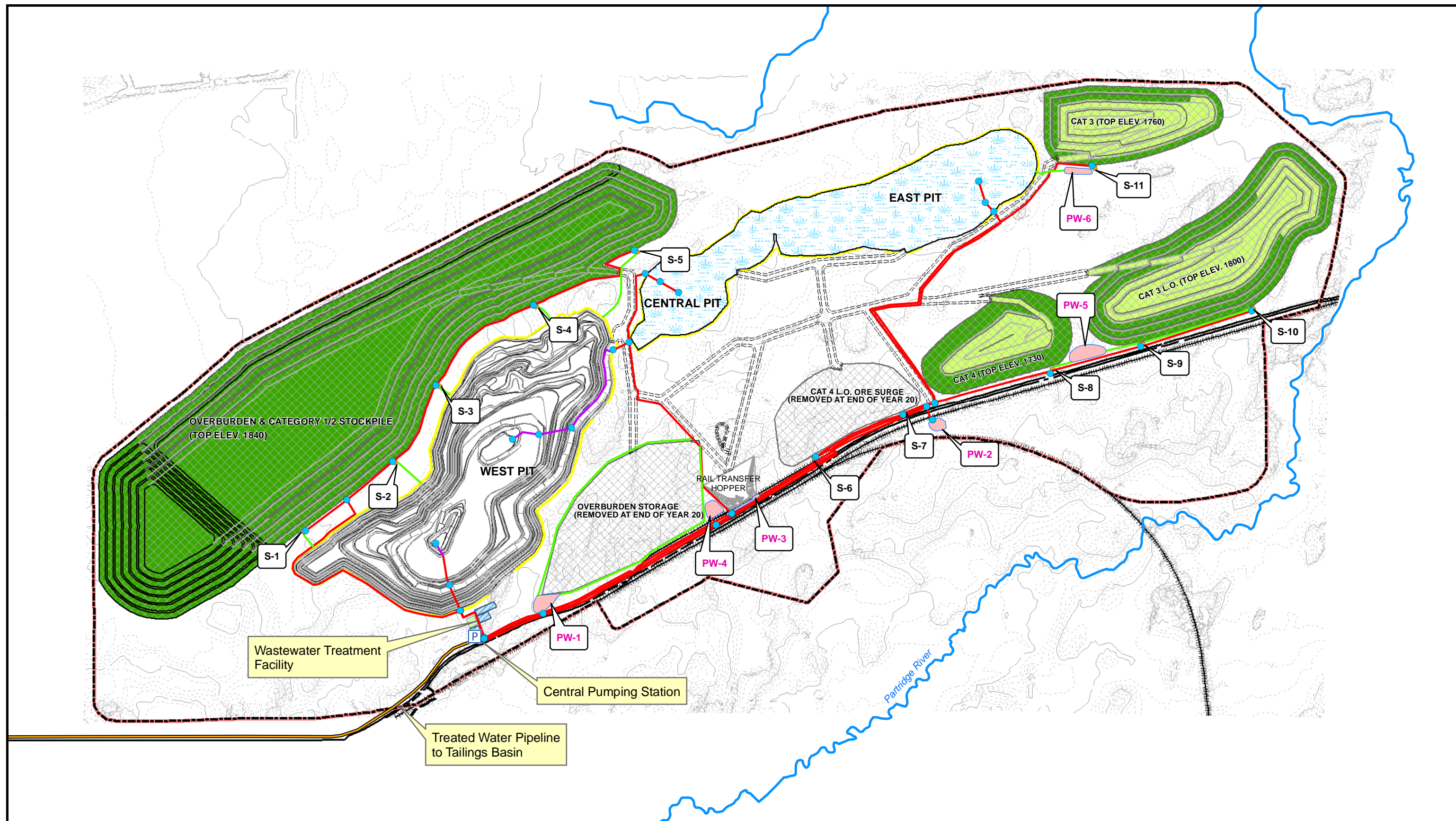


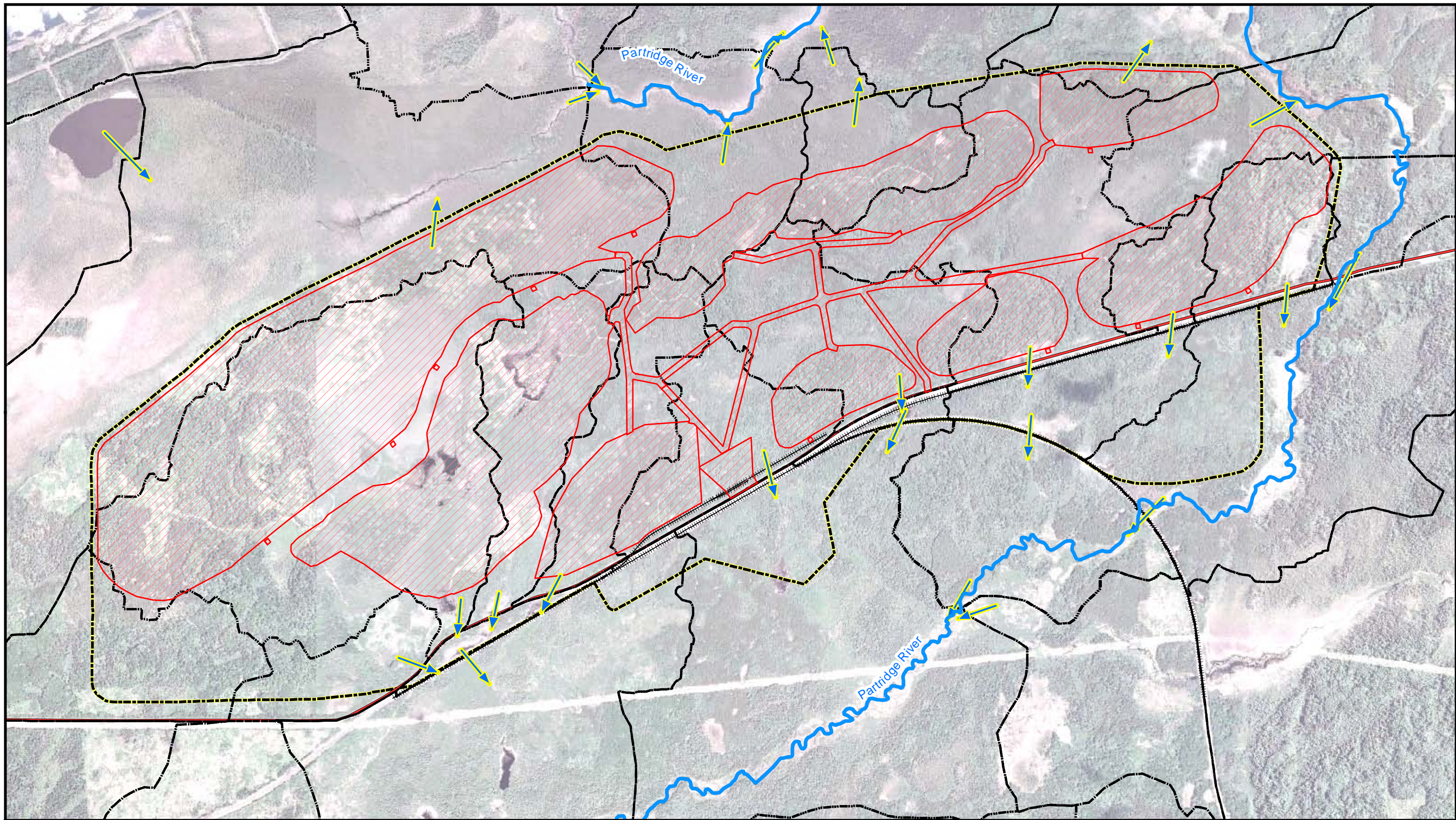
**Figure 3.1-9
Stockpile Cross Sections (Proposed Action)**

**NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota**








October 2009







Map Source: Barr Engineering

- | | |
|---|---|
|  Partridge River |  Mine Site |
|  Flow Direction |  Year 20 Mine Facilities |
|  Dunka Road |  Existing Sub Watersheds |
|  Railroad | |

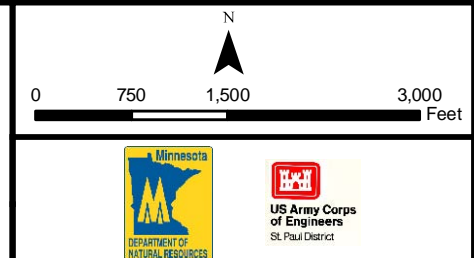
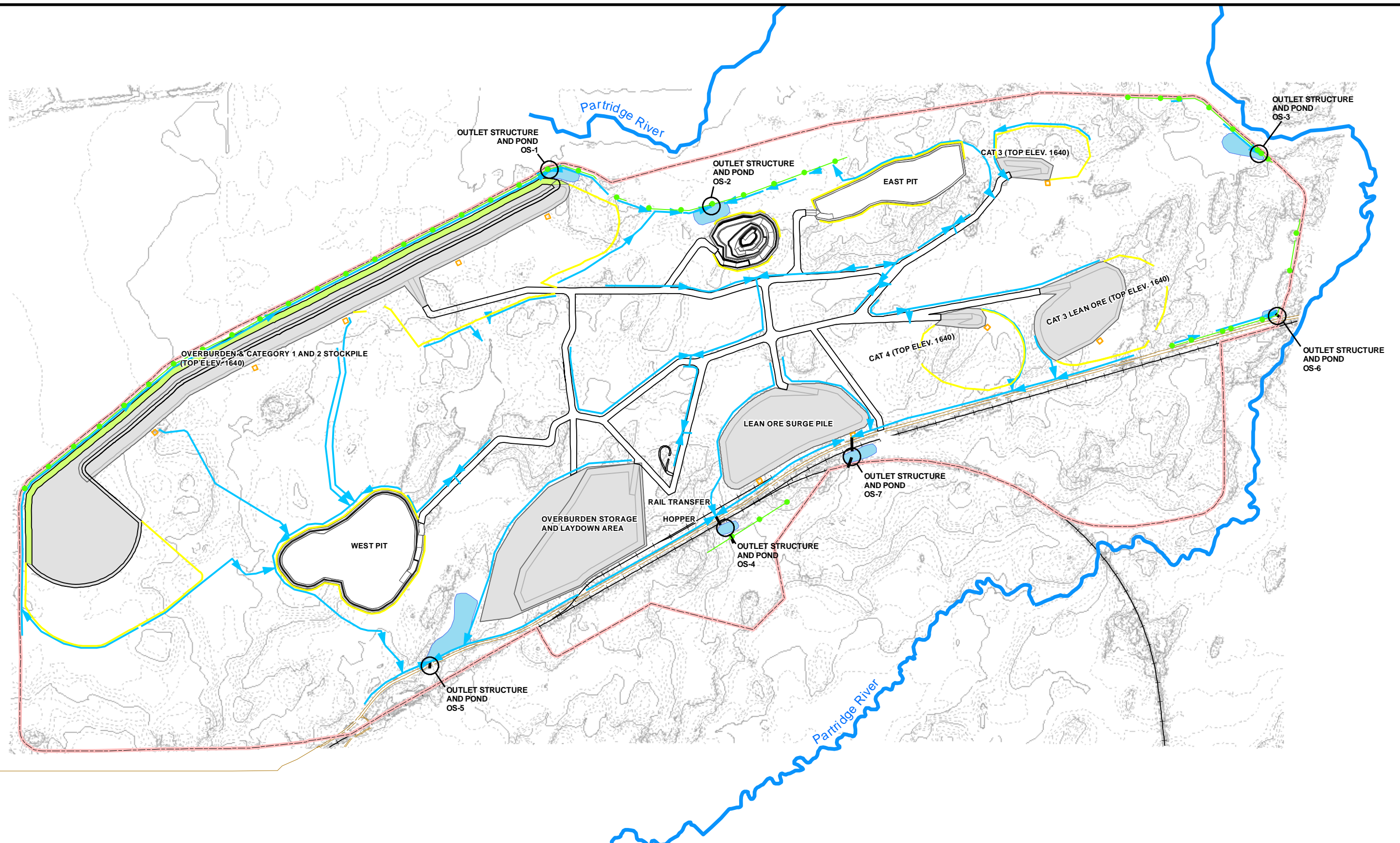


Figure 3.1-13
Existing Drainage Subwatersheds
at the Mine Site (Proposed Action)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota
 October 2009



Map Source: Barr Engineering

Year 1 Stormwater

- Stormwater Culverts
- Ditches
- Pit Rim and Stockpile Prep Dike
- Perimeter Dike
- Stormwater Sedimentation Pond

Year 1 Stockpile Layout

- Stockpile Contours (40' Interval)
- Stockpile Breaklines
- Category 1/2 Overburden
- Stockpile Sumps
- Haul Roads

Year 1 Mine Plan

- Index Contours (100' Interval)
- Intermediate Contours (20' Interval)
- Index Contours (10' Interval)
- Intermediate Contours (2' Interval)

Year 1 Stockpile Covers

- Not Yet Covered
- Covered - Year 1

- Mine Site
- Railroad
- Dunka Road
- Partridge River

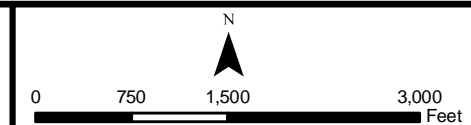
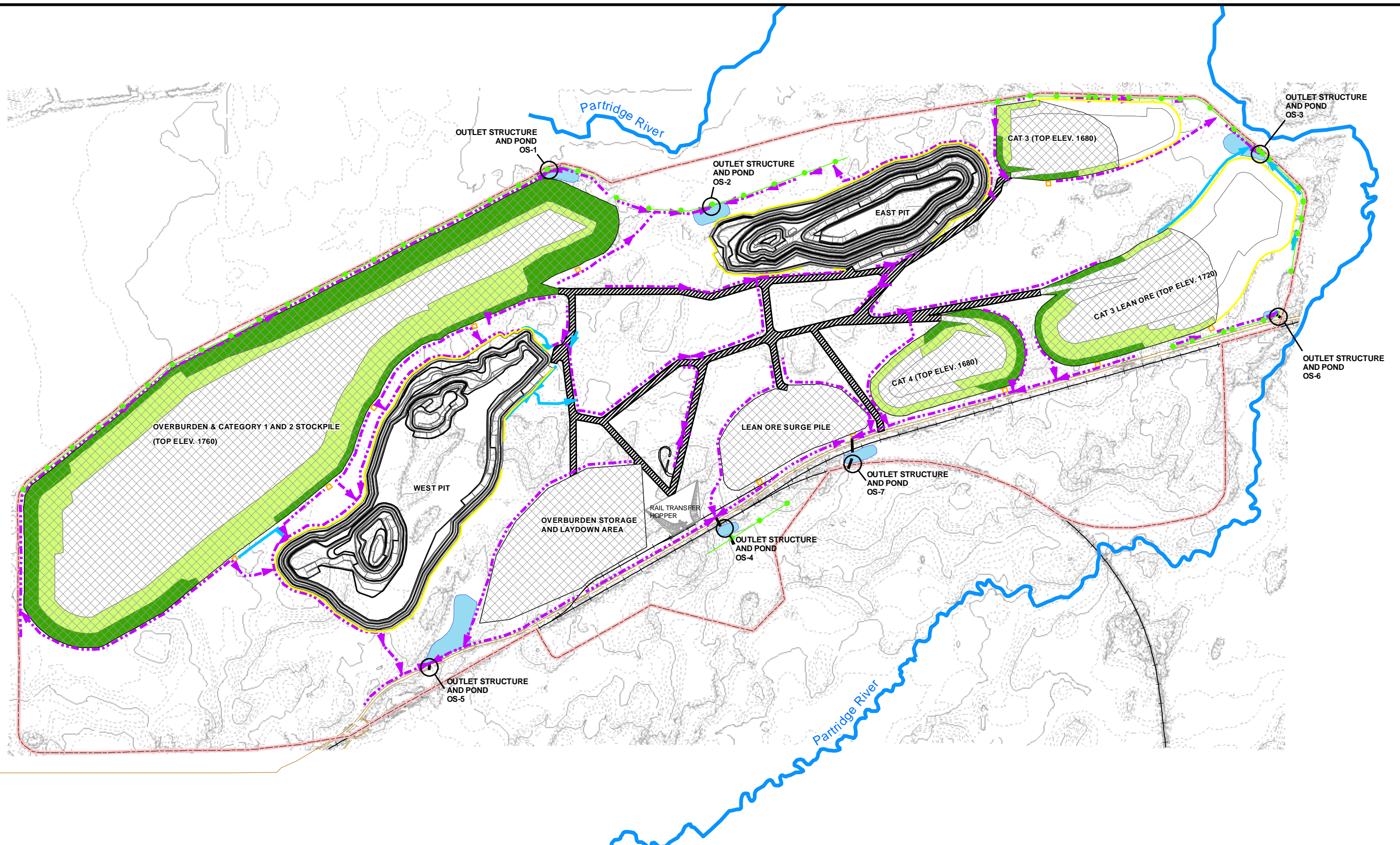


Figure 3.1-14
Year 1 Stormwater Management
(Proposed Action)
NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

Year 10 Stormwater

- Culverts
- Ditches-New Year 10
- Ditches
- Pit Rim & Stockpile Prep Dikes
- Perimeter Dike
- Stormwater Sedimentation Pond

Year 10 Stockpile Layout

- Stockpile Contours (40' Interval)
- Stockpile Breaklines
- Stockpile Sumps
- Category 1/2 Overburden
- Haul Roads
- Rail Transfer Hopper

Year 10 Mine Plan

- Index Contours (100' Interval)
- Intermediate Contours (10' Interval)
- Mine Site Contours**
 - Index Contours (10' Interval)
 - Intermediate Contours (2' Interval)

Mine Site

- Railroad
- Dunka Road
- Partridge River

Year 10 Stockpile Covers

- Not Yet Covered
- Covered - Year 10
- Covered Previous Years
- Stockpile Footprint

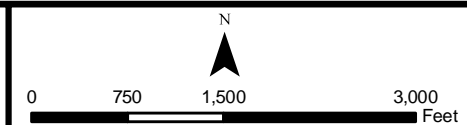
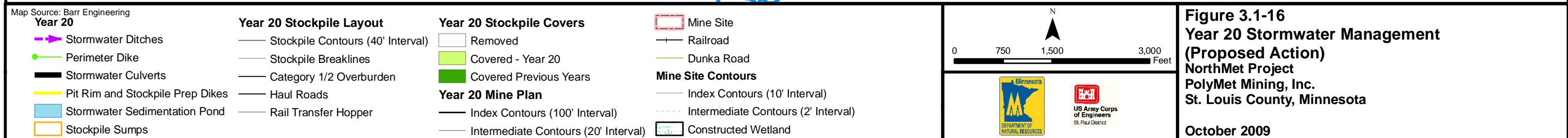
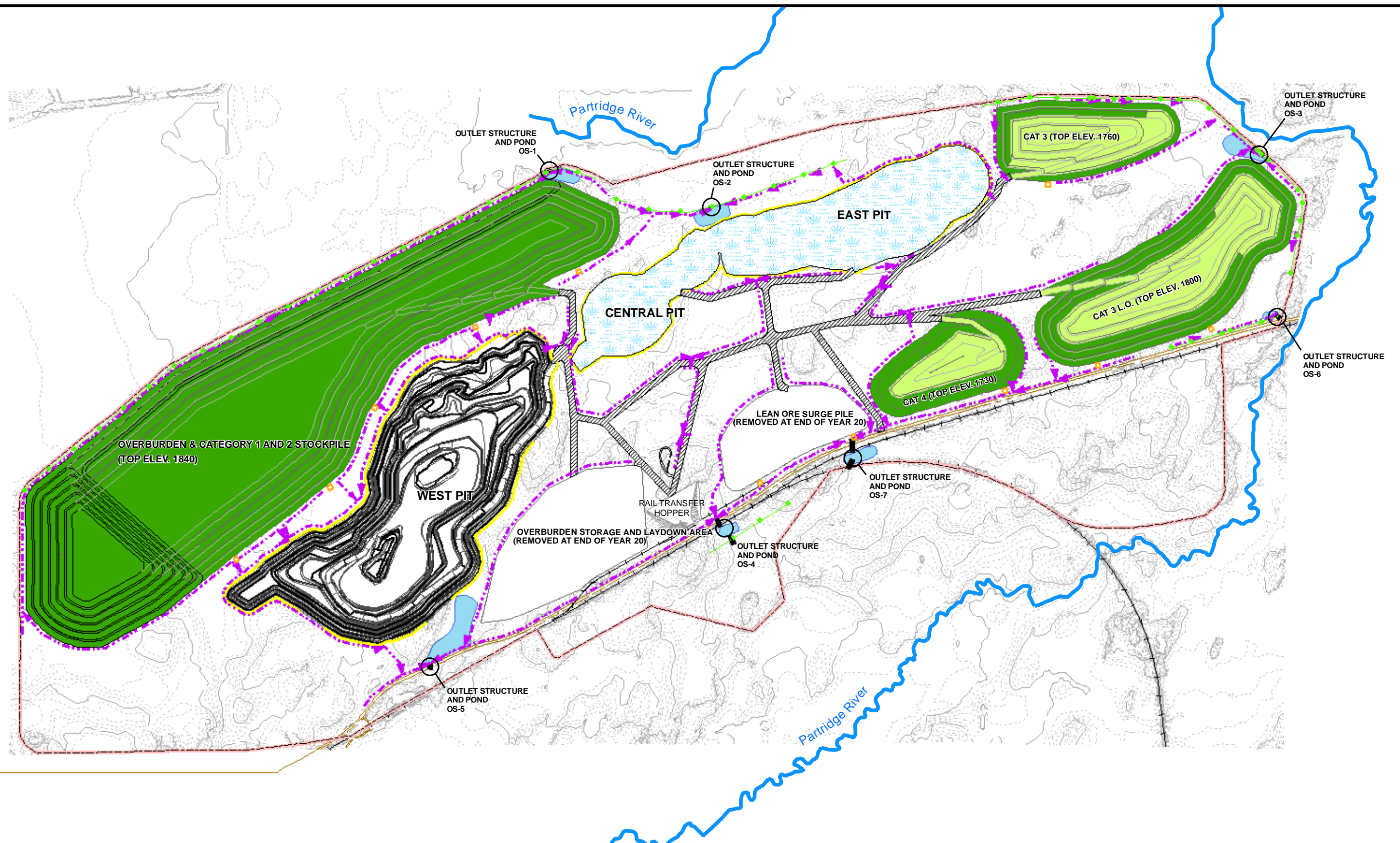
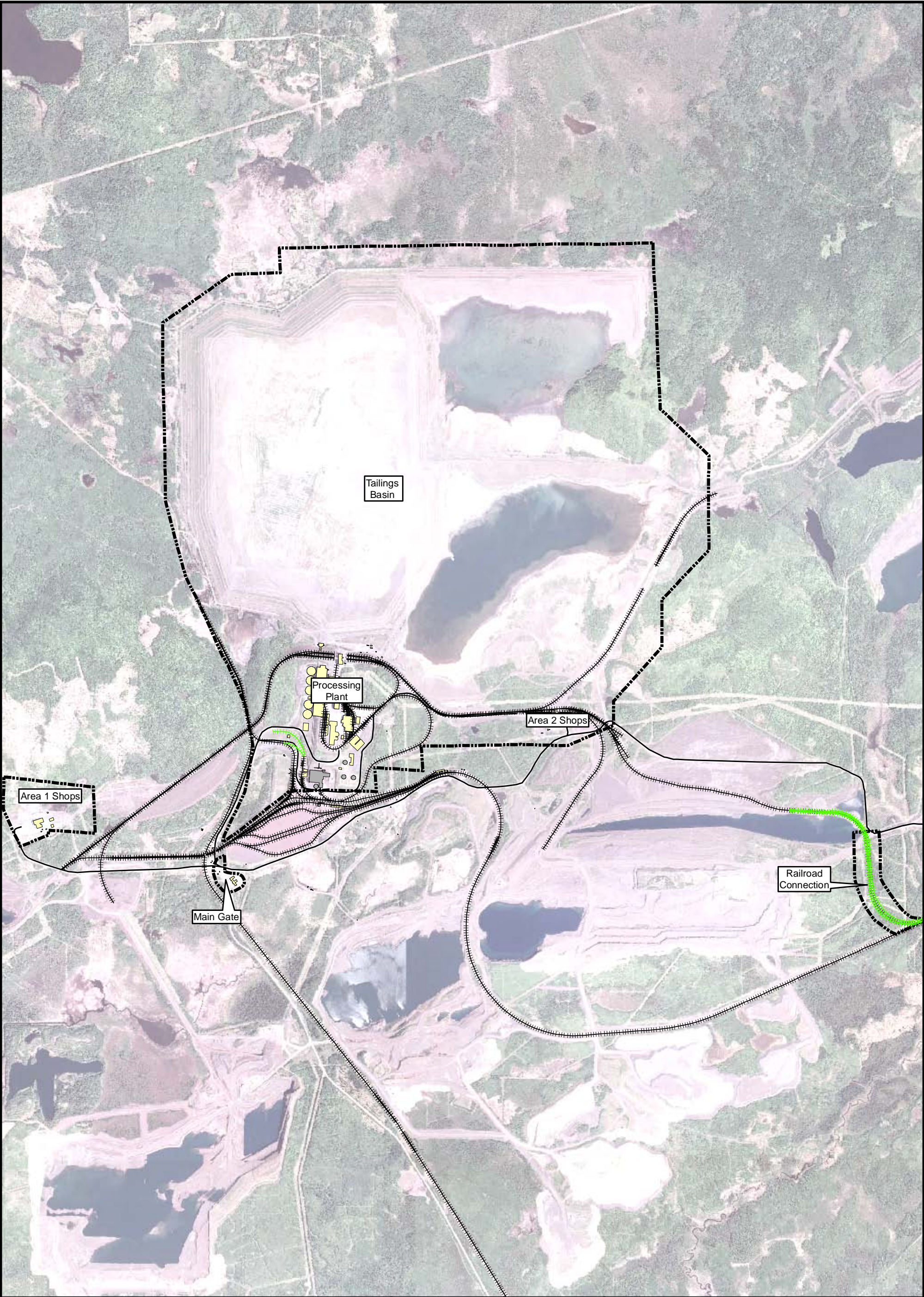


Figure 3.1-15
Year 10 Stormwater Management
(Proposed Action)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009





Map Source: Barr Engineering

- Private Roads
- New Railroad
- Existing Railroad
- Plant Site

- Buildings**
- Proposed Plant Structures (Reuse of Existing)
 - Demolished Structures

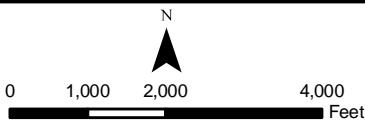
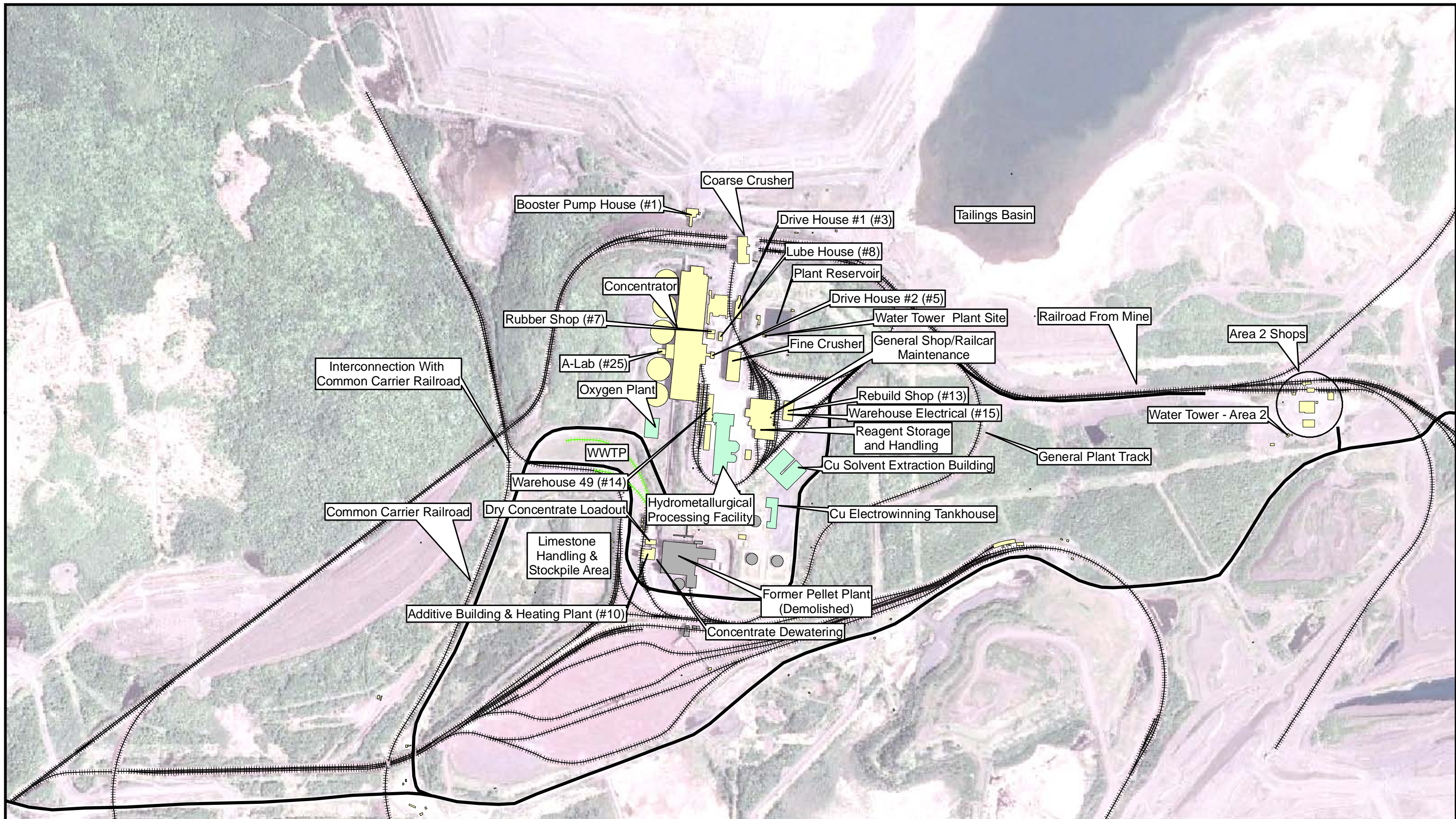


Figure 3.1-17
Plant Site Layout (All Actions)

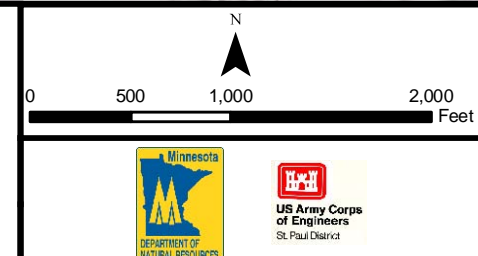
NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

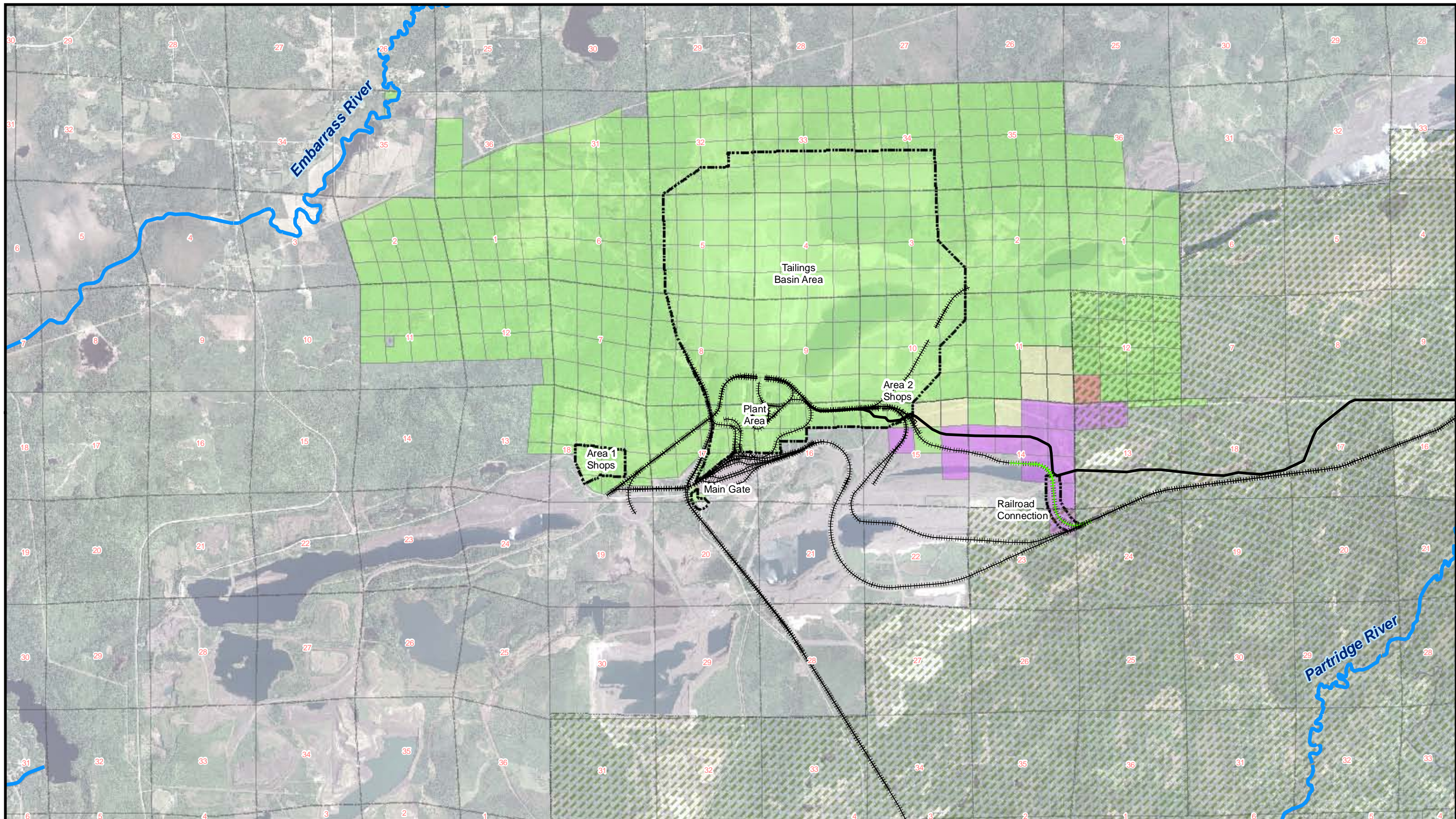
- | | |
|--|--|
| <ul style="list-style-type: none"> — Private Roads ++++ Existing Railroad ++++ New Railroad | <p>Buildings</p> <ul style="list-style-type: none"> Proposed Plant Structures (Reuse of Existing) Proposed Plant Structures (New Buildings) Demolished Structures |
|--|--|



**Figure 3.1-17a
Processing Plant (All Actions)**

**NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota**

October 2009



Map/Data Source: Barr Engineering

Partridge River

Existing Railroads

New Railroad

Dunka Road



Superior National Forest



Plant Site



Public Land Survey Section Lines

Surface Ownership

Alam Gould et al.-Owned

State of Mn.-Owned: Lease to Cliffs Erie

Polymet-Owned

Du Nord Land Company-Owned: Lease to Polymet

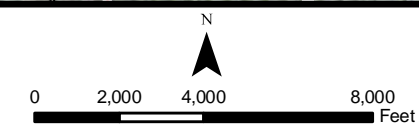
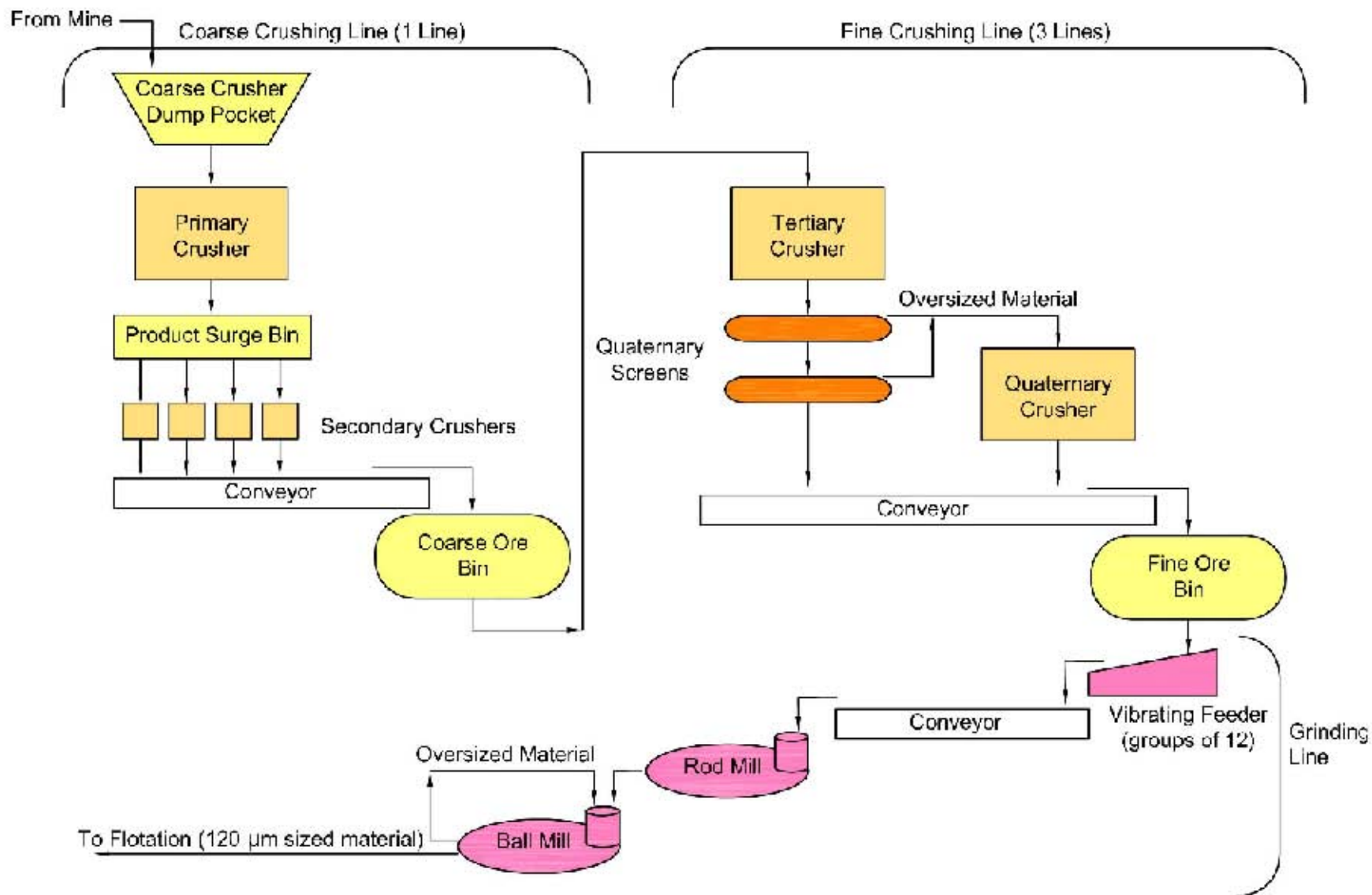


Figure 3.1-18
Plant Site Surface Ownership (All Actions)

NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

October 2009



Information Source: PolyMet

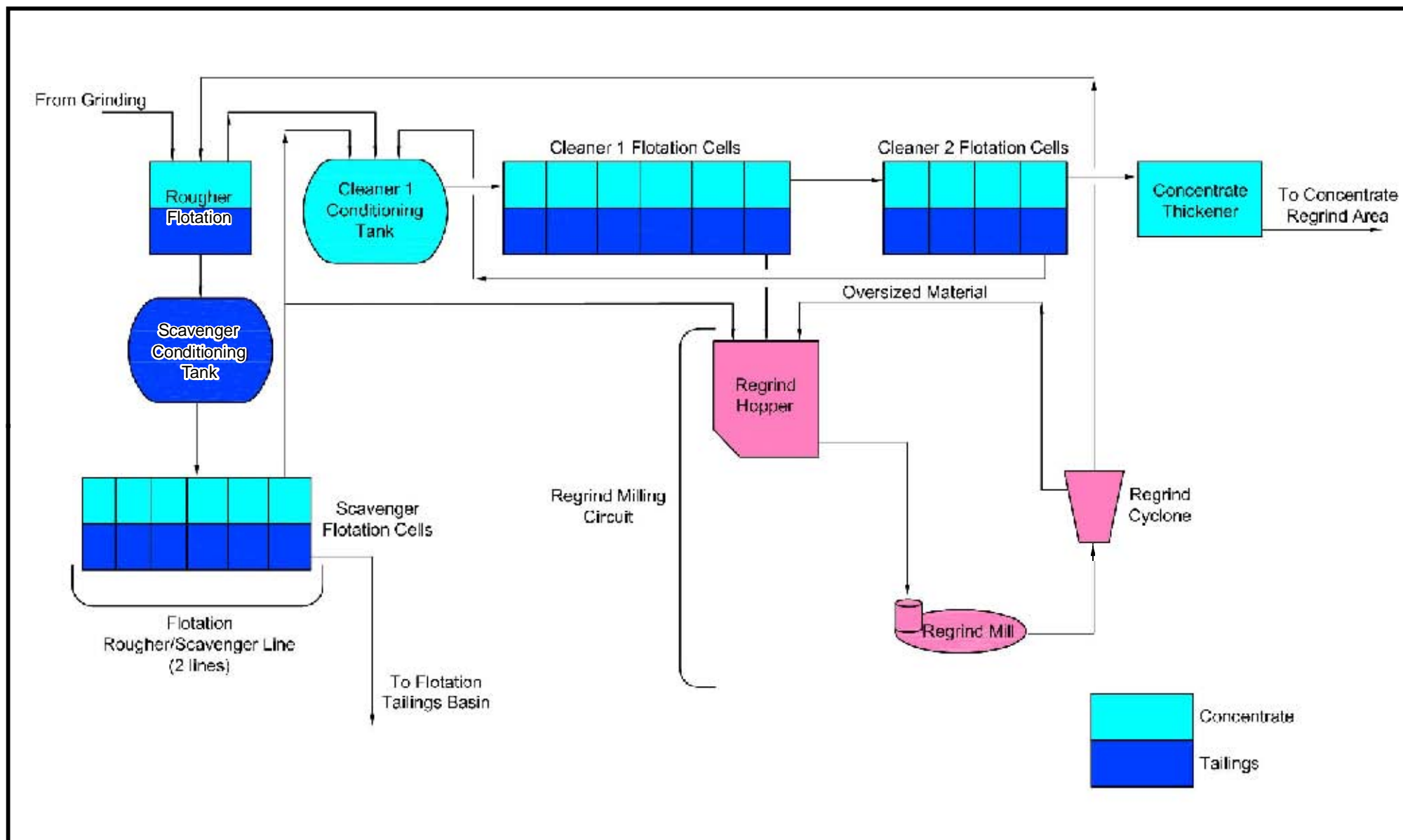
No Scale Applicable



**Figure 3.1-19
Ore Crushing and Grinding (All Actions)**

**NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota**

October 2009



Information Source: PolyMet

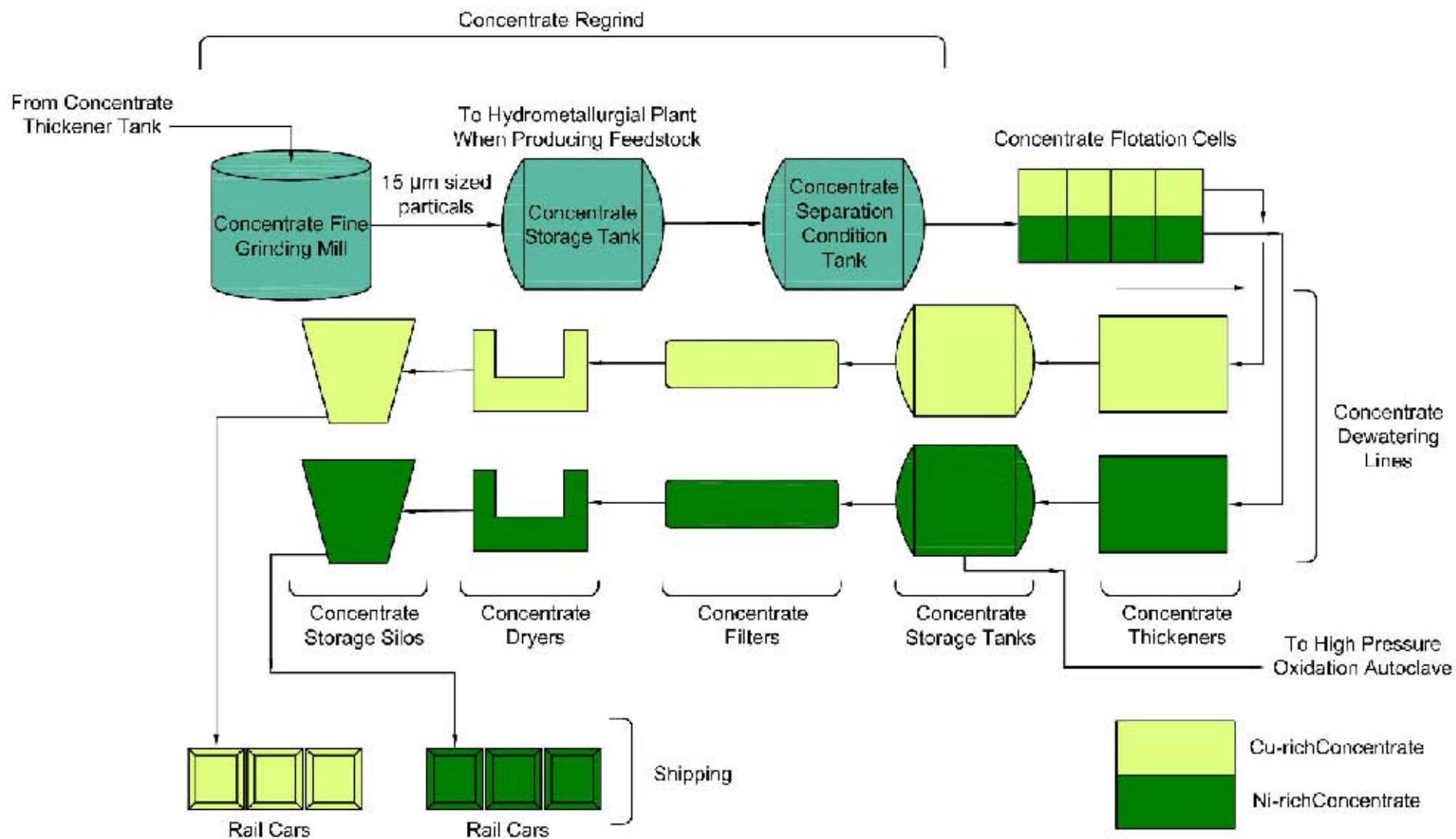
No Scale Applicable



**Figure 3.1-20
Flotation (All Actions)**

**NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota**

October 2009



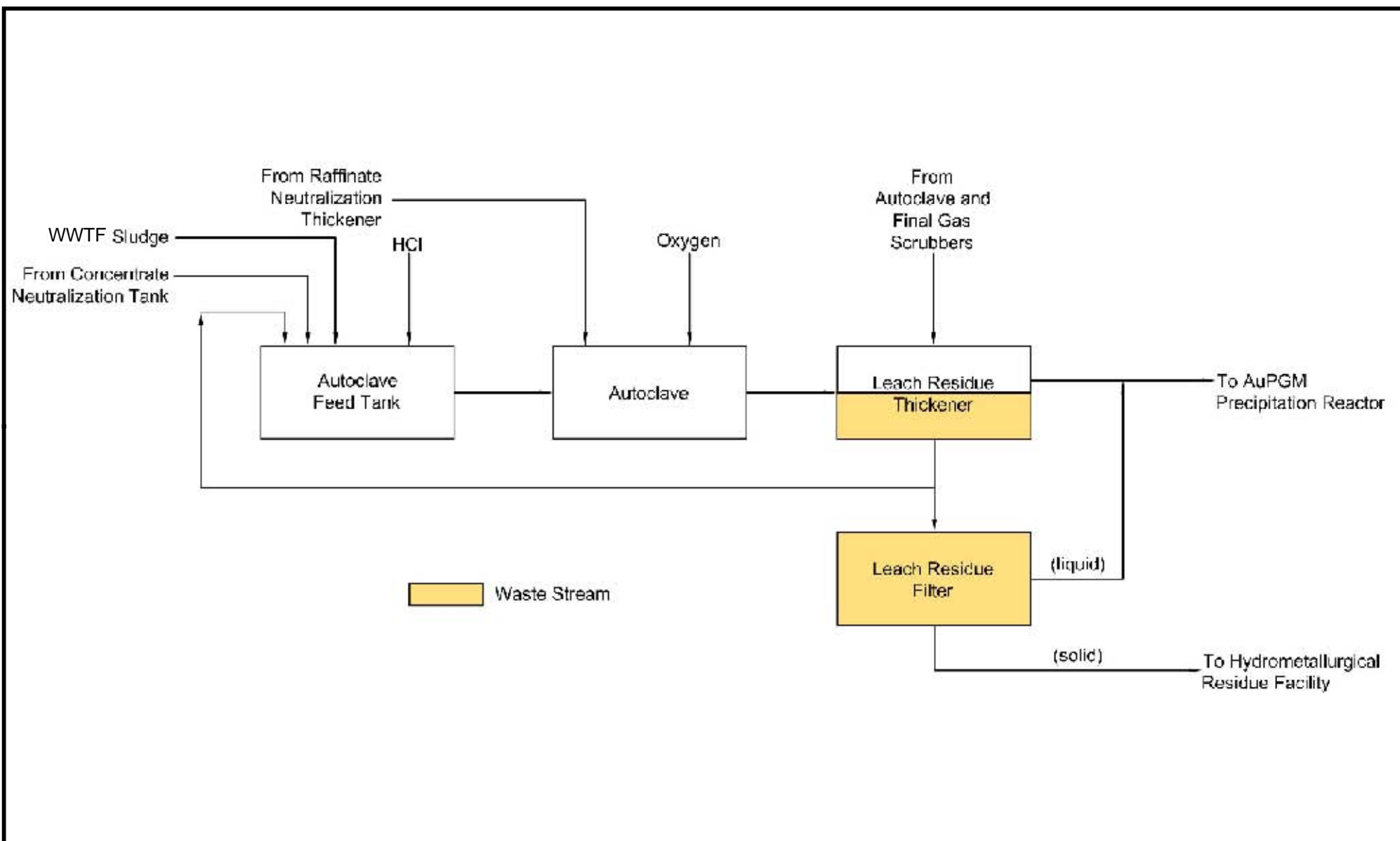
Information Source: PolyMet

No Scale Applicable



Figure 3.1-21
Concentrate Regrind, Separation & Dewatering, and Shipping (All Actions)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009



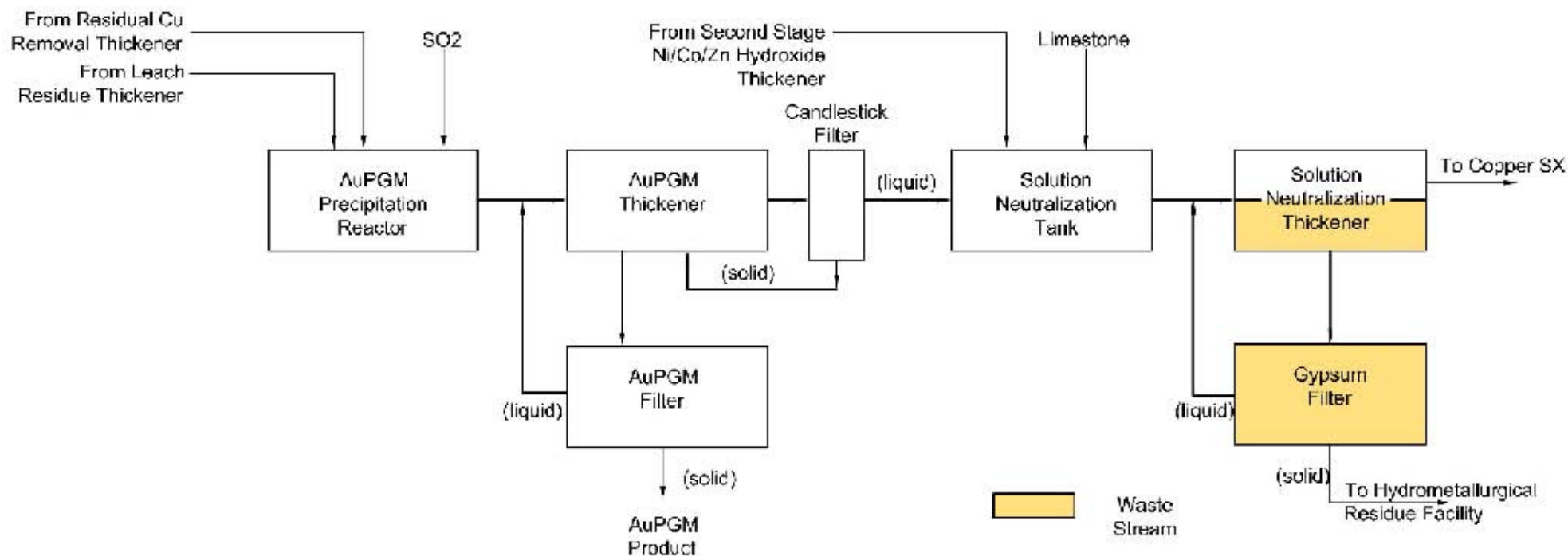
Information Source: PolyMet

No Scale Applicable



Figure 3.1-22
High Pressure Oxidation Autoclave
(All Actions)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009



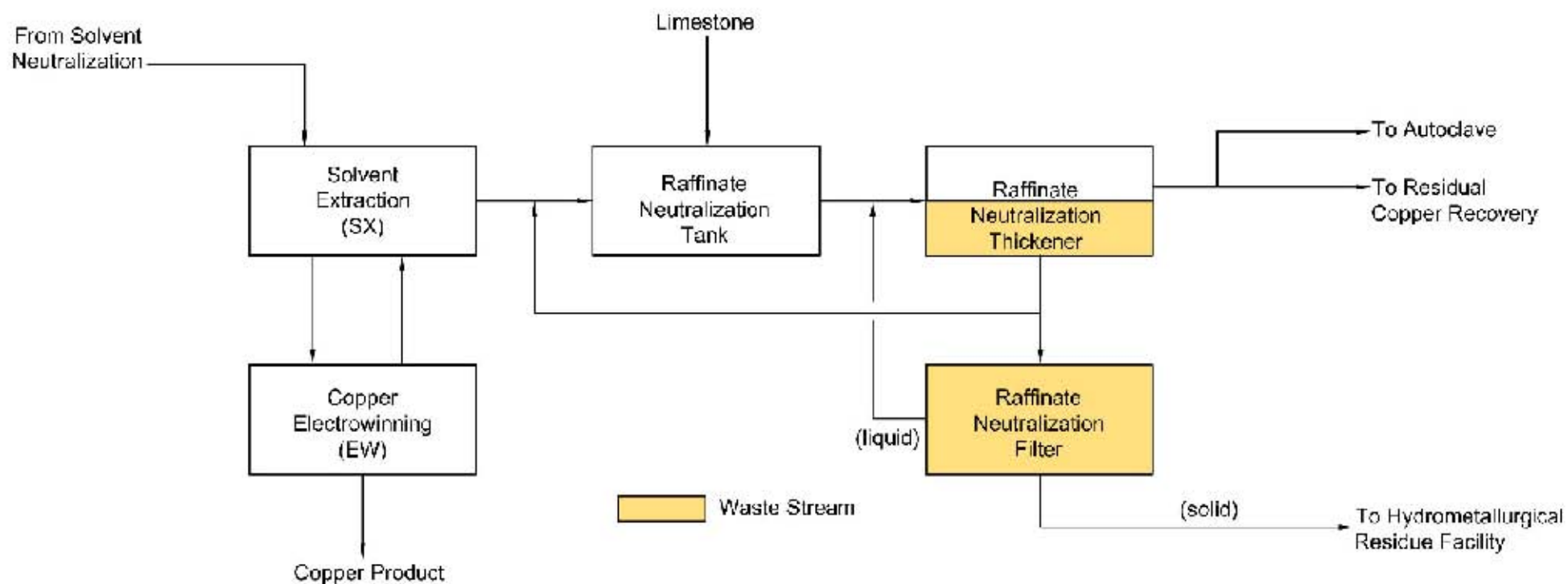
Information Source: PolyMet

No Scale Applicable



Figure 3.1-23
Gold and Platinum Group Metals (AuPGM)
Precipitation Reactor (All Actions)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009



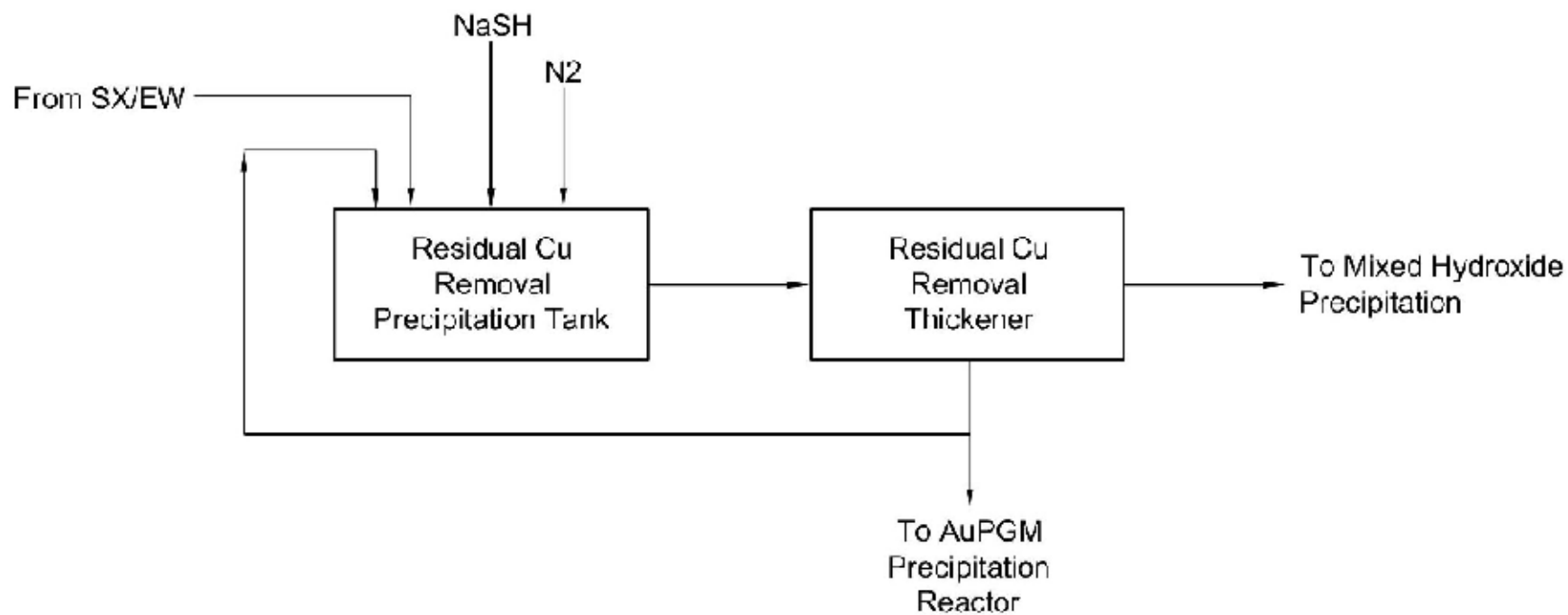
Information Source: PolyMet

No Scale Applicable



Figure 3.1-24
Copper Solvent Extraction/Electrowinning (SX/EW) and Raffinate Neutralization (All Actions)
 NorthMet Project
 PolyMet Mining, Inc.

October 2009



Information Source: PolyMet

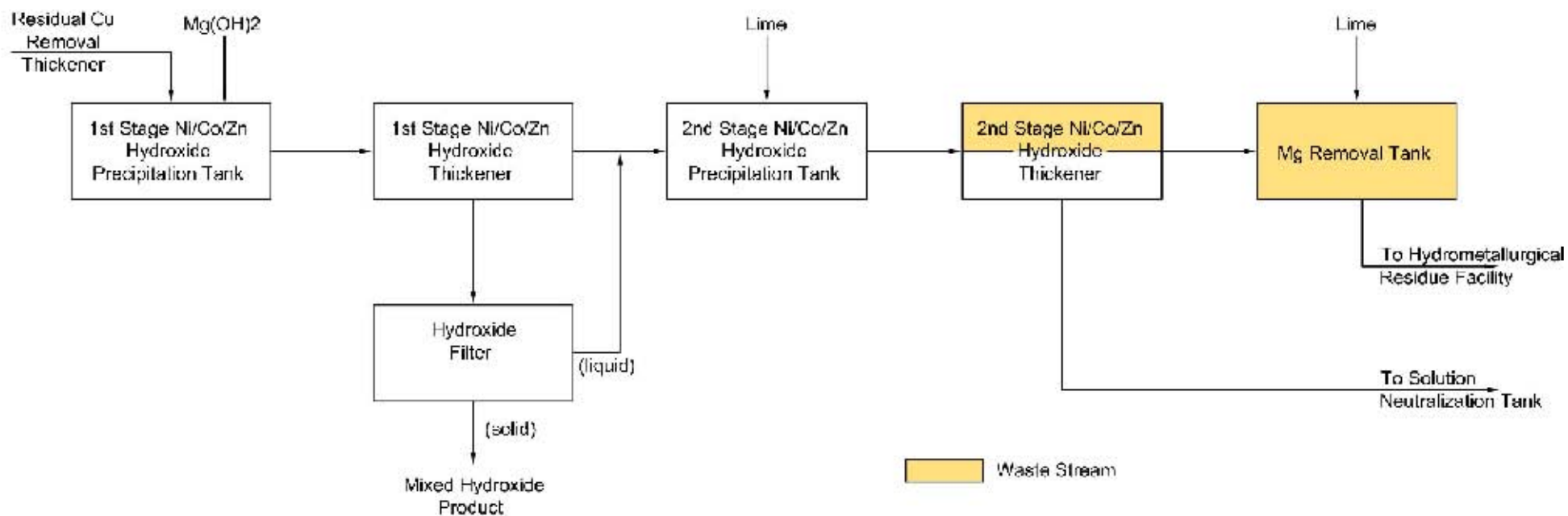
No Scale Applicable



**Figure 3.1-25
Residual Copper Recovery (All Actions)**

**NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota**

October 2009



Information Source: PolyMet

No Scale Applicable



**Figure 3.1-26
Mixed Hydroxide Precipitation (All Actions)**

**NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota**

October 2009



Map Source: Barr Engineering

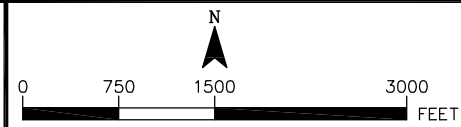


Figure 3.1-27
Existing Tailings Basin

NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

October 2009



Source: Barr Engineering

- Embankment
- LTV Beach
- NorthMet Beach
- Pond

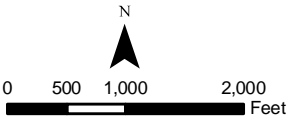
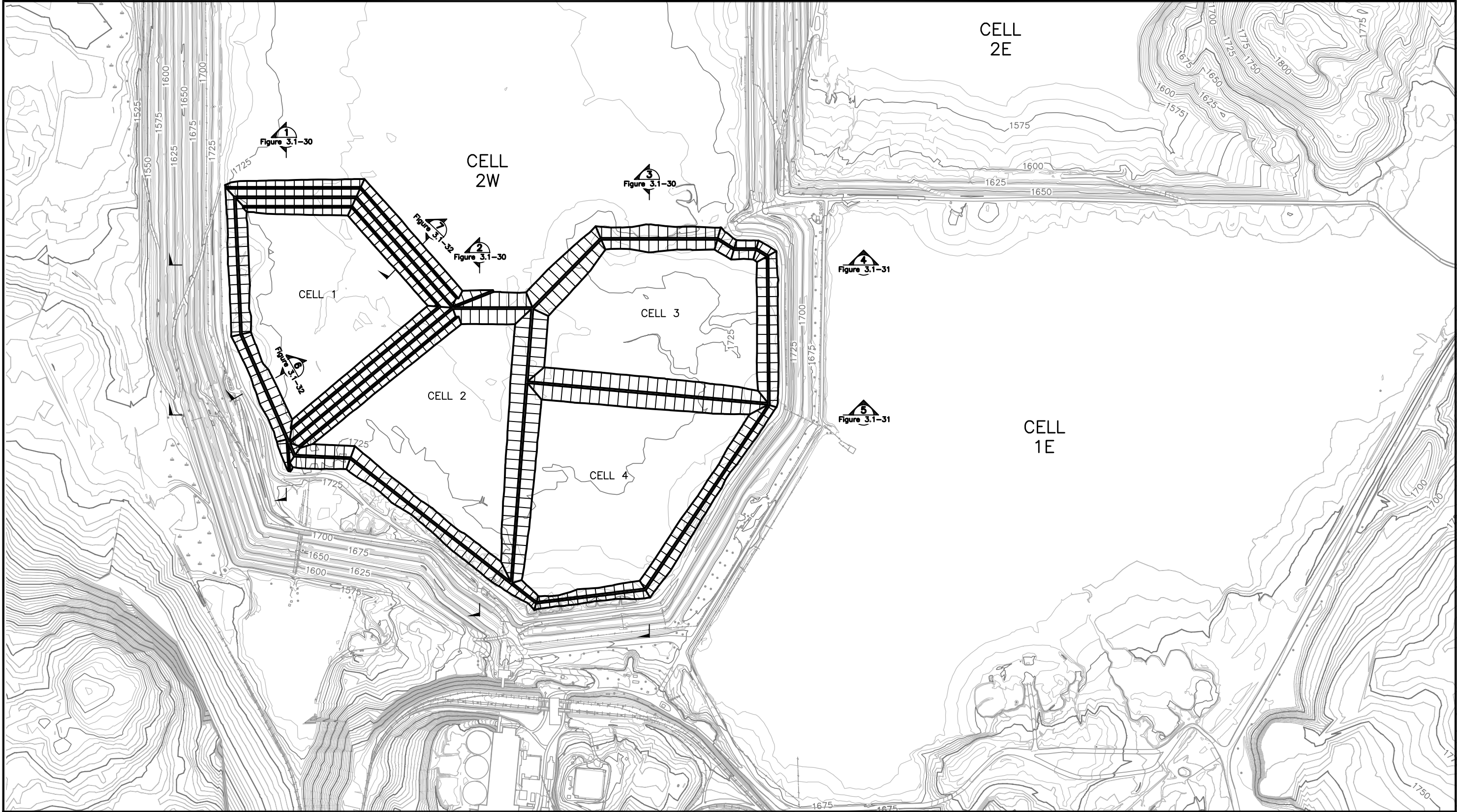


Figure 3.1-28
Proposed Tailings Basin Layout (All Actions)

NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

- | | |
|----------------------------|------------|
| INDEX CONTOURS (10') | RAILROAD |
| INTERMEDIATE CONTOURS (2') | PIPELINE |
| ROAD | WETLAND |
| | BUILDING |
| | POWER POLE |

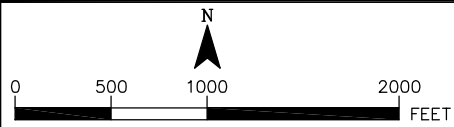
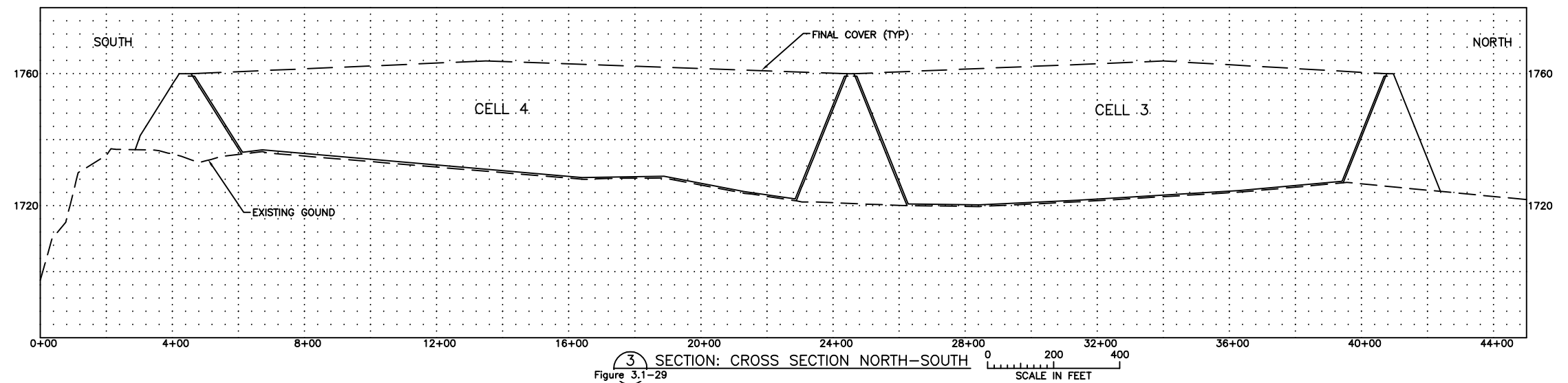
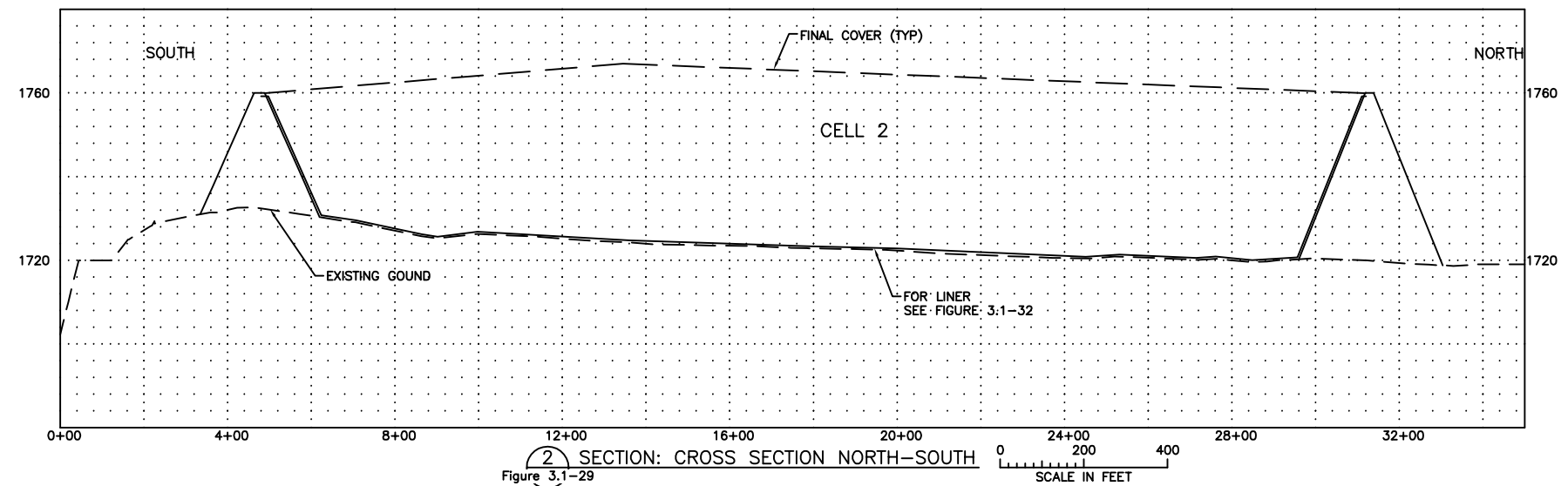
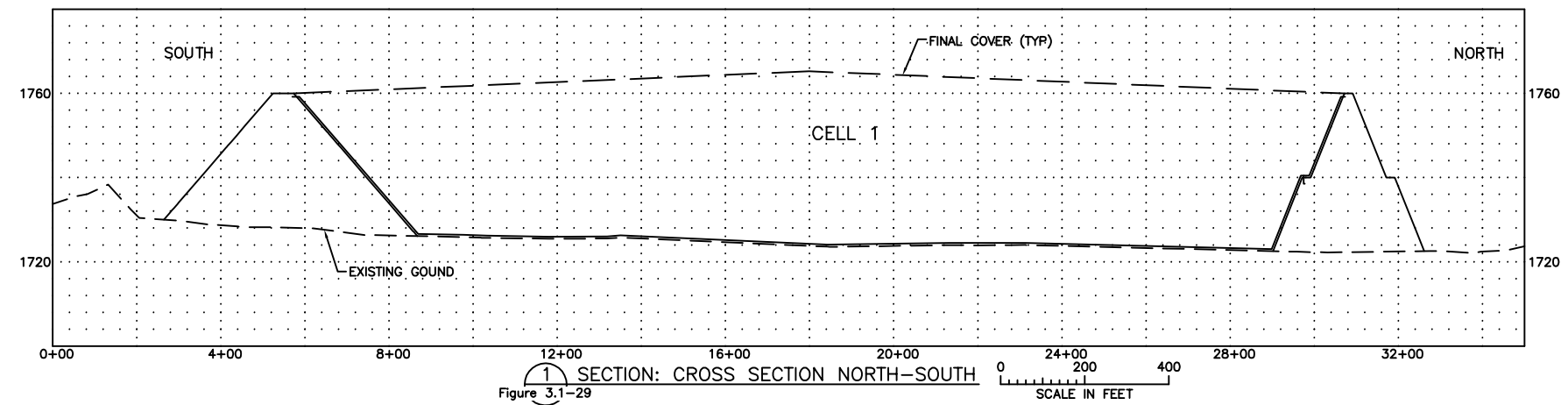


Figure 3.1-29
Hydrometallurgical Residue
Facility - Cell Layout (All Actions)
NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota
October 2009

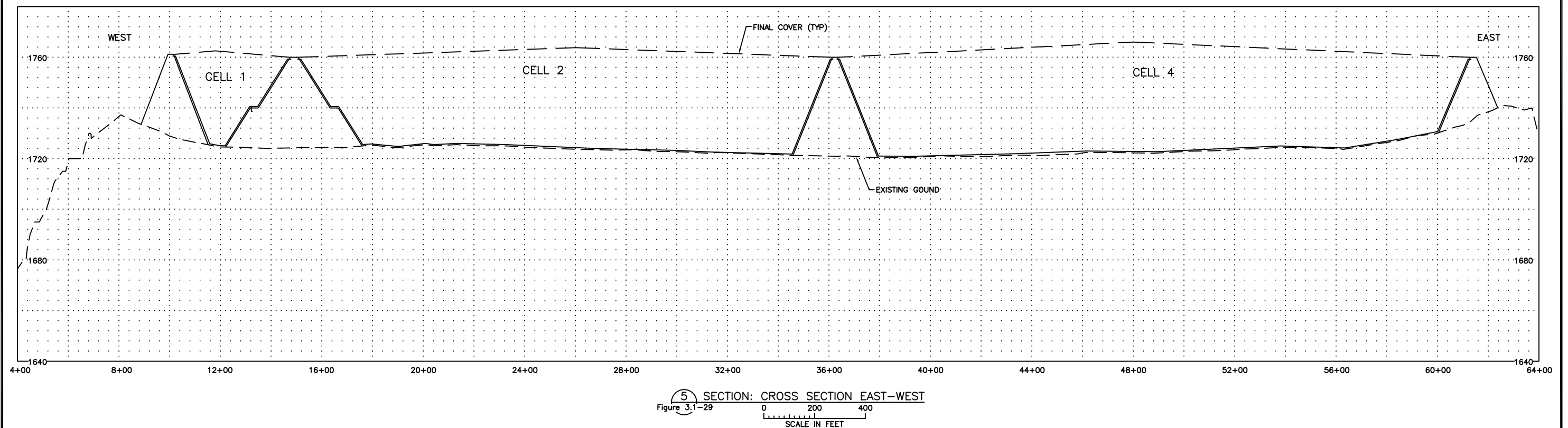
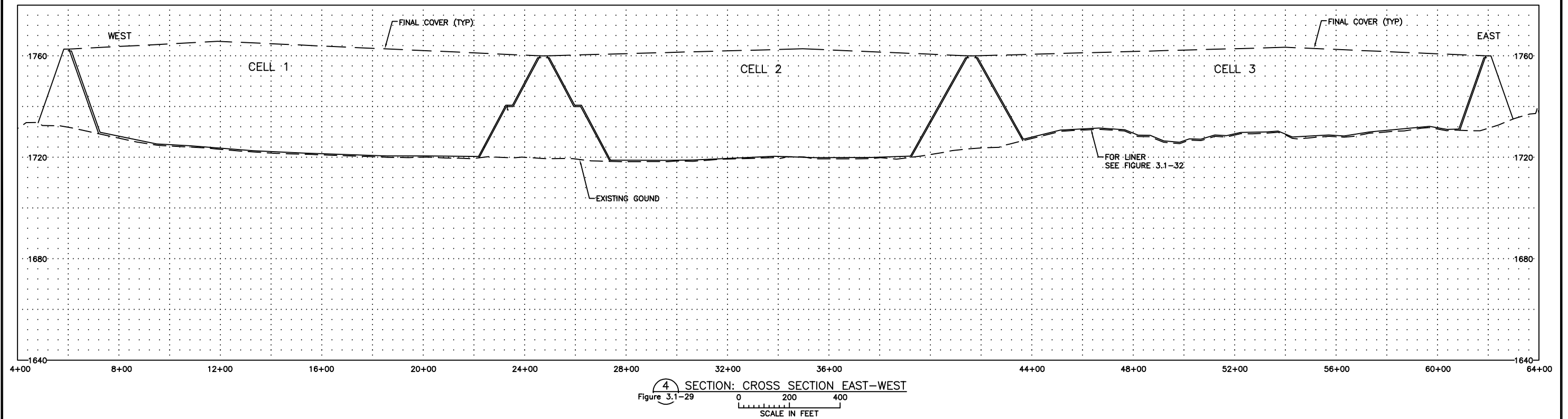


Map Source: Barr Engineering



Figure 3.1-30
Hydrometallurgical Residue Facility
North/South Cross Sections (All Actions)

NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota
 October 2009

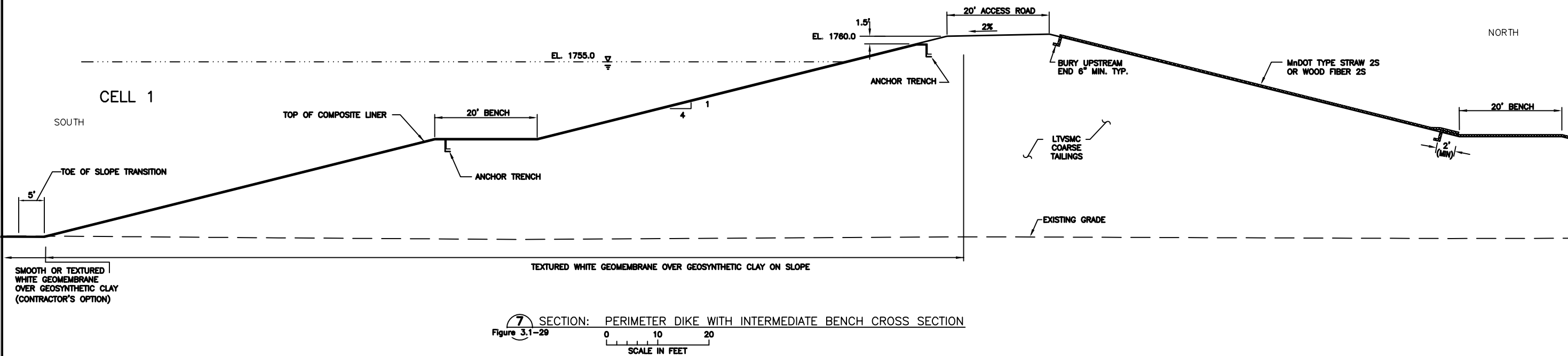
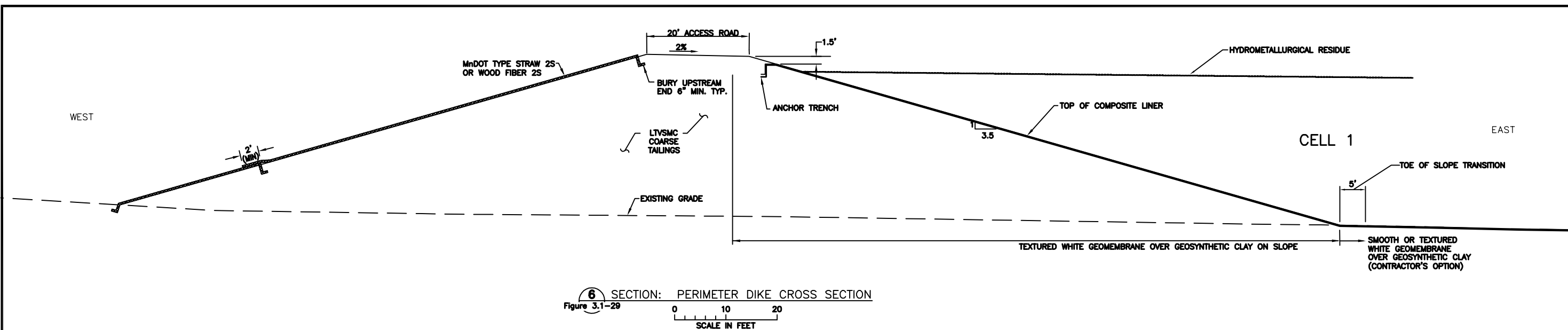


Map Source: Barr Engineering



Figure 3.1-31
Hydrometallurgical Residue Facility
East/West Cross Sections (All Actions)

NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota
October 2009

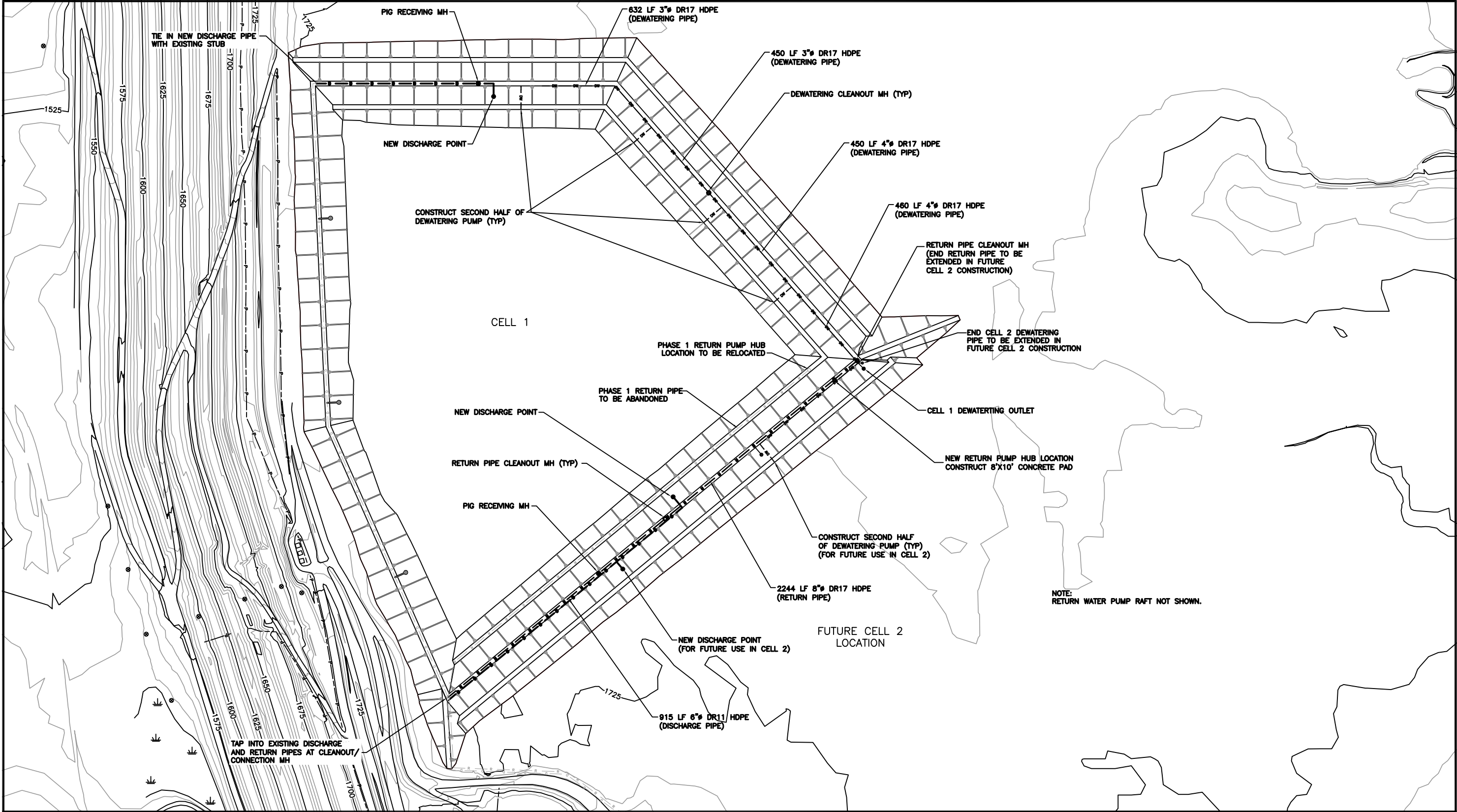


Map Source: Barr Engineering



Figure 3.1-32
Hydrometallurgical Residue
Facility - Dike Sections (All Actions)

NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota
October 2009



Map Source: Barr Engineering

- | | |
|----------------------------|---------------------------|
| — 25' CONTOURS | ● POLE |
| — 5' CONTOURS | ○ DISCHARGE POINT |
| — EXISTING ROAD | — DEWATERING OUTLET POINT |
| — NEW DISCHARGE PIPE | — RETURN PUMP PAD |
| — NEW DEWATERING PIPE | — DEWATERING PUMP |
| — NEW RETURN PIPE | |
| — EXISTING DISCHARGE PIPE | |
| — EXISTING DEWATERING PIPE | |
| — EXISTING RETURN PIPE | |
| — EXISTING PIPELINE | |

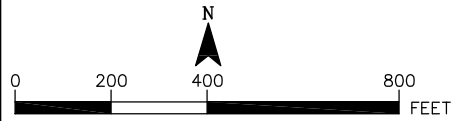
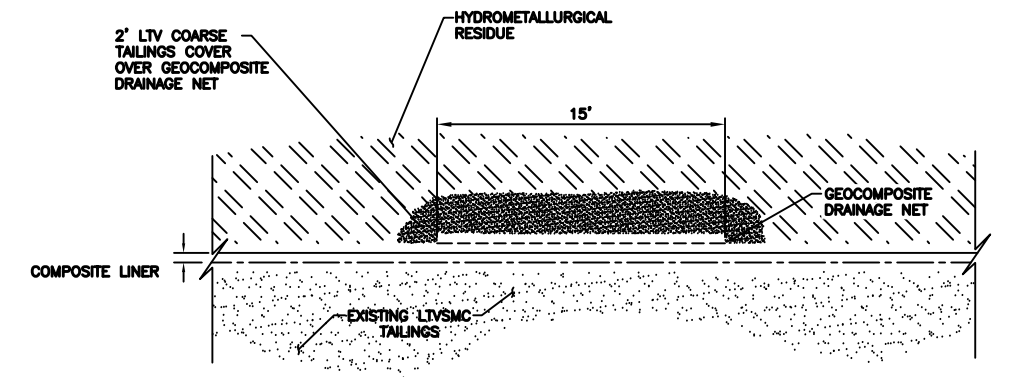
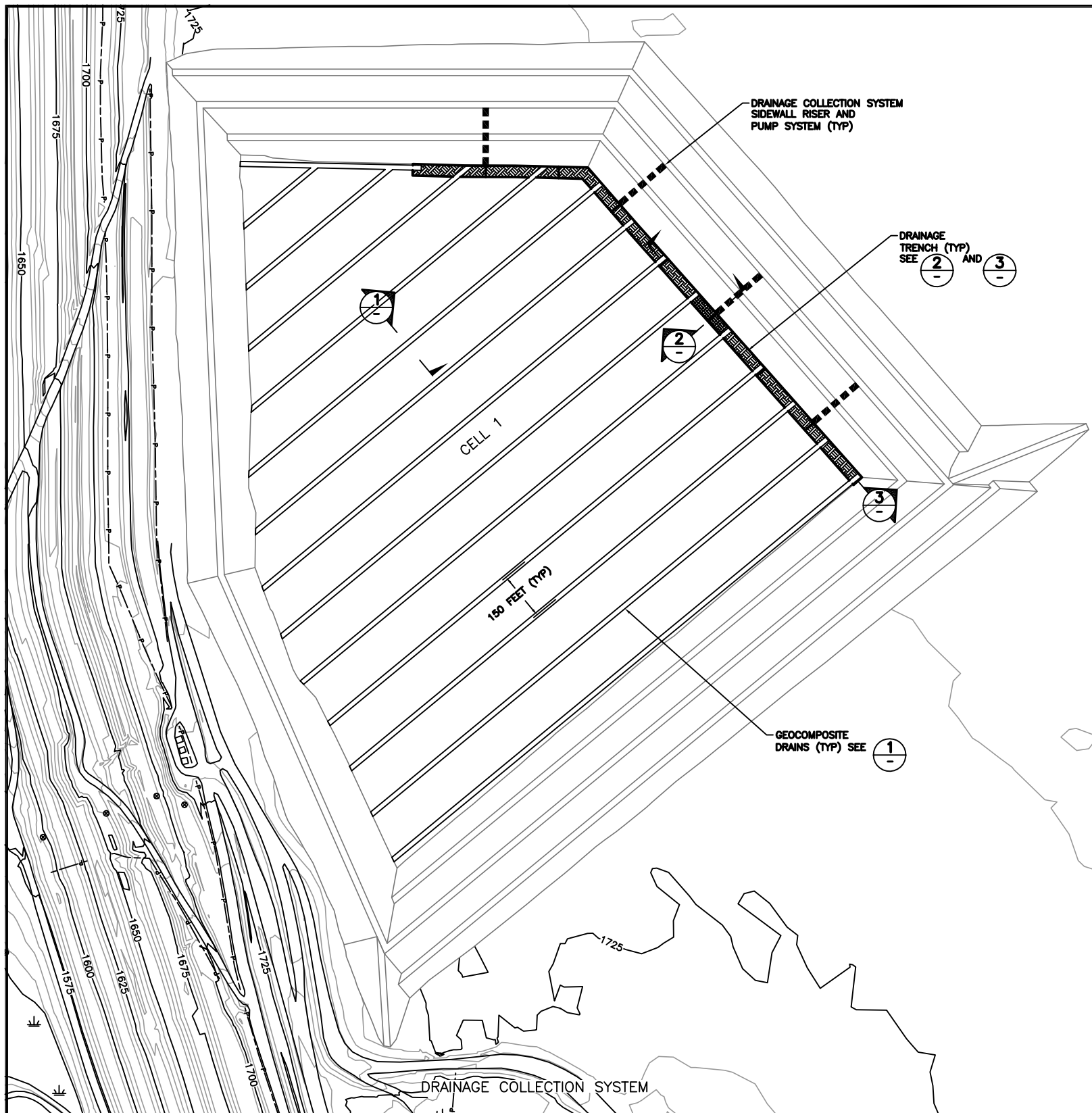
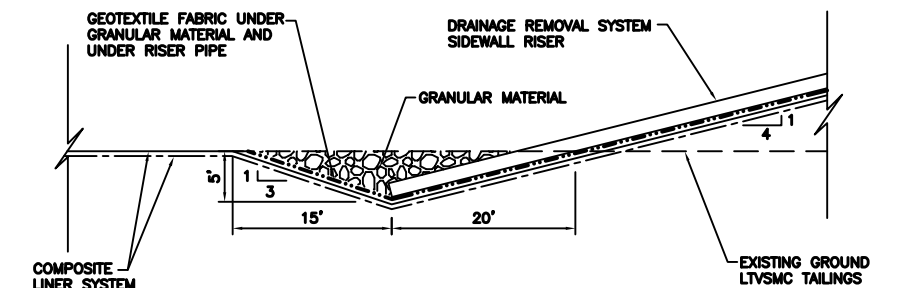


Figure 3.1-33
Hydrometallurgical Residue Discharge
and Water Return Pipelines (All Actions)

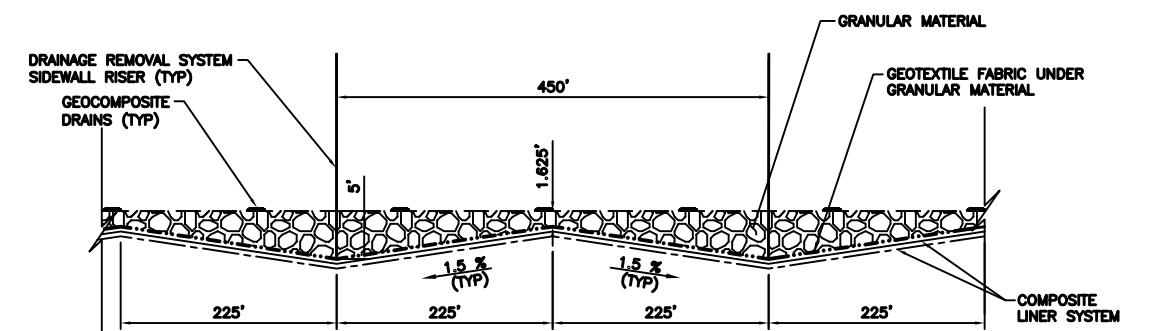
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St. Louis County, Minnesota
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1 SECTION: GEOCOMPOSITE DRAINS
0 5 10
SCALE IN FEET



2 SECTION: DRAINAGE COLLECTION TRENCH
0 10 20
SCALE IN FEET



3 SECTION: DRAINAGE COLLECTION TRENCH
0 100 200
SCALE IN FEET
0 10 20
SCALE IN FEET

Map Source: Barr Engineering

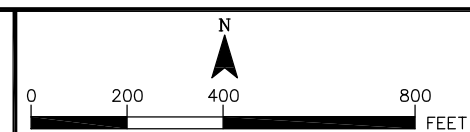
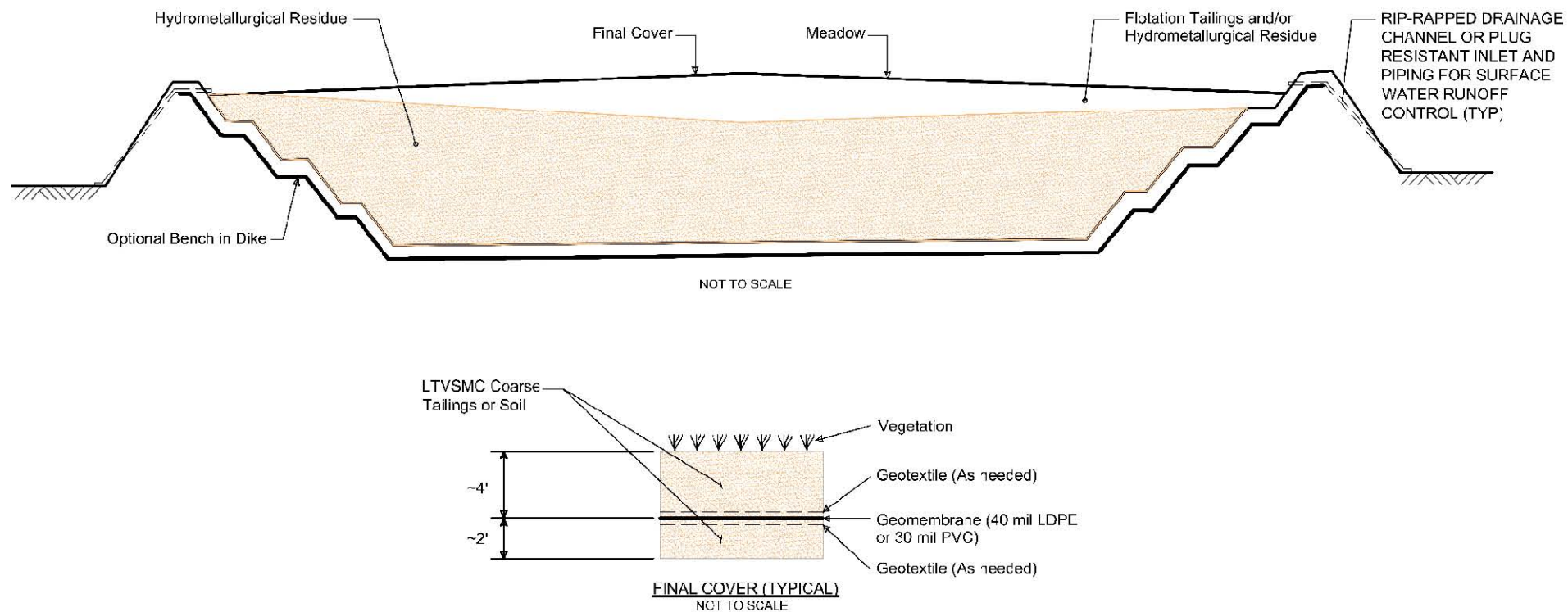


Figure 3.1-34
Hydrometallurgical Residue Drainage
Collection System

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PolyMet Mining, Inc.
St. Louis County, Minnesota
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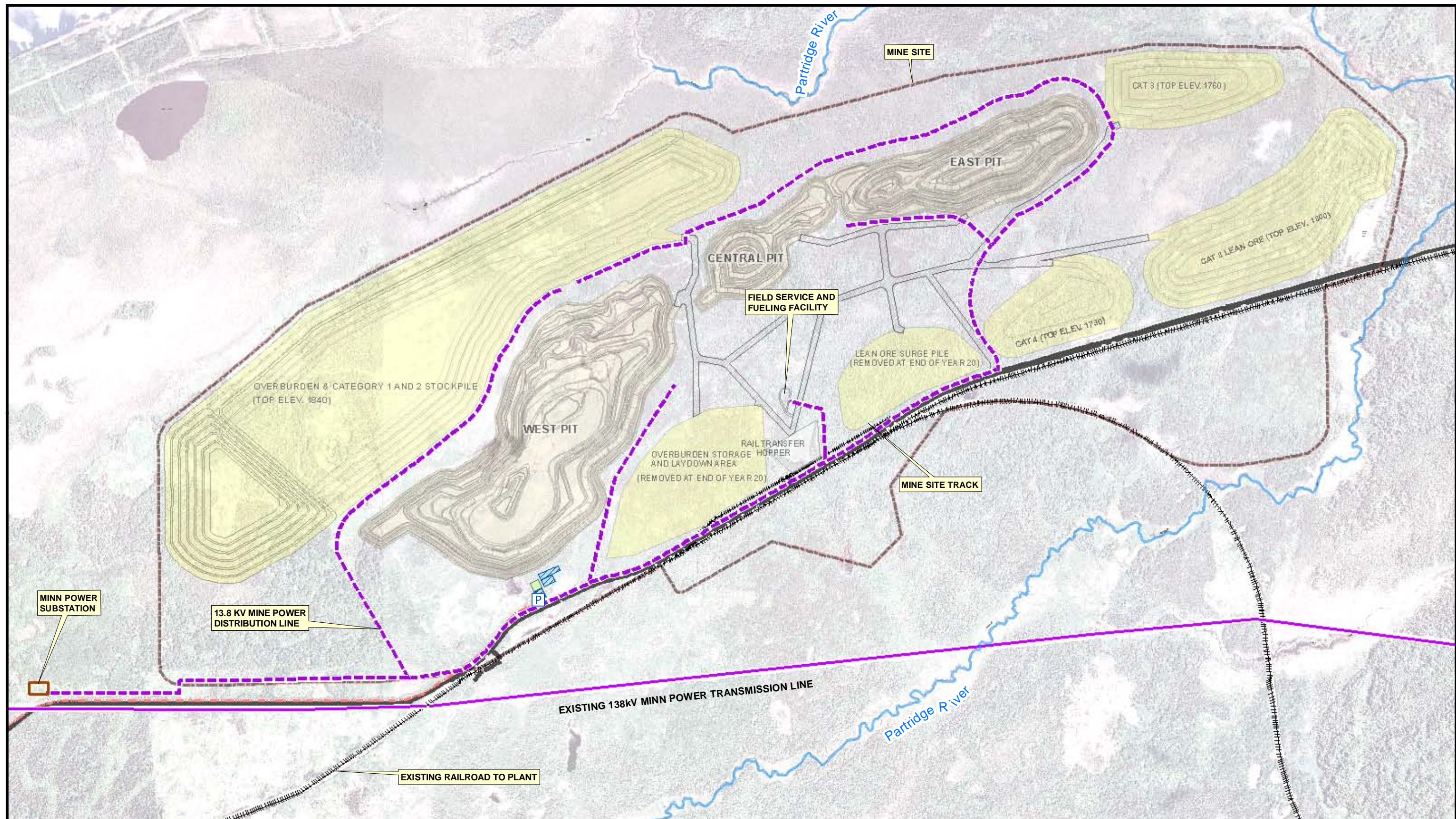
Data Source: Barr Engineering/PolyMet

No Scale



Figure 3.1-35
Hydrometallurgical Residue Facility
Cell Closure Approach (All Actions)
NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

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- | | | |
|--------------------------------|------------------------|-------------------------------|
| Partridge River System | Mine Site Impact Area | Wastewater Treatment Facility |
| 138KV Transmission Line | Mine to Plant Pipeline | Equilization Ponds |
| 13.8KV Mine Power Distribution | Stockpiles | Central Pumping Station |
| Dunka Road | Pits | |

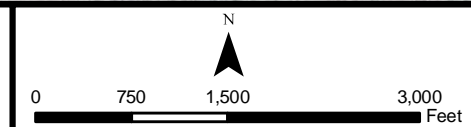
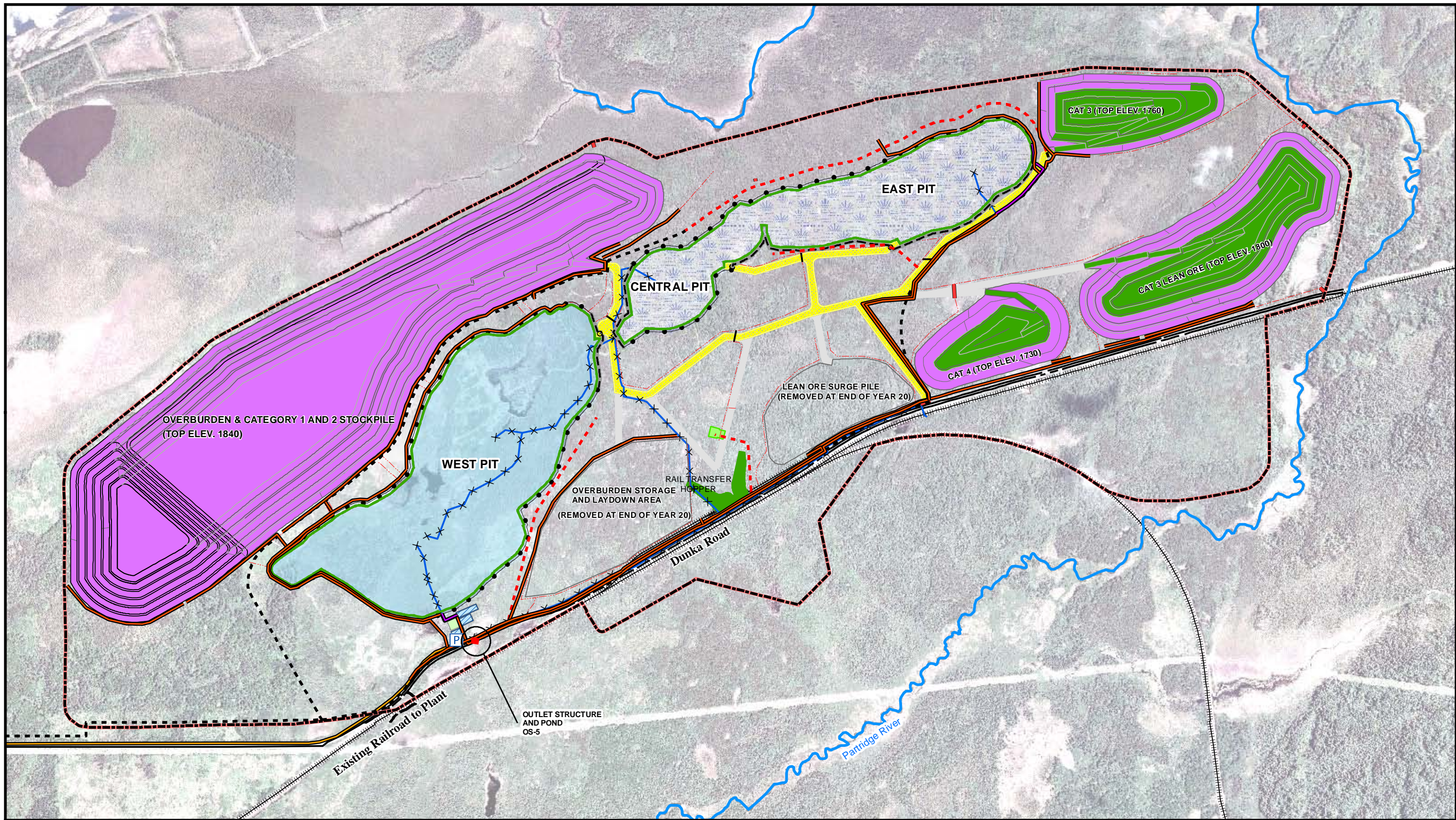


Figure 3.1-36
Mine Site Power Distribution (All Actions)

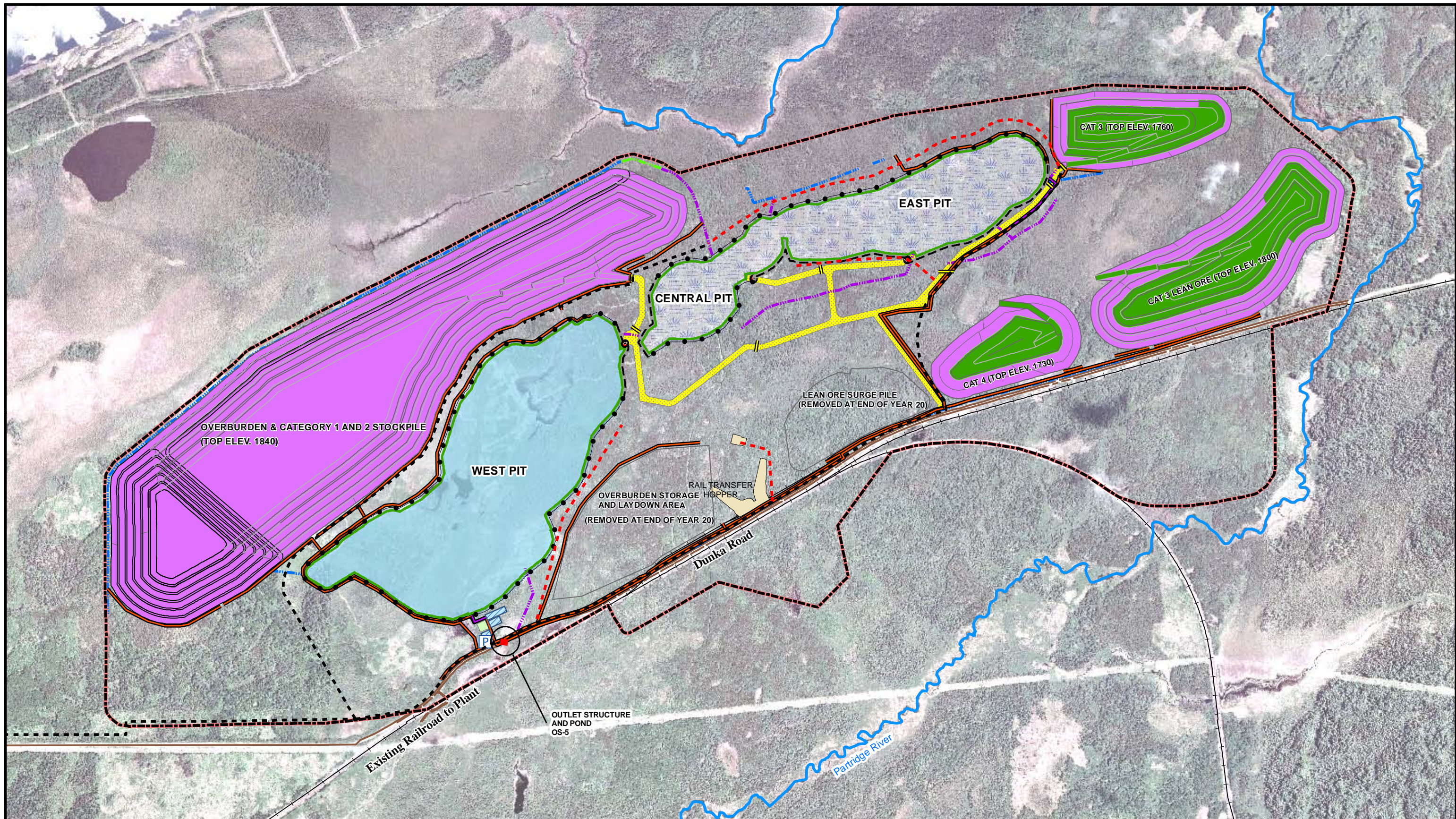
NorthMet Project
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<p>Map Source: Barr Engineering</p> <p>— Culverts To Remain</p> <p>— Removed Culverts</p> <p>- - - Removed 13.8KV Mine Powerline</p> <p>- - - Remaining 13.8KV Mine Powerline</p> <p>● Barbed Wire Fencing</p> <p>— Non-Climbable Fencing</p>	<p>--- Filled Ditch</p> <p>✕✕ Removed Pipe</p> <p>— Pipeline to be Demolished</p> <p>— New Pipe</p> <p>— Pipes to Remain</p> <p>— Fencing Gates</p>	<p>▭ Mine Site</p> <p>▭ Previously Reclaimed Areas</p> <p>▭ Year 20 Reclamation Area</p> <p>▭ Cover and Revegetation of Building Areas</p> <p>▭ Haul Roads Closed and Reclaimed</p> <p>▭ Haul Roads to Remain</p>	<p>▭ West Pit - Lake</p> <p>▭ East and Central Pits - Wetland</p> <p>▭ Wastewater Treatment Facility</p> <p>▭ Equilization Ponds</p> <p>▭ Central Pumping Station</p>	<p>0 750 1,500 3,000 Feet</p> <p>North Arrow</p> <p>Minnesota Department of Natural Resources</p> <p>US Army Corps of Engineers St. Paul District</p>	<p>Figure 3.1-37</p> <p>Mine Closure Activities at Year 20</p> <p>(Proposed Action)</p> <p>NorthMet Project</p> <p>PolyMet Mining, Inc.</p> <p>St. Louis County, Minnesota</p> <p>October 2009</p>
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Note: Some Powerlines to be Removed at Closure



Map Source: Barr Engineering

- 13.8KV Mine Powerline to Remain
- - - 13.8KV Mine Powerline to be Removed
- Culverts to Remain
- Fencing Gates
- Barbed Wire Fencing
- Non-Climbable Fencing

- Modified Ditch
- New Ditch
- Ditch to Remain Open
- New Pipe
- Pipes to Remain
- Mine Site

- Cover and Revegetation of Building Areas
- Haul Roads to Remain
- Year 20 Reclamation Area
- Previously Reclaimed Areas
- East and Central Pits - Wetland
- West Pit - Lake

- Equilization Ponds
- Wastewater Treatment Facility
- [P] Central Pumping Station

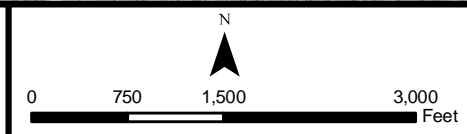
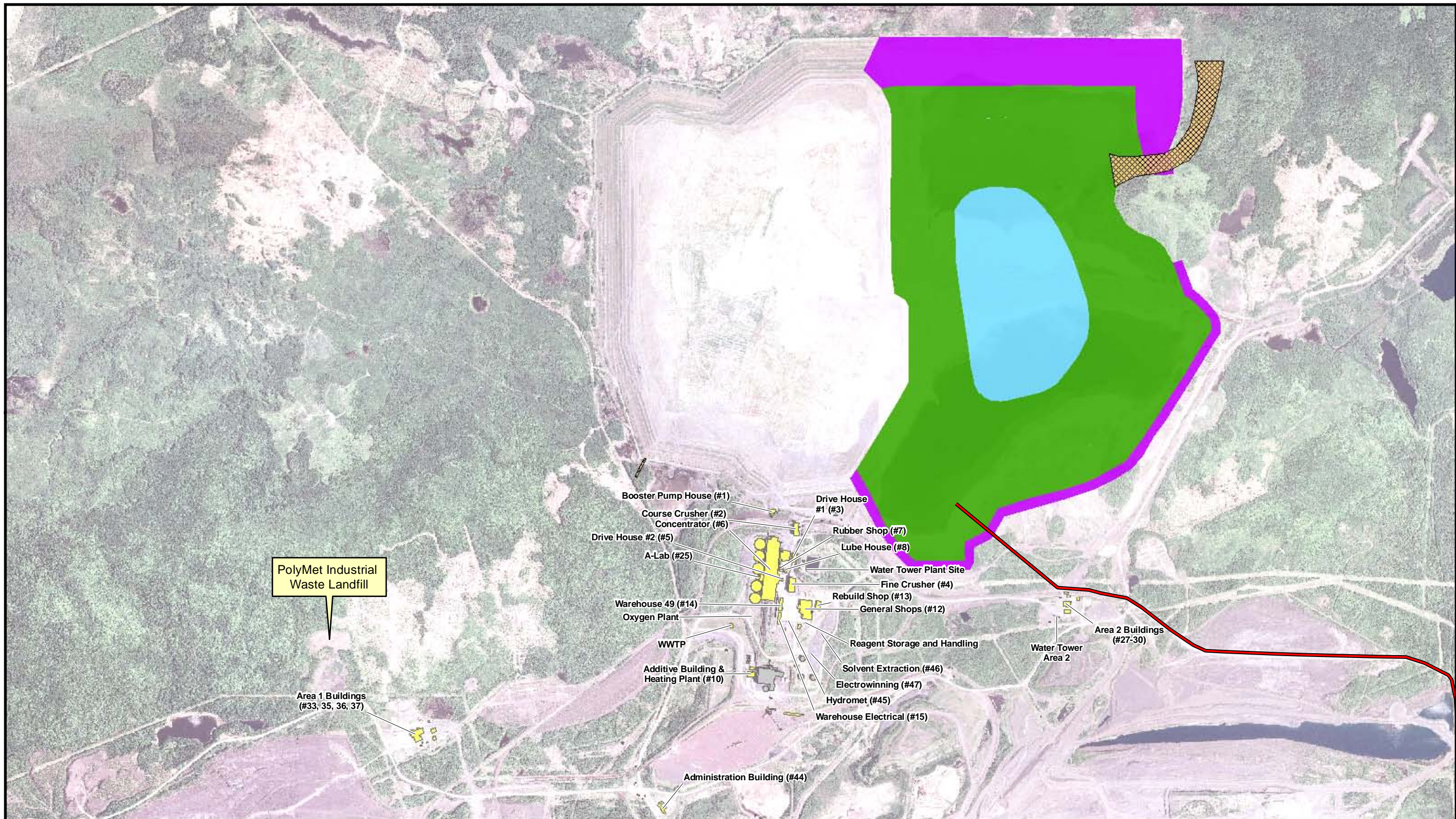


Figure 3.1-38
Features to Remain After Mine
Closure (Proposed Action)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

— Pipeline to be Removed After Completion of Tailings Basin Operations

Buildings

■ Building to be Demolished
 ■ Not PolyMet Building

Tailings Basin Reclamation

■ Pond-Final Size May Vary
 ■ Previous Reclamation
 ■ Year 20 Reclamation
 ■ Emergency Spillway

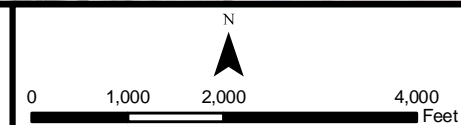
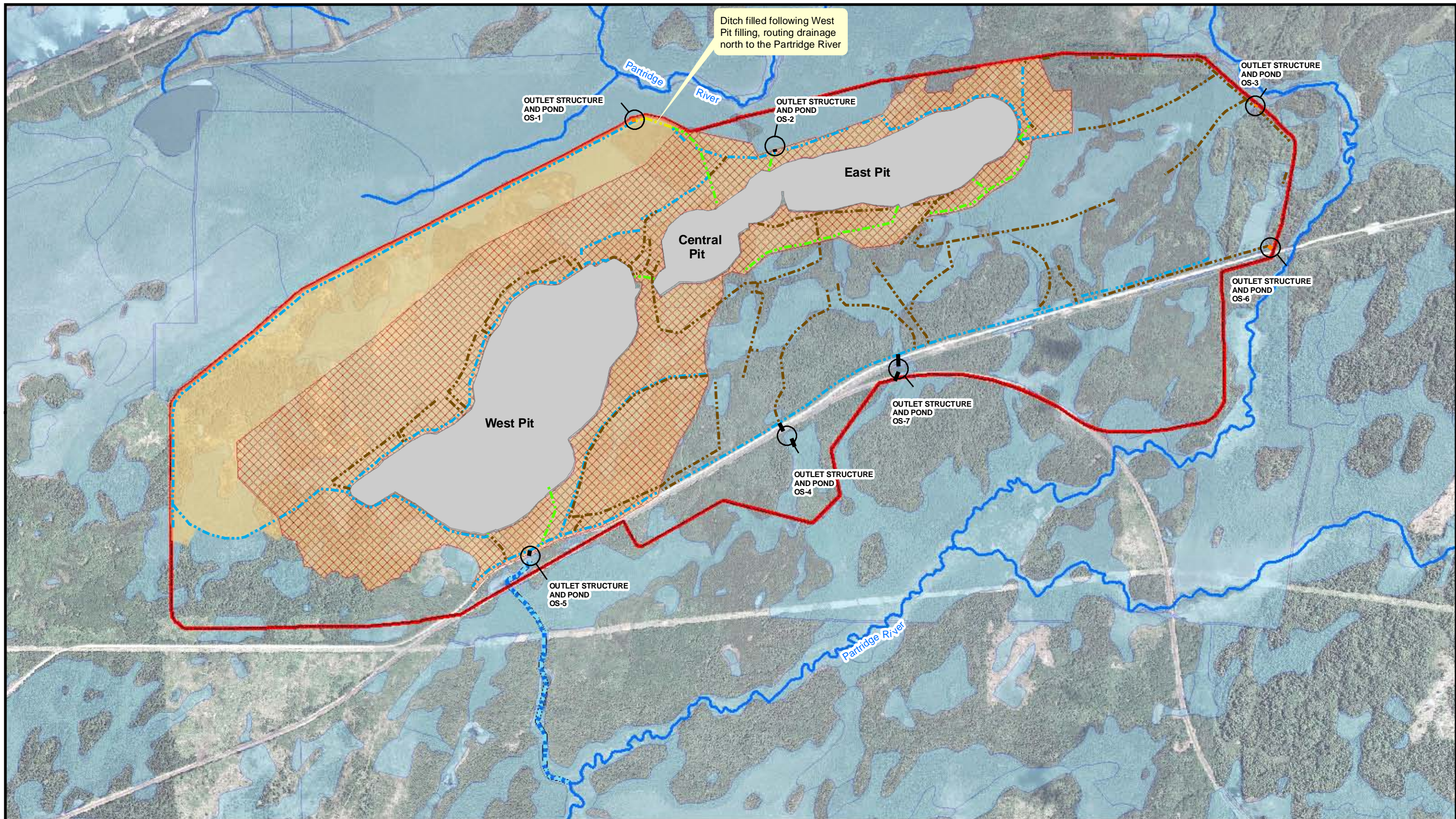


Figure 3.1-39
Plant Site Closure Activities at Year 20
(Proposed Action)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

- | | |
|--|---|
| <ul style="list-style-type: none"> Outlet Structure to Remain in Place Outlet Structure to be Removed Filled Ditch Rerouted Ditch New Ditch Existing Ditch | <ul style="list-style-type: none"> Mine Pits West Pit Drainage Area - During Flooding West Pit Drainage Area - After Flooding Mine Site Mine Site Drainage Channel Wetland Delineations |
|--|---|

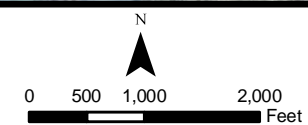
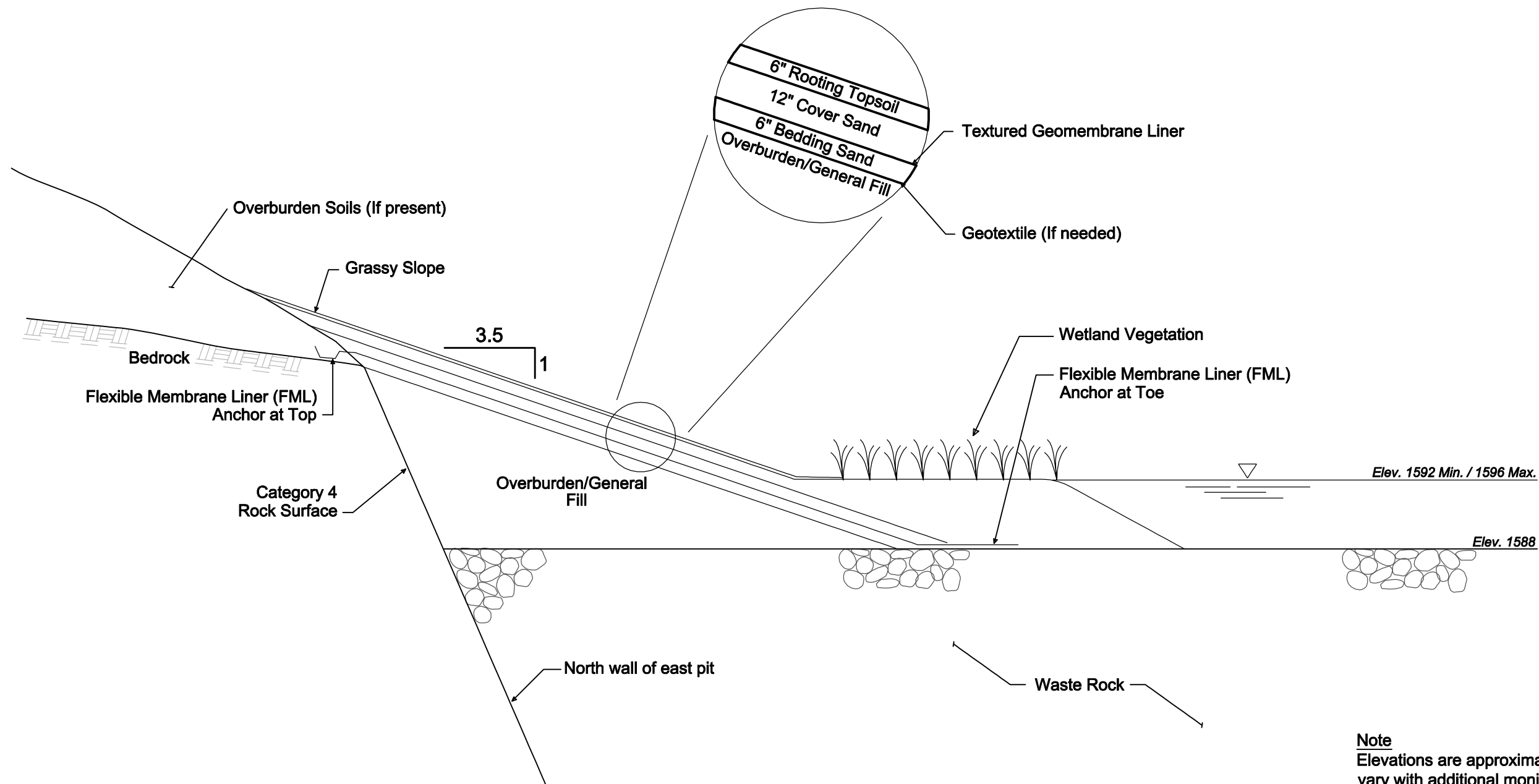


Figure 3.1-40
Ditches to be Blocked, Rerouted or
Constructed During Closure (Proposed Action)
NorthMet Project
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St. Louis County, Minnesota

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Note
 Elevations are approximate - may vary with additional monitoring or actual flows.

NORTH WALL - EAST PIT DETAIL

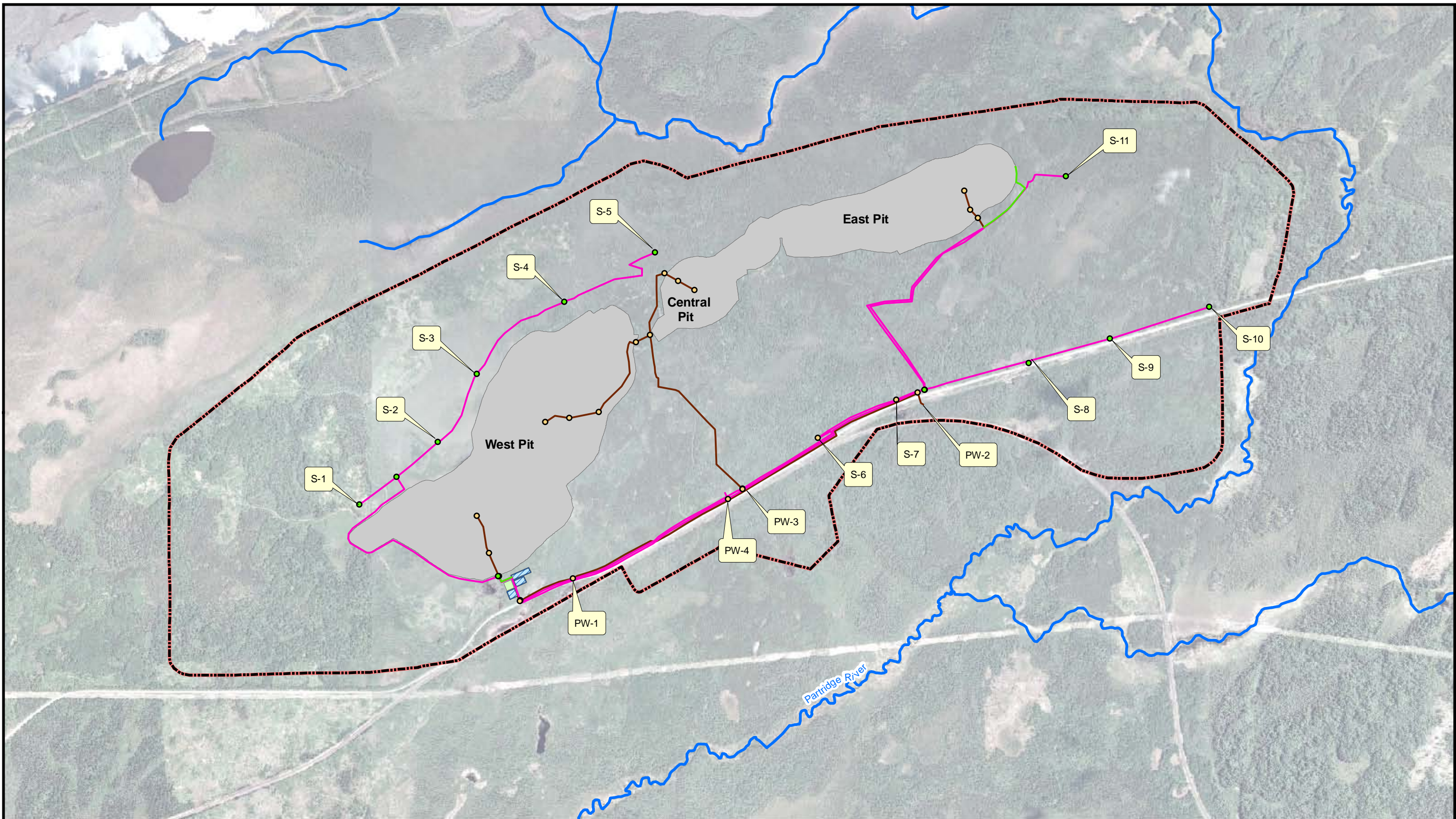
Drawing Source: Barr Engineering

No Scale Applicable













Figure 3.1-41
North Wall - East Pit Category 4
Existing Rock Face (All Actions)
 NorthMet Project
 PolyMet Mining, Inc.
 St. Louis County, Minnesota

October 2009



Map Source: Barr Engineering

- | | |
|---|--|
|  Mine Site |  Maintained Pump |
|  Year 20 Mine Pits |  Removed Pump |
|  Wastewater Treatment Facility |  New Pipe |
|  Equilization Ponds |  Maintained Pipe |
|  Streams/Rivers |  Removed Pipe (if Water Quality Meets Discharge Limits) |

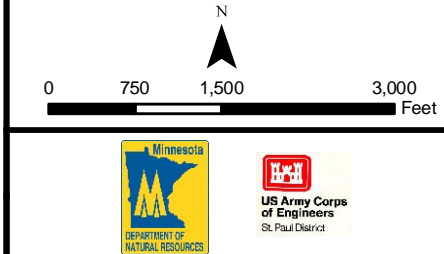
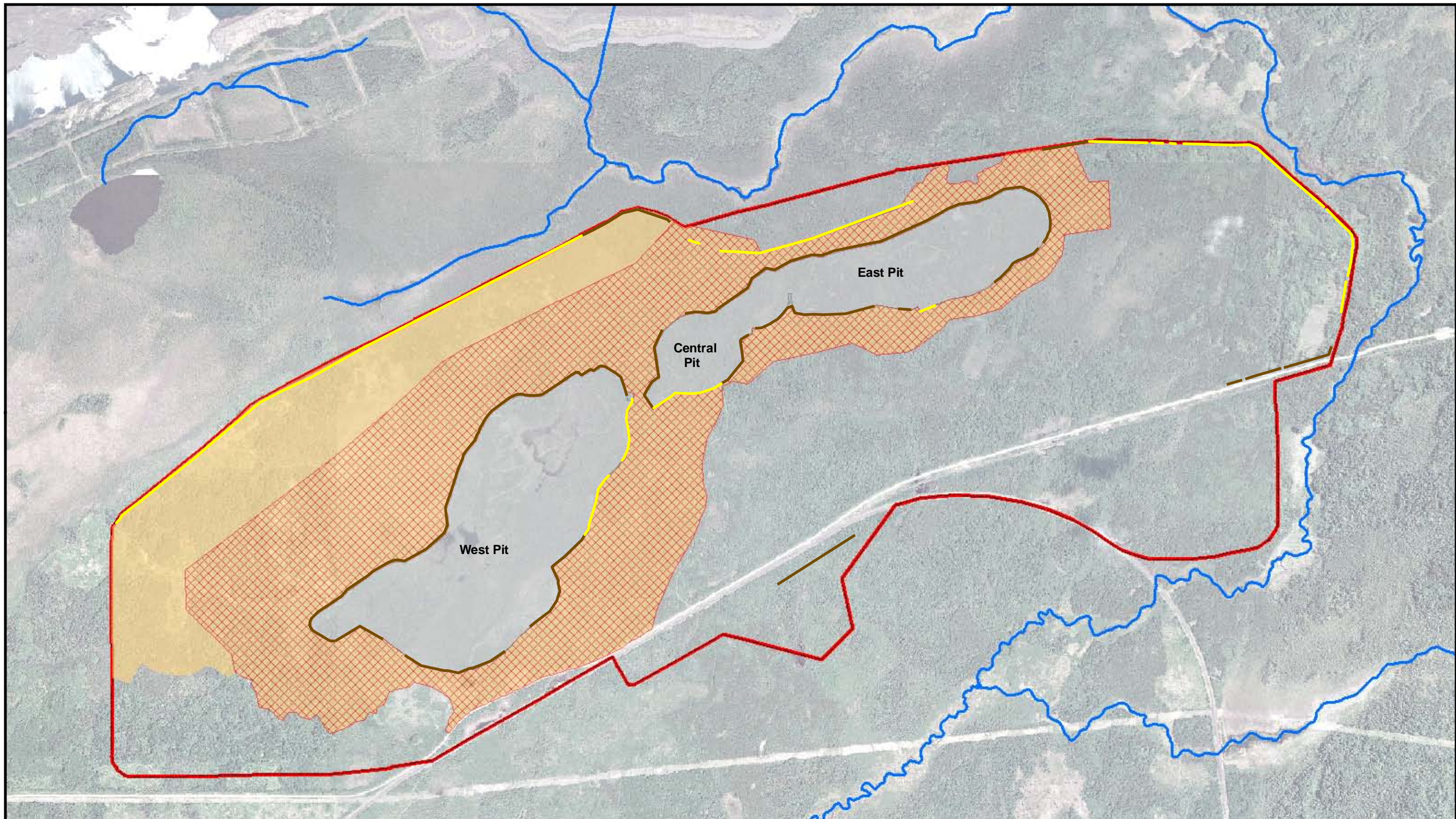



Figure 3.1-42
Pumps and Pipes to be Maintained
or Removed in Closure (Proposed Action)
NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota
October 2009



Map Source: Barr Engineering

- | | |
|--|--|
|  Mine Site |  West Pit Drainage Area-After Flooding |
|  Mine Pits |  West Pit Drainage Area-During Flooding |
| Dikes During Closure |  Rivers/Streams |
|  Maintained Dikes | |
|  Removed Dikes (As Appropriate) | |

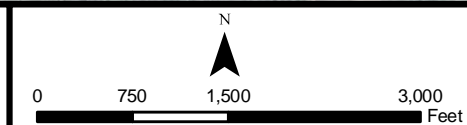
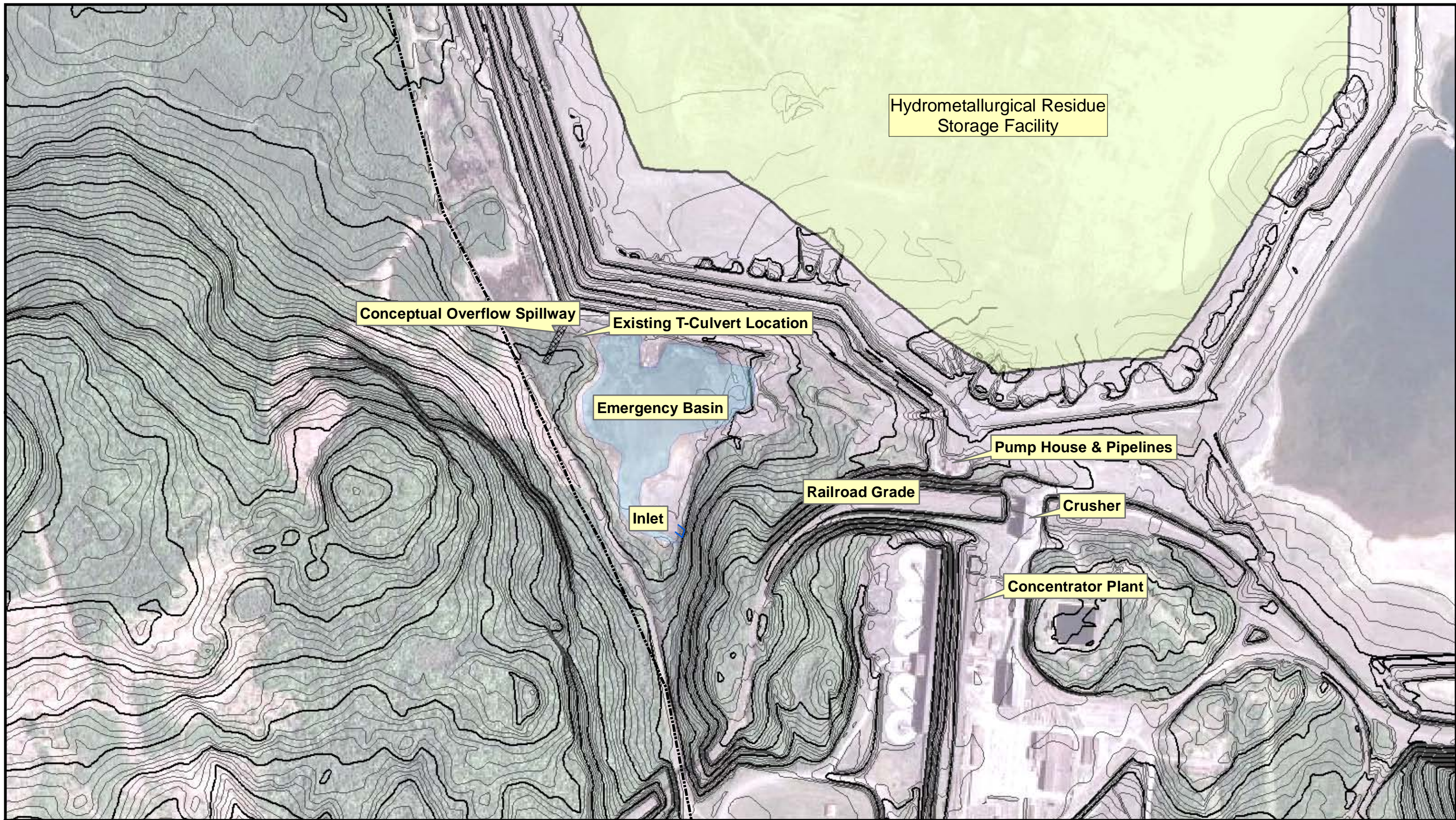


Figure 3.1-43
Dikes to be Removed and Maintained
During Closure (Proposed Action)
NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

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Map Source: Barr Engineering

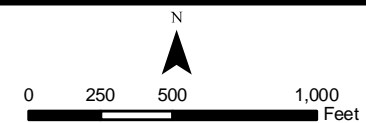


Figure 3.1-44
Overflow Spillway and Emergency Basin
(All Actions)
NorthMet Project
PolyMet Mining, Inc.
St. Louis County, Minnesota

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