

A case history of a recently permitted mine in Cleveland County, North Carolina

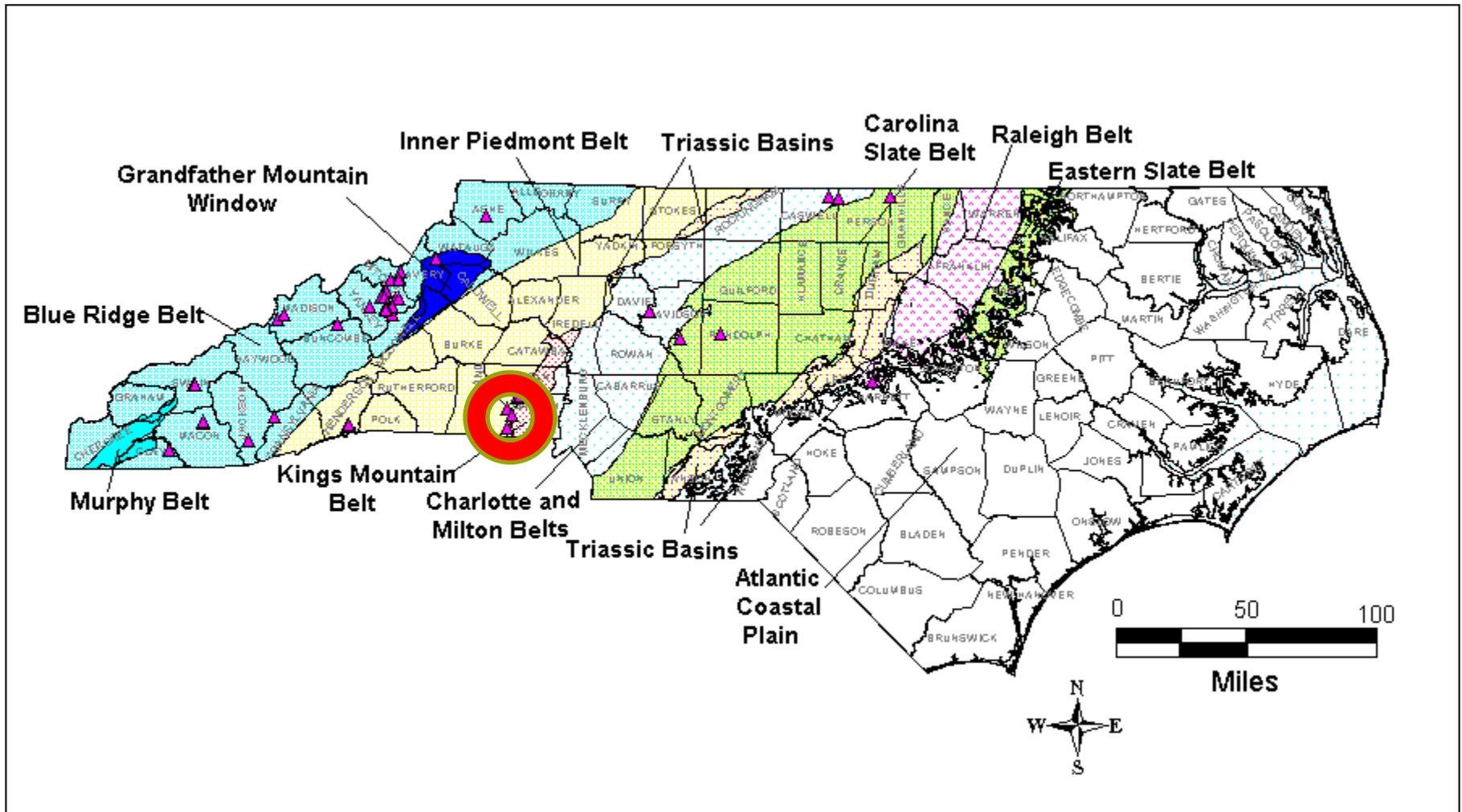
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Imerys, Performance & Filtration Minerals



Kings Mountain Mica, North Carolina

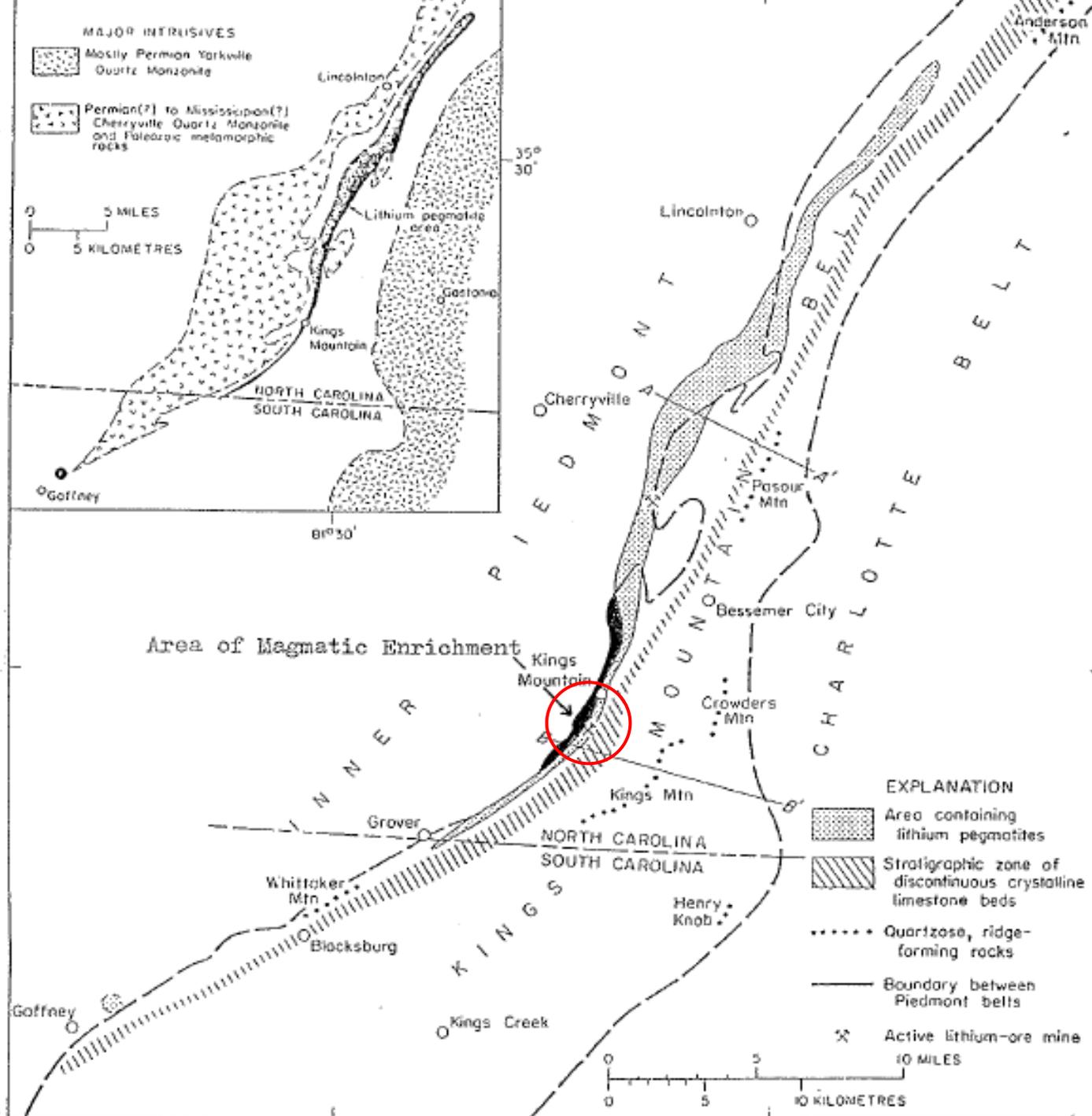
- Geologic Overview
- Uses of Mica
- Permitting Process
- Mine development

North Carolina Geologic Terranes



Geology

- Mississippian Cherryville Quartz Monzonite
- Carolina Tin-Spodumene Belt
- Kings Mountain Shear Zone
- Monzonites and Pegmatites intruded into host mica schist
- Deep saprolite weathering defines mineable ore zones



Geologic Exposures





Mining

Mining with Excavator and Articulated Trucks.

No blasting, free dig to saprolite / bedrock interface at +/- 120 ft.

Campaign mine during Spring and Fall. Avoid Winter mud and cold.

Dump truck haul over the road to Plant site.



**Coarse
Mica Flakes**



**Off-color Pegmatite
Saprolite Ore**



White Pegmatite Ore

Wet Processing

Wash, crush, screen

Spiral separation of coarse

Flotation separation of fines

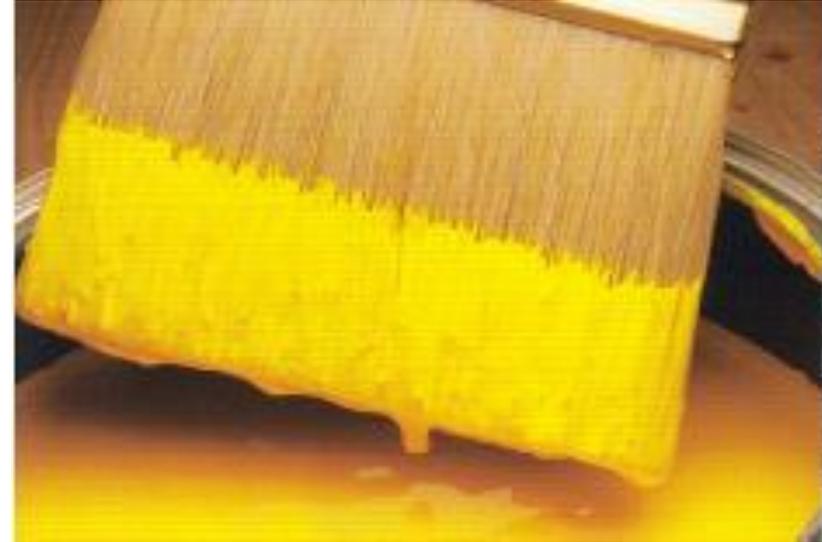


Mica Applications



Dry Wall

Paint

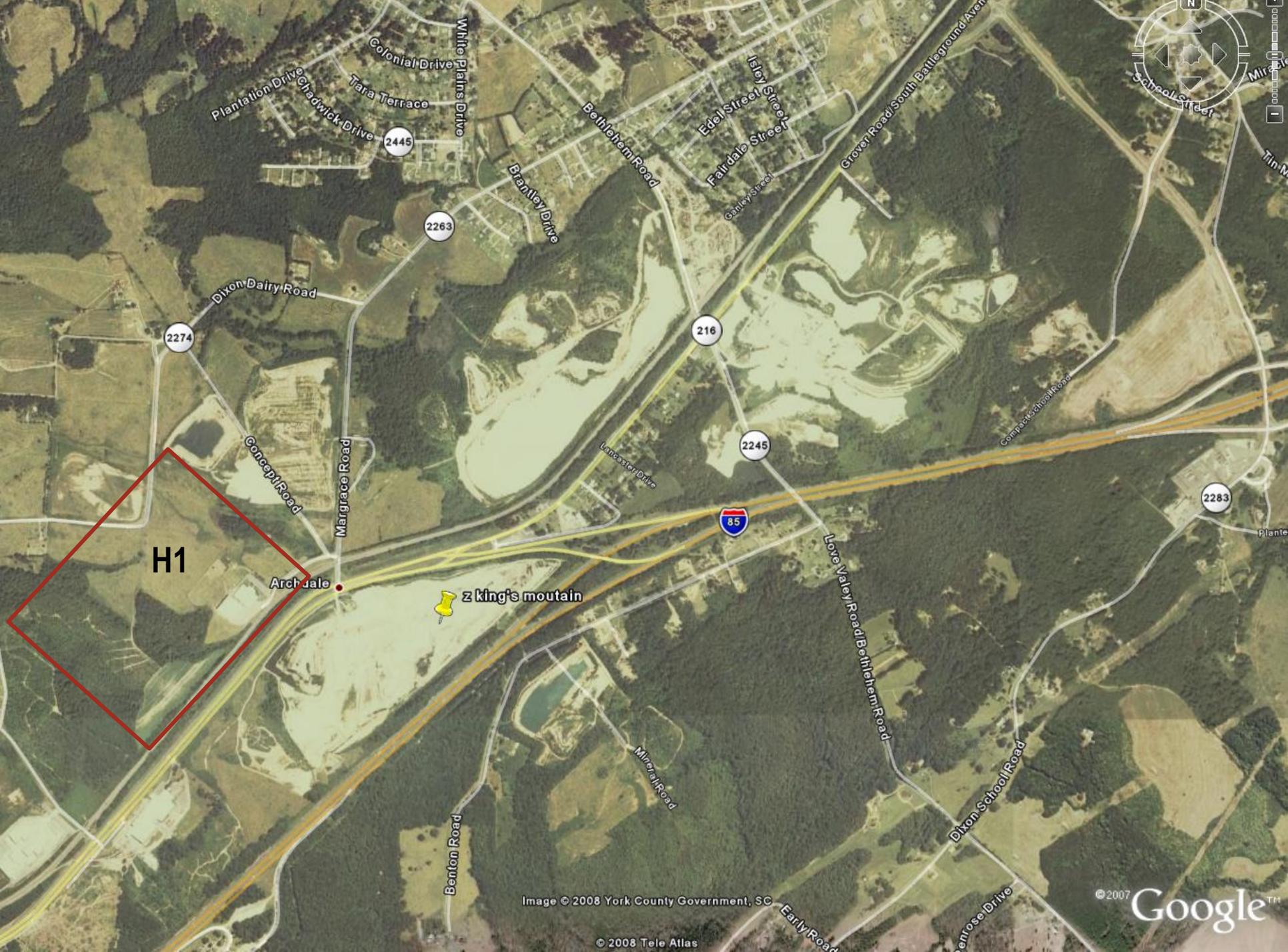


Automotive
Sound Insulation



Site History

- Mica mining in Kings Mountain started in 1947. Used for electrical resistors.
- The Kings Mountain Mica Company started their first operation in 1949.
- Several companies operated in the belt over the years, but after acquisitions and closures only one company was operating in the late 1990's.
- Kings Mountain Mica Company was owned by Franklin Minerals, Oglebay Norton, Zemex and then General Chemical between 1994 and 2007.
- Imerys bought Kings Mountain Minerals, Inc. along with a phlogopite mica operation in Quebec in 2008.



H1

z king's moutain

Archdale

Dixon Dairy Road

Concept Road

Margrace Road

Plantation Drive
Chadwick Drive
Tara Terrace
Colonial Drive

White Plains Drive

Brantley Drive

Bethlehem Road

Edel Street
Isley Street
Fairdale Street

Grover Road South
Battleground Avenue



2274

2263

2445

216

2245

2283

85

Lancaster Drive

Commerce School Road

Love Valley Road
Bethlehem Road

Benton Road

Mineral Road

Dixon School Road

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Early Road

Centrose Drive

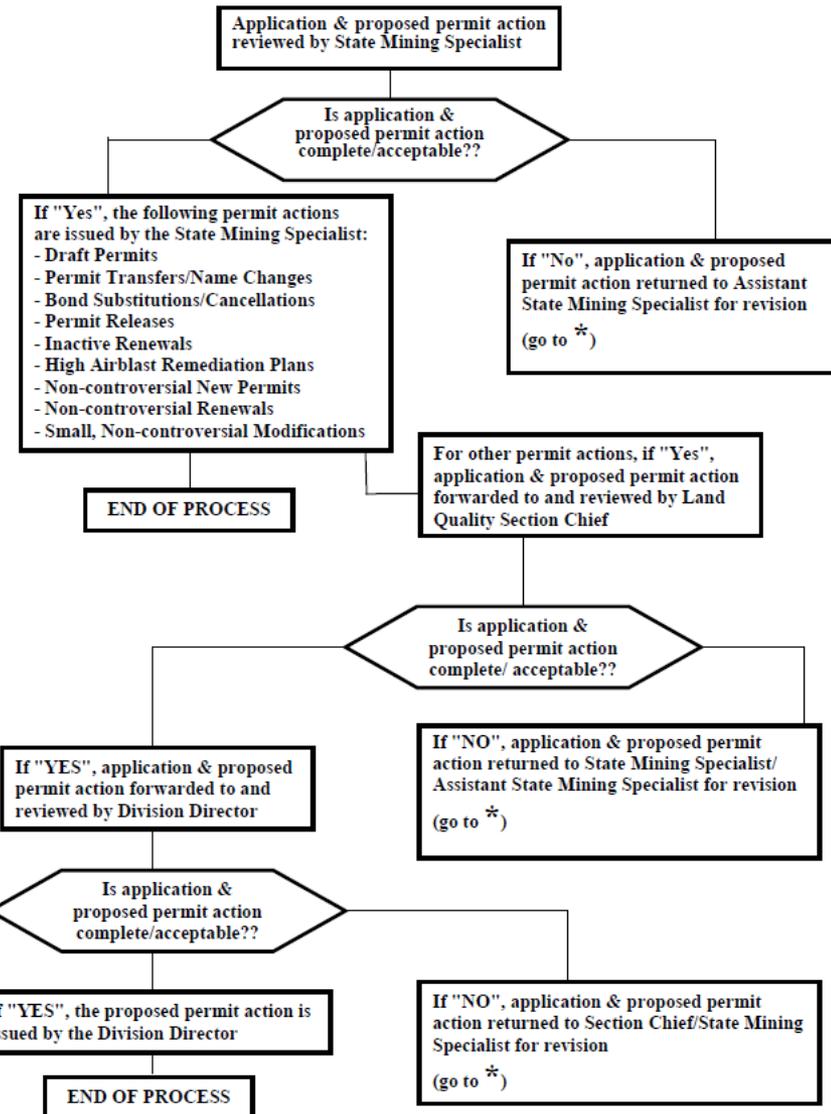
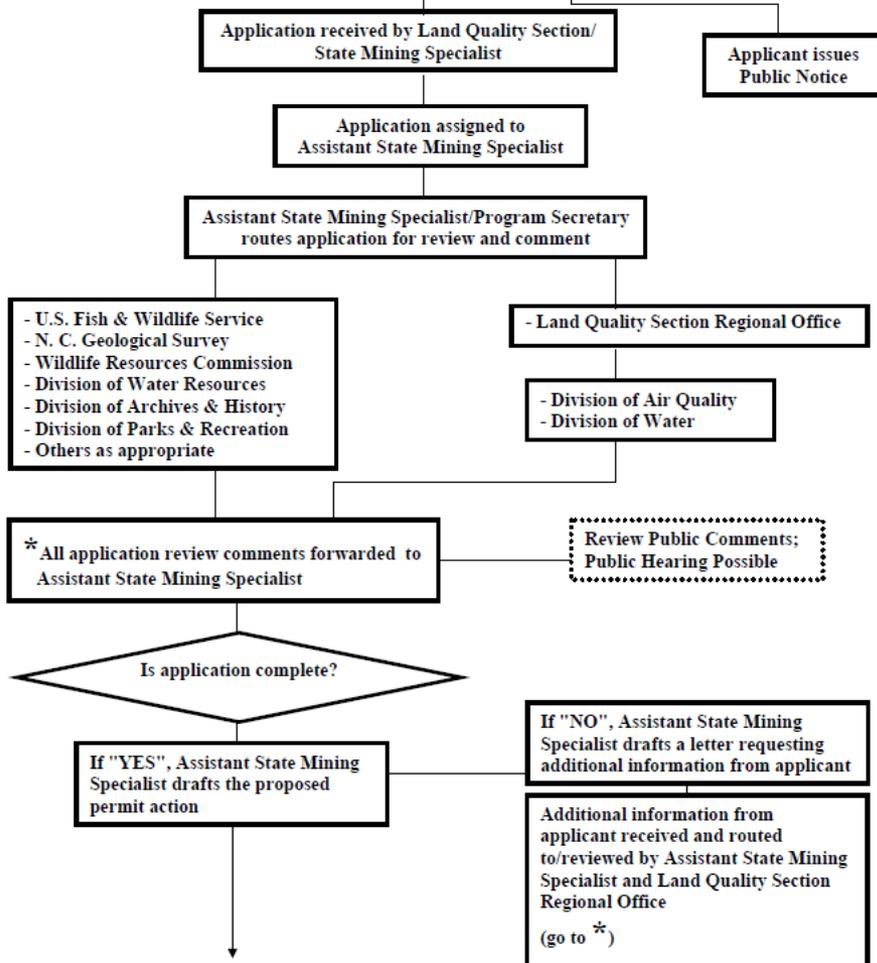
Permitting the H1 Property

- Limited reserves confirmed after 2008 acquisition and a year of operation, initiated a program in early 2010 to evaluate leased properties and permit the next mine by mid-2011.
- False start on permitting based on reliance on local site interpretation of process.
- Drilling initiated in April of 2010 to support mine planning and permitting.
- Baseline permit work completed after drill program.
- Permit modification started in August of 2010 and submitted at end of September 2010.
- Permit modification granted January of 2011. 401/404/NCEEP completed by early March. NPDES amendent also received in March of 2011.
- Stormwater and erosion control systems and site infrastructure completed in April. Phase 1 stripping of mine area completed mid-May.
- Grand Opening May 20, 2011. Mining contractor on site preparing to mine ore.

North Carolina General Statute, Article 7, Mining Act of 1971

MINING PERMIT APPLICATION REVIEW PROCESS FLOWCHART

BEGINNING OF PROCESS

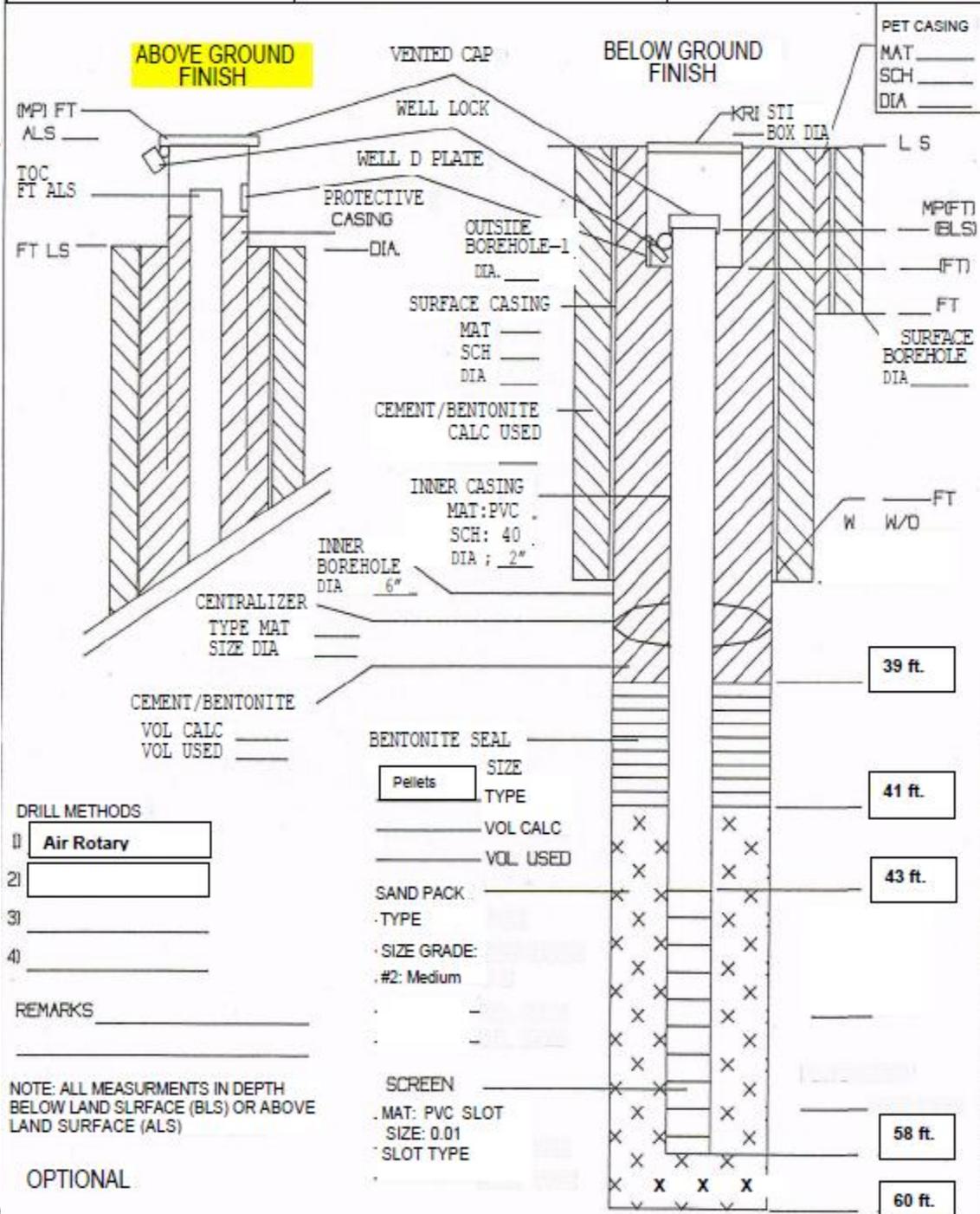


Permit Modification – Key Components

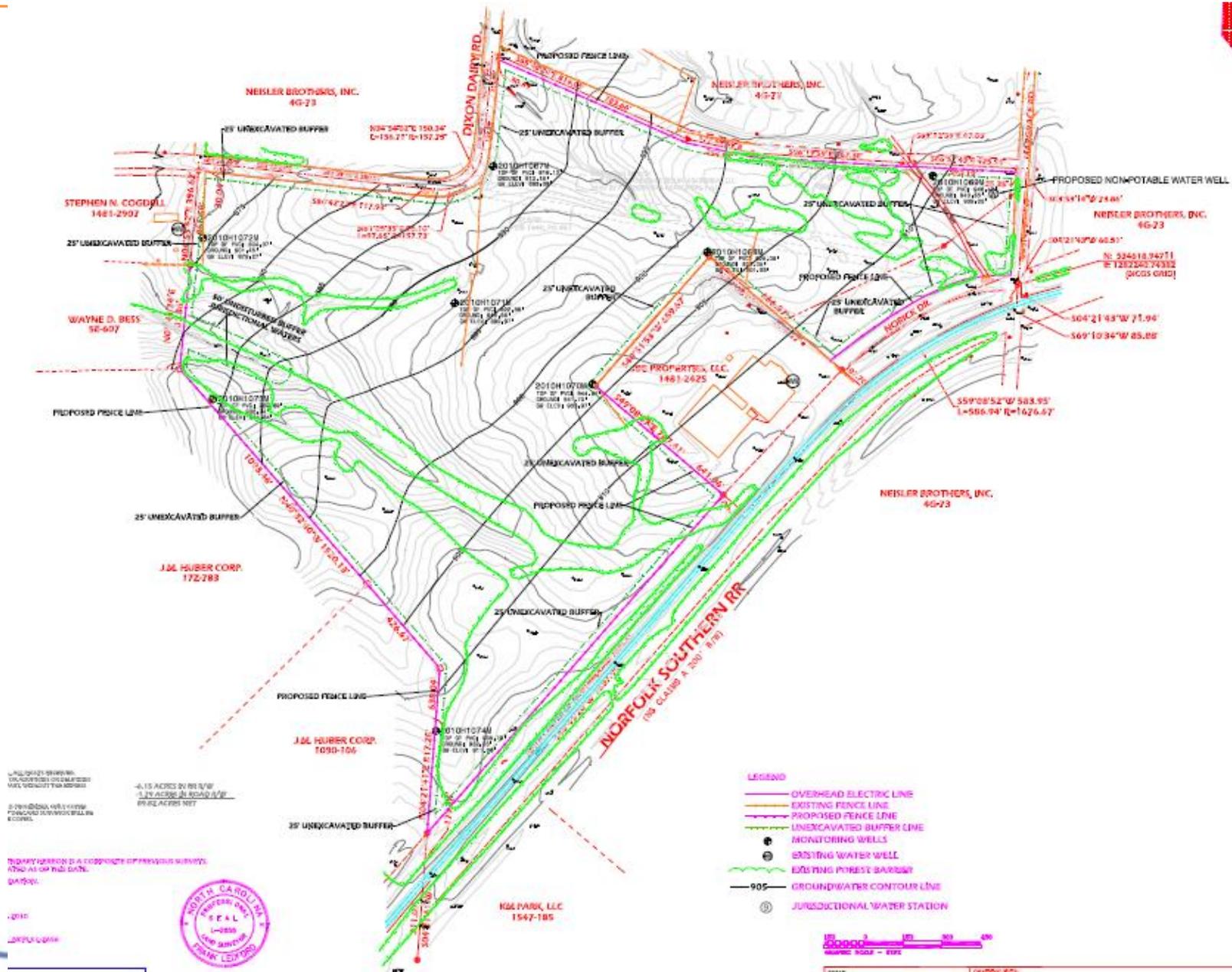
- The H1 property is contiguous with current permit boundary, so required only a modification or amendment to the permit.
- Plans for pits, dumps, stockpiles, roads, cleared areas, sediment and erosion control structures and buildings were required.
- Plan with defined property boundaries, set backs, streams, ponds, and adjoining properties was needed.
- List of all property owners within 1000 feet of the proposed permit boundary for notification.
- Define sequence of mining, surface water impact and management, impact to groundwater, impact to air quality, slope stability management, security, screening of operation and reclamation plan.

Monitor Well Permits

- 10 groundwater monitoring wells were installed to bedrock.
- NC DENR, Division of Water Quality. Location and completion details.
- To establish the groundwater elevation, hydrologic surface, and baseline water quality.
- Mine permit requires you to indicate how the mine will impact groundwater and neighboring wells.
- Two neighborhood water wells were sampled.



Site Hydrology



Air Quality Permit

- File for exemption from Air Quality Permit.
- NC DENR, Division of Air Quality.
- North Carolina Administrative Code 15A 2Q.
- Document that no crushers or conveyors will be used and that equipment is limited to motor vehicles and self-propelled vehicles.
- September 9, 2010 – Air Quality Permit Application Determination confirmed that an Air Quality Permit was not required.

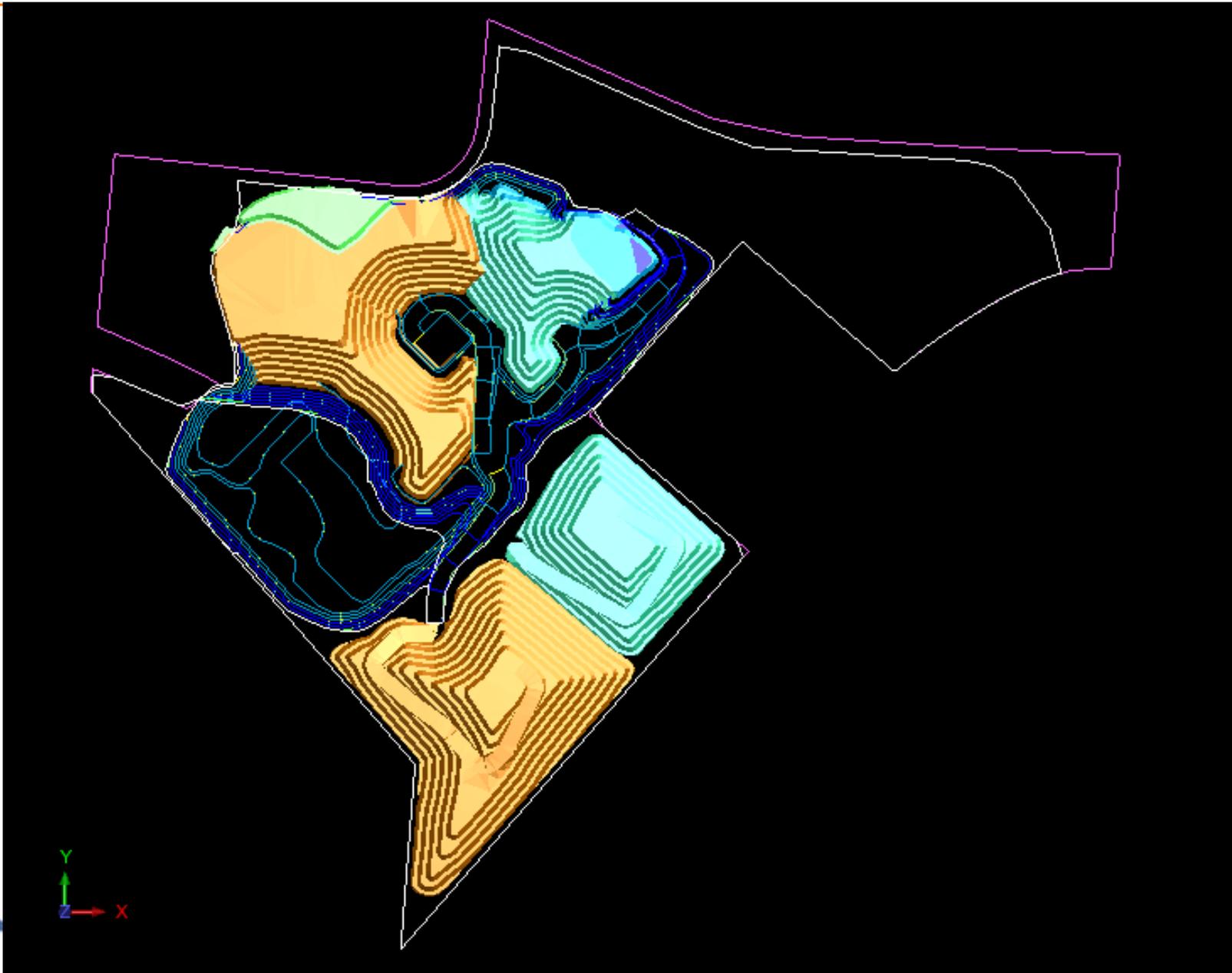
Permit Modification

- Application submitted 28 September 2010.
- Key issues in response were administrative and document modifications.
- We had not paid our annual permit fee for 5 years, \$460.
- Site inspection for this amendment also included an inspection of the other permitted contiguous sites, which created a number of finding on active properties.
- NC DENR, Division of Land Resources was satisfied with a few modifications.
- The Division of Water Quality had issues to resolve with groundwater, surface streams and monitoring. We had to get the US Army Corps of Engineers involved.
- 13 January 2011 the Permit Modification was approved.

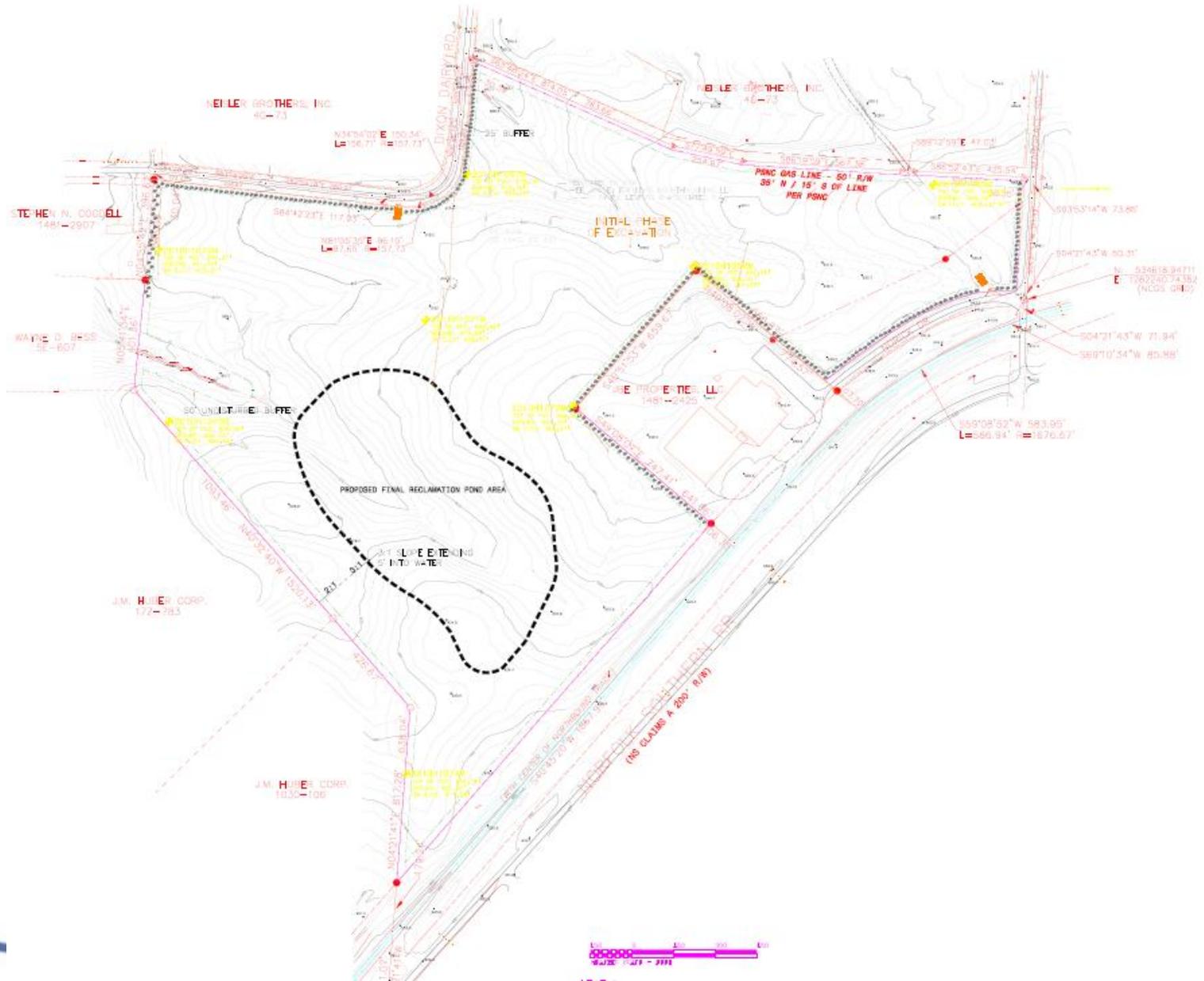
Final Mine Plan Limits



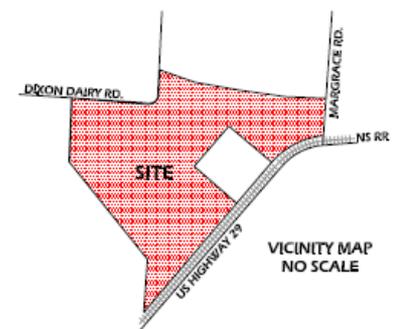
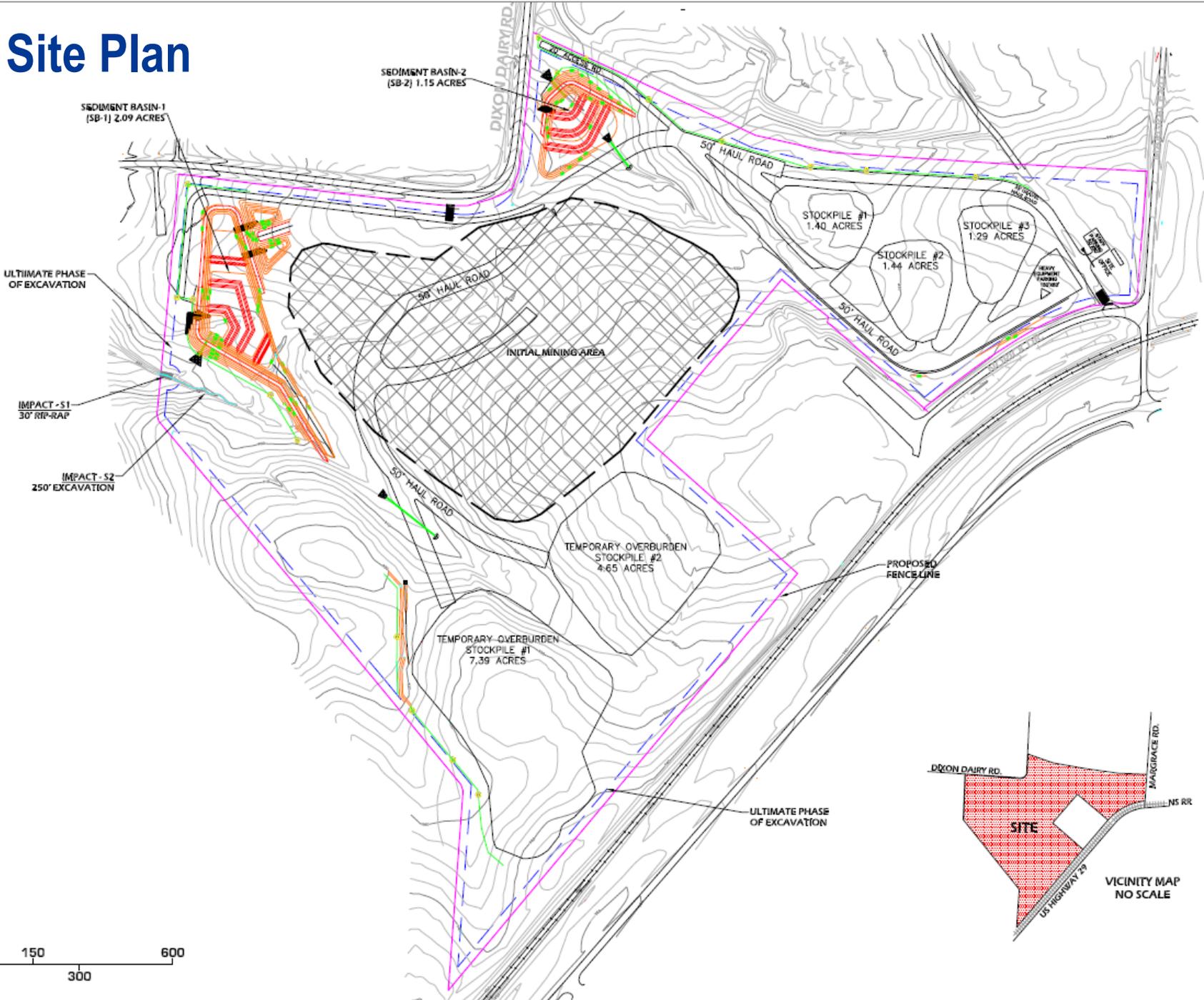
Waste Impoundments and Mining Sequence



Reclamation Plan



Site Plan



Burn Permit

- Regulated by North Carolina Forest Service through County agents.
 - Issued as long as there are no burning bans and conditions are acceptable.
 - Prevailing winds must be away from structures.
 - Burn piles must be 500' from buildings.
 - Burn piles must be 250' from roads.
 - Burn only during daylight hours.
 - Only kerosene or diesel as starters.
-
- H1 property was a 40 acre burn, doze and pile. Forest had already been thinned by loggers.

February 2011

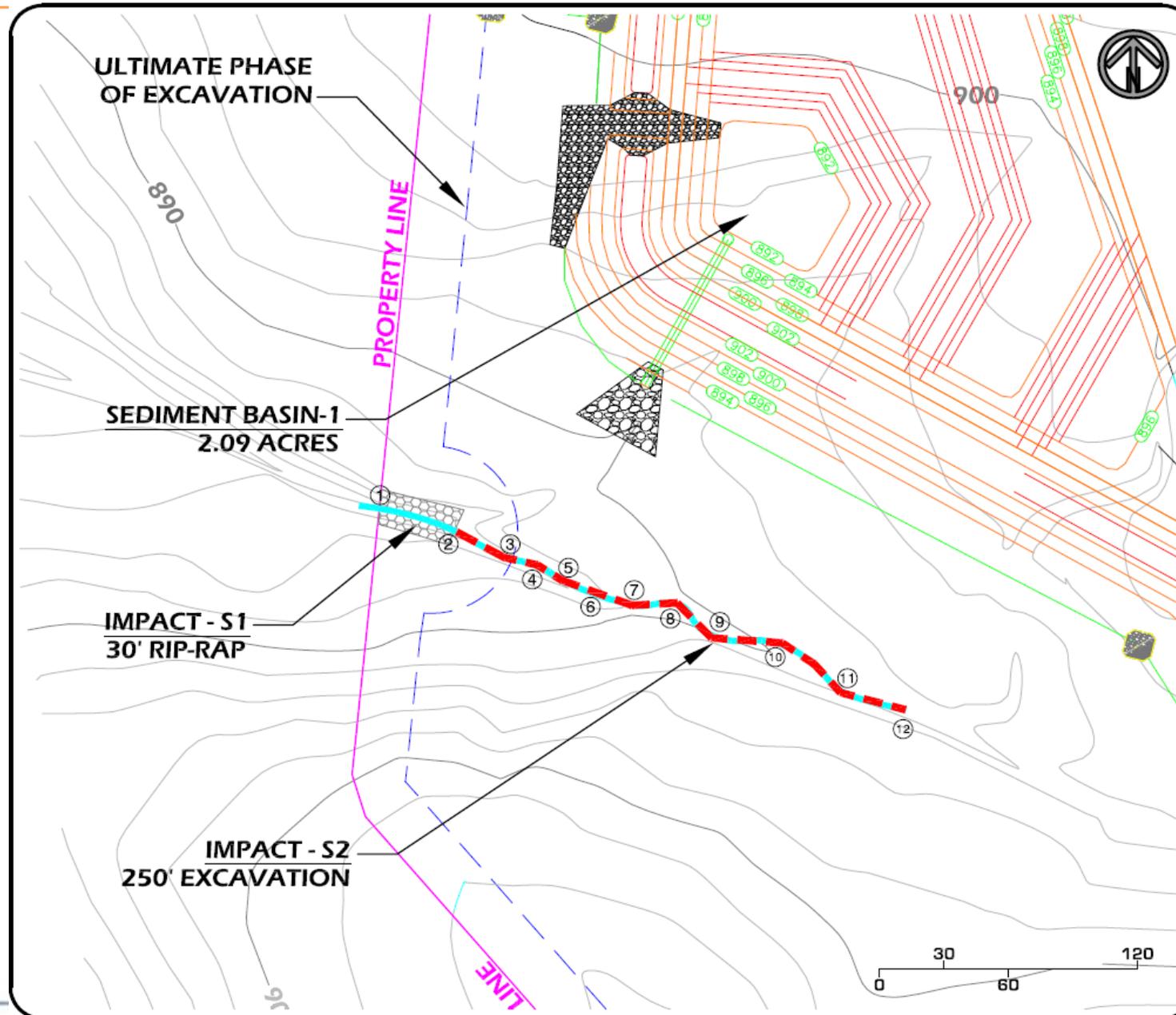


Water-Related Permits

- Explain rationale for monitoring wells and monitoring program.
- Impact on dewatering of an unimportant stream (280'). Key issue is potential interface between groundwater and surface water, and the impact of mining on streams.
- USACE – jurisdictional, unimportant, not-mitigable. Request no permit required.
- Impact to surface waters not allowed. Although stream did not run, it was wet in a few locations after rain events, thus there was potentially impacted water. Remedy – a check to the NC Ecosystem Enhancement Program for mitigation in support of their stream restoration fund.
- NC DENR DWQ 401 water quality certificate issued February 28, 2011.
- NCEEP was paid on March 1, 2011 for 250 feet of unimportant stream.
- A 404 permit was issued that authorizes 30 linear feet of permanent impact with the installation of a rip-rap dissipator pad. March 2, 2011.



Impacted Stream



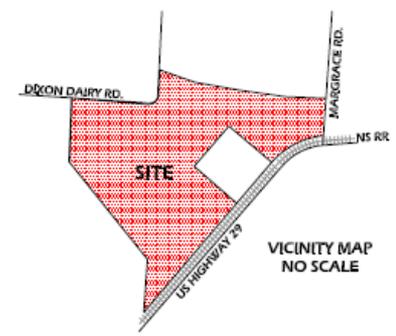
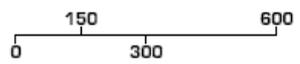




Site Development

- Construction of Stormwater and Erosion control features first.
- Construction of site infrastructure.
- Installation of Office Trailer.
- Initial Stripping program.
- Grand Opening – May 20, 2011.
- Turn project over to Operations and initiation of contract mining.

Site Plan



Phase 1 stripping area



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Office Trailer Permits – Cleveland County

- With the trailer on site for more than 18 months, it had to be a North Carolina certified, handicap accessible trailer. Only 1 used trailer in the Carolinas fit the requirements.
- The trailer required concrete footers and tornado restraint cables.
- Water well had to be drilled and permitted.
- Plumbing system had to be inspected and tested.
- Septic system had to be dug, installed and permitted.
- The electrical had to be inspected before connection with power.
- Trailer skirting was required and inspected prior to occupancy.
- The trailer required a handicap accessible ramp, sign and paved parking spot.
- A final inspection of all of the above items was required prior to occupancy.
- We received a 30-day exemption for occupancy for the Grand Opening because we did not have the paved parking spot in place.



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 **IMERYS**
Kings Mountain Minerals Inc.
H1 Mine Grand Opening
May 20, 2011