

**WARRIOR INVESTMENT COMPANY, INC.
CORINTH MINE, P-3731 REVISION NO. 19**

WARRIOR INVESTMENT COMPANY, INC.

CORINTH MINE, P-3731

REVISION NO. 19

ALABAMA SURFACE MINING COMMISSION

SURFACE MINING PERMIT APPLICATION

P A R T I I I

Prepared by:

MCGEHEE ENGINEERING CORP.

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PART III - OPERATION PLAN

2. Describe the sequence and timing of increments to be mined (as shown on permit map) over the total life of the permit. (780.11)

The timing increments are as follows:

| <u>Increment No.</u> | <u>Acres</u> | <u>From</u> | <u>Dates</u> | <u>To</u> |
|-----------------------------|---------------------|----------------------|---------------------|------------------|
| 1 | 49.0 | Currently Bonded | | Life of Mine |
| 3 | 9.0 | Issuance of R-19 | | Life of Mine |
| 4 | 55.0 | Currently Bonded | | Life of Mine |
| 2 | 10.0 | Bonded | | |
| 5 | 1.0 | Reclamation complete | | |

See the attached [Permit Map](#).

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3. Attach a narrative explaining the construction modification, use, maintenance, and removal of the following facilities: (780.11)
 - (a) Coal removal, handling, storage, cleaning and transportation structures and facilities;
See [Attachment III-A-3](#), Part III-A-5 & Part III-B-5
 - (b) Spoil, coal mine waste and non-coal mine waste removal, handling, storage, transportation and disposal structures and facilities;
See [Attachment III-A-3](#) & [III-B-2-A](#).
 - (c) Mine facilities; and
See [Attachment III-A-3](#)
 - (d) Water pollution control facilities.
See [Attachment III-A-3](#) & [III-B-2-A](#)

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ATTACHMENT III-A-3**

**SPOIL, COAL MINE WASTE AND NON-COAL MINE
WASTE REMOVAL, HANDLING, STORAGE, TRANSPORTATION
AND DISPOSAL STRUCTURES AND FACILITIES**

This permit application proposes adding Slurry Impoundment No. 2 and Slurry Impoundment No. 003A for surface storage of coal mine waste (fine refuse or slurry) along with two (2) additional injection wells, No. 19 & No. 20 for the injection of slurry generated by this mining facility into the abandoned Mary Lee No. 2 Underground Mine. The Corinth Mine is approved by both ASMC and ADEM for injecting coal mine waste into the abandoned Mary Lee No. 2 underground mine. All of the pipeline for delivery of the slurry to the impoundments/injection wells will be on area that is already permitted under P-3731, or is being permitted by this revision. All refuse material handling will be accomplished by pumping through “drisco” polyethylene pipe. Detailed modification plans for Rock Dump No. 2 are also enclosed. Modification to Rock Dump No. 2 is proposed to increase the volume of coarse refuse to be stored in Rock Dump No. 2 by extending the southeaster perimeter of the dump. See the attached [acknowledgement letter from MSHA](#) that serves as MSHA’s approval of the plan.

The injection wells to be added by this revision (No. 19 & No. 20) will be used to decant Slurry Impoundments No. 2 and No. 003A by constructing the wells such that the collar of each well is located at the maximum elevation allowed for each well.

The injection wells will be located 10’ – 20’ outside the pool area of the slurry impoundments with the collar opening at the maximum allowable elevation for slurry (525.1’ for Imp. 002 & 444.1 for Imp. 003A). The wells will receive water/slurry from the impoundment via a 3’ minimum wide trench (2 to 1 side slopes) also at the elevation of the injection wells. The injection well will be constructed so as to allow slurry and water from the slurry impoundments to decant into the injection well. Decanting into the injection well from the impoundment serves two (2) purposes: 1) it eliminates the possibility of a slurry spill due to clogging of a well. If the well plugs, the slurry is contained by the slurry impoundment. 2) allows solids to settle out in the impoundment increasing the life of the injection wells which eliminates surface discharge of runoff from slurry impoundments.

Slurry pumping will cease when the slurry elevation reaches the maximum elevation allowed for slurry in each respective impoundment. At that time Warrior Investment Company, Inc. will either submit detailed abandonment plans or remove the accumulated slurry from the impoundment and haul it to Rock Dump No. 2 for permanent storage. Warrior Investment Company, Inc. will resume pumping to the slurry impoundment(s) if the accumulated slurry is removed from the impoundment.

MINE FACILITIES

Mine facilities added as a result of Revision R-19 will consist of Slurry Injection Well No. 19 & No. 20, associated pipelines, Sediment Basin 002, Slurry Impoundments No. 2 and Slurry Impoundment No. 003A. The slurry injection wells added by this revision will be used to inject coal mine waste (fine refuse) into the underground old works in the Mary Lee No. 2 Mine by decanting Slurry Impoundment No. 2 and No. 003A. Underground injection was approved by ADEM under UIC permit ALSI9964508.

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“Driscoe” type polypipe will be used to transport the above referenced water/slurry. Preparation for the pipeline corridor will consist of the clearing and grubbing of the area. All of the area to be disturbed will drain to either Sediment Basin 002, 003, Slurry Impoundment No. 2 or Slurry Impoundment No. 003A. Typically with Driscoe pipe the joints are welded and provide for a water tight seal. Use and maintenance of the pipeline will consist of replacement of damaged or malfunctioning sections of pipeline, repair of leaks as they develop, and the addition of pipeline when needed. Upon the termination of pumping operations, the pipeline will be dismantled and removed from the site. All disturbed areas will be vegetated as stated in the approved reclamation plan.

Monitoring the slurry pipeline and injection wells will be performed in accordance with the plan submitted to Dr. Randall C. Johnson on October 10, 2011 and revised on November 1, 2011.

The road crossing will be constructed using an underground boring machine. The crossing is located in a section of road that has an embankment sloping away from the road on both sides of the pavement. Traffic flow will not be impacted. Flagmen will be posted 500’ on either side of the excavation area to alert passerby’s that work is being conducted near the road. The underground pipe crossing will be 4” “Drisco” type pipe encased in 6” or 8 inch steel tubing. Approval from the Walker County Commission is forthcoming and will be submitted during the review period.

All disturbed areas outside of the pool area of the slurry impoundment will be fertilized and vegetated with an appropriate combination of grasses and legumes and mulched as stated in the approved reclamation plan to ensure a permanent diverse vegetative cover.

WATER POLLUTION CONTROL FACILITIES

Sedimentation basins constructed during mining operations are to collect sediment from the disturbed area during the actual mining phase and during the reclamation and restabilization phase. All basins will be constructed, prior to any disturbance in its respective drainage area, under the supervision of a qualified Registered Professional Engineer or by a qualified person under his direct supervision. Upon completion of construction the basin will then be certified to the Regulatory Authority as having been constructed in accordance with the approved design plan. Areas where embankments are to be built will be cleared and grubbed with the topsoil removed and stockpiled (if required). The basins will be constructed by bringing desirable material in and compacting it in lifts until the construction specifications are met. Drainage structures will be installed as per design plans with any necessary erosion control and/or stabilization procedures such as riprap, concrete, drop structures, energy dissipaters, etc. being implemented as deemed necessary by the project engineer. Upon completion of construction the entire disturbed area will be revegetated in accordance with the approved Reclamation Plan (IV-C-5).

CONSTRUCTION SPECIFICATIONS FOR SLURRY IMPOUNDMENT NO. 2

The impoundment for coal processing waste will be designed and constructed using the following as minimum criteria:

Coal processing waste will not be used in the construction impoundments without written approval from the regulatory authority.

All trees, shrubs, grasses, and other organic material will be cleared and grubbed from the site, and all combustibles will be removed and stockpiled before coal-processing waste is placed at the impoundment site.

All surface drainage that may cause erosion to the impoundment area will be directed away from the area. Diversions designed to divert drainage from the upstream area away from the impoundment area will be designed to carry the peak runoff from a 100 year - 6 hour precipitation event. The diversion will be maintained to prevent blockage. Adequate outlets for the discharge from these diversions will be controlled by energy dissipaters, riprap channels, and other devices where necessary to reduce erosion, prevent deepening or enlargement of the stream channel, and to minimize disturbance of the hydrologic balance. Also, all diversions delivering runoff from disturbed area must pass through an approved sediment basin.

Detailed design plans for Slurry Impoundment No. 2 are attached. Slurry Impoundment No. 2 will be constructed in a reclaimed final pit remaining from pre-law mining. One side of both impoundments will be of natural ground. The other sides will consist of small embankments and massive spoil fills. The spillway system will be a concrete trapezoidal channel. Slurry Impoundment No. 2 will be less than 20 feet tall and less than 20 Ac-ft and therefore will not be classified as an MSHA impoundment.

All disturbed areas will be sowed with both perennial and annual grasses in order to insure erosion is minimized.

Slurry Impoundment No. 2 will be inspected for erosion, etc. at 14-day intervals, except when more frequent inspections are required by on-site conditions. Maintenance for both impoundments will be performed as necessary. A formal inspection will be made annually until the removal of the structures or until the release of the performance bond by the Alabama Surface Mining Commission.

The impoundment, including spillway system will be maintained by repairing any damage such as erosion or spillway damage until removal of the structure or release of the performance bond.

Formal inspections will be made on an annual basis, including any reports or modifications, in accordance with 880-X-IOC-.20(1(j)) of the Alabama Surface Mining Regulations.

Liming requirements (for 2 feet of slurry depth) will be determined using calculated acid-base accounts. and the following formula:

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$$\frac{(-AB - 5) \times 4,138}{1,000} = T$$

where,

AB = Acid-Base Account (when less than -5)

T = tons of agricultural lime per acre

4,138 = tons of slurry refuse in one acre (2 feet thick)

1,000 = 1000 tons of CaCO₃ equivalent

The agricultural lime will be broadcast or spread over the entire final surface of the impoundment. Neutralizing the final surface of the impoundment should prevent or minimize the possibility of acid mine drainage in form of groundwater seeps and surface water runoff.

After the lime has been applied, the existing adjacent spoil material will be used to construct a working surface on the impoundment that will permit equipment travel and provide for positive drainage. All spoil material slopes on the impoundment shall have a maximum and minimum grade of 5 percent and 1 percent, respectively.

All spoil material fill shall be spread in one (1) foot maximum layers with a minimum compaction of 90 percent of its maximum dry density as determined by the standard proctor compaction test. The thickness of the spoil material will be no more than is necessary to support equipment that will be working upon the impoundment surface.

Including the completion of the above mentioned working surface, the final limed slurry surface will be covered with a minimum of two (2) feet of the best available non-toxic, noncombustible and non-acid forming material. The final configuration of the impoundment area will be regraded to blend with the adjacent areas and will be suitable for the post mining land use of undeveloped/no current use. All regraded/disturbed areas will be fertilized with the appropriate combination and quantities of soil amendments (and be disced in), and the area will then be revegetated in accordance with the approved reclamation plan in Part IV of this permit.

A qualified registered professional engineer or other qualified professional specialist, under the direction of the professional engineer shall conduct regular inspections during construction and upon completion shall inspect each basin for certification purposes.

A qualified registered professional engineer or other qualified professional specialist, under the direction of the professional engineer shall conduct regular inspections during construction and upon completion shall inspect each basin for certification purposes.

CONSTRUCTION SPECIFICATIONS FOR SLURRY IMPOUNDMENT NO. 003A

Slurry Impoundment No. 003A was previously permitted as Sediment Basin 003A. Basin 003A filled beyond its approved sediment storage capacity, was removed and no longer considered as a permitted structure. No modifications were required for removal of the embankment or spillway

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system because the sediment had reached the normal pool elevation and naturally revegetated itself with cattails.

This revision proposes to reinstate Sediment Basin 003A as a slurry impoundment named Slurry Impoundment No. 003A. The embankment and spillway system will remain as is with no modifications to be done. The sediment contained in Basin 003A/Slurry Impoundment No. 003A will be cleaned out and at minimum the original sediment storage volume reestablished and no more than 20 Ac.-Ft. Detailed design plans for Slurry Impoundment No. 003A are attached. Slurry Impoundment No. 003A will be less than 20 feet tall and less than 20 Ac-ft and therefore will not be classified as an MSHA impoundment. The existing slurry/coal fines contained in Slurry Impoundment No. 003A will be processed through the Corinth Prep Plant for additional recovery.

All disturbed areas will be sowed with both perennial and annual grasses in order to insure erosion is minimized.

Slurry Impoundment No. 003A will be inspected for erosion, etc. at 14-day intervals, except when more frequent inspections are required by on-site conditions. Maintenance for both impoundments will be performed as necessary. A formal inspection will be made annually until the removal of the structures or until the release of the performance bond by the Alabama Surface Mining Commission.

The impoundment, including spillway system will be maintained by repairing any damage such as erosion or spillway damage until removal of the structure or release of the performance bond.

Formal inspections will be made on an annual basis, including any reports or modifications, in accordance with 880-X-IOC-.20(1(j)) of the Alabama Surface Mining Regulations.

Liming requirements (for 2 feet of slurry depth) will be determined using calculated acid-base accounts and the following formula:

$$\frac{(-AB - 5) \times 4,138}{1,000} = T$$

where,

AB = Acid-Base Account (when less than -5)

T = tons of agricultural lime per acre

4,138 = tons of slurry refuse in one acre (2 feet thick)

1,000 = 1000 tons of CaCO₃ equivalent

The agricultural lime will be broadcast or spread over the entire final surface of the impoundment. Neutralizing the final surface of the impoundment should prevent or minimize the possibility of acid mine drainage in form of groundwater seeps and surface water runoff.

After the lime has been applied, the existing adjacent spoil material will be used to construct a working surface on the impoundment that will permit equipment travel and provide for positive

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drainage. All spoil material slopes on the impoundment shall have a maximum and minimum grade of 5 percent and 1 percent, respectively.

All spoil material fill shall be spread in one (1) foot maximum layers with a minimum compaction of 90 percent of its maximum dry density as determined by the standard proctor compaction test. The thickness of the spoil material will be no more than is necessary to support equipment that will be working upon the impoundment surface.

Including the completion of the above mentioned working surface, the final limed slurry surface will be covered with a minimum of two (2) feet of the best available non-toxic, noncombustible and non-acid forming material. The final configuration of the impoundment area will be regraded to blend with the adjacent areas and will be suitable for the post mining land use of undeveloped/no current use. All regraded/disturbed areas will be fertilized with the appropriate combination and quantities of soil amendments (and be disced in), and the area will then be revegetated in accordance with the approved reclamation plan in Part IV of this permit.

A qualified registered professional engineer or other qualified professional specialist, under the direction of the professional engineer shall conduct regular inspections during construction and upon completion shall inspect each basin for certification purposes.

FINAL COVER MATERIAL AND BORROW AREAS

This plan proposes to change the required cover material thickness from four feet to two feet.

The proposed final cover material will come from areas within the permit area. This area is made up of previously mined area (spoil) identified as Palmerdale type soils. The land use for this area is undeveloped. Adjacent areas previously mined by P-3228, P-3731 and a pre-law mining operation have been reclaimed with this spoil material as the final growth medium and shown to be successful in re-establishing vegetation. The pre-law mining was reclaimed by the Abandoned Mine Lands program.

Sufficient cover material from the permit area in Increments No. 1, 2, 3 & 4 can be obtained during final reclamation.

In determining the adequacy of the proposed twenty-four (24) inch minimum depth of rooting medium, the following is submitted:

1. In order to restore land use capability, the post mining rooting depth should be equivalent to that of the soils present prior to the placement of material. This is the depth to a root restricting layer and generally includes the A+B horizons.
2. Properly neutralizing acid forming or toxic forming material prevents upward migration of the affect of the acid forming or toxic forming material, thereby, preventing the contamination of the cover material.
3. Properly neutralizing the top six to eight inches (that part typically affected by discing) of the material, adds an additional six to eight inches of depth to the proposed (24") rooting medium.
4. Scarification, discing, or ripping compacted refuse prior to adding the proposed (24") cover material may enhance rooting depth in nontoxic refuse.

Preparation of the site as described above will provide an adequate cover and growth medium.

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Cover material for slurry impoundments will be systematically sampled at a minimum rate of four (4) samples per impoundment to form one (1) composite sample. The composite sample will be sent to Auburn University Testing Laboratory, for analysis to determine type and amount of soil amendments necessary to maintain vegetative growth and applied as recommended. Seedbed preparation shall include discing or scarifying the soil to permit seed application and to aid in the mixing of the soil amendments.

ABANDONMENT PLANS

Actual abandonment plans will be submitted when it is determined that Slurry Impoundment No. 2 and No. 003A are no longer feasible to operate. The abandonment plans will clearly demonstrate that 2' of cover material is adequate, if not, 4' of cover material will be used.

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5. Describe measures to be taken to ensure that all debris, acid-forming and toxic-forming materials and materials constituting a fire hazard are disposed of in accordance with 816.89 and 816.103; include contingency plans to prevent sustained combustion of such material. (780.18).

Slurry Impoundment No. 2 will be covered with a minimum of 2 feet of the best available non-toxic, non-combustible material. The area will be seeded with some combination of the following: Fescue, Bermuda, rye grass, canary grass, and willows. After seeding, the area will be mulched.

Other Materials

Any material such as oil, grease, rags etc. that may present a fire hazard will be properly disposed of in an approved landfill.

Any non-coal waste such as office type garbage, debris, concrete, construction/demolition material, etc., will be disposed of at approved off-site landfills, which meet all applicable local, state and federal requirements.

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6. Give a description, including appropriate cross-sections and maps, of measures to be used to seal or manage mine openings, bore holes, wells and other openings within the proposed permit area. (780.18, 816.13-816.15)

Mine openings within the permit area (other than blast holes) will be eliminated in the following methods:

- 1) Exploration Holes – Not Applicable
- 2) Injection Wells – See [Attachment III-A-6\(2\)](#)
- 3) Mine Openings – Not Applicable

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7. Give a description of steps to be taken to comply with applicable water quality laws, regulations and health and safety standards. (780.18)

Water Quality Laws - All disturbed surface drainage from the proposed mining area will be routed through an approved sediment structure for monitoring and treatment purposes. Monitoring and Reporting will take place as set forth in the approved Monitoring Plan (III-D & III-E) and NPDES requirements. When necessary, drainage will be chemically treated for pH or Iron with hydrated lime or caustic soda. Other treatment such as floating silt fences or flocculation bricks may be administered for Total Suspended Solids. These measures will be taken to remain in compliance NPDES requirements. Health & Safety Standards - Applicable approvals will be received prior to the construction of any sanitary absorption lines for bathhouses and offices. MSHA guidelines and regulations will be followed in all operations.

Certification and training of all mine personnel will be current and updated by attending MSHA classes at the Walker Technology School, in Sumiton, Alabama.

All dust, noise, and other required control test will be current and performed by certified MSHA personnel.

All records are maintained at the mine and are available for inspection.

B. Engineering Plans.

All cross sections, maps and plans related to operations, reclamation and structures must comply with Section 780.10. Plans, appropriate calculation and conclusions shall be presented in a clear and logical sequence and shall take into account all applicable factors necessary to evaluate the proposed plan or design.

1. Existing Structures. (780.12, 786.21)

- (a) Describe each existing structure to be used, its location, current condition, approximate dates of construction and evidence (including relevant monitoring data) showing whether or not the structure meets the performance standards of Subchapter K or Subchapter B, whichever is more stringent and demonstrate whether or not the use of existing structures will pose a significant harm to the environment or public health or safety.

Not Applicable

- (b) If an existing structure requires modification or reconstruction to meet the performance standards, attach a compliance plan which includes design specifications, construction schedule, monitoring procedures, and evidence that the risk of harm to the environment or public health or safety is not significant during modification or reconstruction.

Not Applicable

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2. Ponds, impoundments, banks, dams and embankments. (780.25)

- (a) Submit a general plan which complies with Section 780.25 (a)(1) for each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam or embankment to be located within the proposed permit area.

See Attachment III-B-2-A

- (b) Submit detailed design plans which comply with Sections 780.25(a)(2)(3) and 816.46, for each sedimentation pond to be constructed on the increment you currently propose to mine. If the sediment pond is to remain as a permanent water impoundment, design plans shall also comply with Section 816.49.

N/A

- (c) Submit detailed design plans which comply with Sections 780.25(a) (2&3) and 816.49, for each temporary or permanent water impoundment to be constructed on the increment you currently propose to mine.

N/A

- (d) Submit detailed design plans, which comply with Section 780.25(a) (2&3) and 816.81-816.85, for coal mine waste bank to be constructed on the increment you currently propose to mine.

See Modification Plans for Rock Dump No. 2

- (e) Submit detailed plans which comply with Sections 780.25 (a)(2&3) and 816.91-816.93 for each coal mine waste dam and embankment to be constructed on the increment which you currently propose to mine.

N/A

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ATTACHMENT III-B-2(A)**

GENERAL ENGINEERING PLAN CERTIFICATION STATEMENT

I, Robert W. Usher, a registered professional engineer, hereby certify that the information, cross-sections, data, maps, etc., contained in this general plan in Attachment III-B-2-A is true and correct to the best of my knowledge and belief.

McGehee Engineering Corp.

Robert W. Usher, P.E.

Alabama Reg. No. 15917

Date

ADDENDUM TO THE GENERAL PLAN

This addendum to the general plan consists of adding Sediment Basin 002, Slurry Impoundment No. 2 and modifying Basin 003 plans to add removed Sediment Basin 003A as Slurry Impoundment No. 003A upstream in series with Sediment Basin 003. Injection wells No. 19 and No. 20 will be constructed so as to decant Slurry Impoundment No. 2 and Slurry Impoundment No. 003A, respectively. The slurry impoundments and injection wells are being added for the purpose of storing fine coal processing waste (slurry) produced from the Corinth Mine Prep Plant.

General design data for all sediment basins and slurry impoundments are included. See attached data and watershed map for the sediment basin location and preliminary hydrologic information. Currently sediment basin 002 is proposed as permanent. Information to qualify this basin as permanent water impoundments will be submitted and approved by the Regulatory Authority prior to a Phase II bond release. Sediment Basin 003 remains permitted as a temporary water impoundment. Removal plans and additional data qualifying Basin 003 for removal will be submitted and approved by the Regulatory Authority prior to a Phase II bond release.

Sediment Basin 002

Detailed design plans for Sediment Basin 002 are enclosed. Upon written approval of Sediment Basin 002 design plans from ASMC, the embankment and spillway will be constructed in accordance with the approved detailed design plans and certified to the Regulatory Authority prior to disturbance within its watershed and prior to the construction of Slurry Impoundment No. 2.

Slurry Impoundment No. 2

Detailed design plans for Slurry Impoundment No. 2 are enclosed. Upon written approval from ASMC of the design plans of Slurry Impoundment No. 2, the embankment and spillway will be constructed in accordance with the approved detailed design plans and certified to the Authority prior to placement of any slurry in the impoundment. Diversion SI-2 will be constructed simultaneously with the spillway of this slurry impoundment and will be constructed prior to the submittal of certification of construction of Slurry Impoundment No. 2. Surface runoff and discharge from Slurry Impoundment No. 2 will discharge through Sediment Basin 002.

Injection Well No. 19 will be located 10' – 20' outside the pool area of Slurry Impoundment No. 2 with the collar opening at the maximum allowable elevation for slurry (525.1'). The well will receive water/slurry from the impoundment via a 3' minimum wide trench (2 to 1 side slopes) also at the 525.1' elevation. The injection well will be constructed so as to allow slurry and water from Slurry Impoundment No. 2 to decant into the injection well. Decanting into the injection well from the impoundment serves two (2) purposes: 1) it eliminates the possibility of a slurry spill due to clogging of a well. If the well plugs, the slurry is contained by the slurry impoundment. 2) allows solids to settle out in the impoundment increasing the life of the

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injection wells which eliminates surface discharge of runoff from slurry impoundments.

Slurry pumping will cease when the slurry elevation reaches elevation 525.1 ft. MSL. At that time Warrior Investment Company, Inc. will either submit detailed abandonment plans or remove the accumulated slurry from the impoundment and haul it to Rock Dump No. 2 for permanent storage. Warrior Investment Company, Inc. will resume pumping to Slurry Impoundment No. 2 if the accumulated slurry is removed from the impoundment.

Sediment Basin 003 & Slurry Impoundment No. 003A

Sediment Basin 003A previously filled beyond its approved sediment storage capacity and was removed and no longer considered as a permitted structure. No modifications were required for removal of the embankment or spillway system because the sediment had reached the normal pool elevation and naturally revegetated itself with cattails.

This General Plan Addendum and the attached detailed modification plans will reinstate Sediment Basin 003A as a slurry impoundment named Slurry Impoundment No. 003A. The embankment and spillway system will remain as is with no modifications to be done. The sediment contained in Basin 003A/Slurry Impoundment No. 003A will be cleaned out and sediment storage volume reestablished at minimum with no more than 20 Ac.-Ft. See the attached Detailed Modification Plans for Sediment Basin 003 and Slurry Impoundment No. 003A. Sediment Basin 003 is satisfactory as is with no modification required.

Injection Well No. 20 will be located 10' – 20' outside the pool area of Slurry Impoundment No. 003A with the collar opening at the maximum allowable elevation for slurry (444.1'). The well will receive water/slurry from the impoundment via a 3' minimum wide trench (2 to 1 side slopes) also at the 444.1' elevation. The injection well will be constructed so as to allow slurry and water from Slurry Impoundment No. 003A to decant into the injection well. Decanting into the injection well from the impoundment serves two (2) purposes: 1) it eliminates the possibility of a slurry spill due to clogging of a well. If the well plugs, the slurry is contained by the slurry impoundment. 2) allows solids to settle out in the impoundment increasing the life of the injection wells which eliminates surface discharge of runoff from slurry impoundments.

Slurry pumping will cease when the slurry elevation reaches elevation 444.1 ft. MSL. At that time Warrior Investment Company, Inc. will either submit detailed abandonment plans or remove the accumulated slurry from the impoundment and haul it to Rock Dump No. 2 for permanent storage. Warrior Investment Company, Inc. will resume pumping to Slurry Impoundment No. 003A if the accumulated slurry is removed from the impoundment.

Geologic investigations of the area under and adjacent to the slurry impoundments and sediment basin indicate alternating sequences of sandstone and shale with sandstone streaks and minor amounts of bituminous coal and underclay. Heterogeneous pre-law spoil exists on three (3) sides of the impoundments.

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All surface drainage from the area added by Revision R-19 drains into Barton Creek or Baker Creeks.

GENERAL DESIGN DATA

| EMBANKMENT | LOCATION | DRAINAGE AREA |
|--------------------|-----------------------------------|----------------------|
| Slurry Imp. No. 2 | NE/NW, Sec. 32, T.15S., R.6W. | 19 Acres |
| Basin 002 | NE/NW, Sec. 32 T.15S., R.6W. | *34 Acres |
| Slurry Imp. No. 3A | SW/NE, Sec. 31, T. 15S., R.6W. | 258 Acres |
| Sediment Basin 003 | SE/NW, SW/NE Sec 31, T15S, R6W | **308 Acres |

* Includes drainage area from Slurry Impoundment No. 2.

** Includes drainage area from Slurry Impoundment No. 003A.

The embankment and spillway system of Sediment Basin 002 were sized to receive runoff from possible future MSHA sized Slurry Impoundment No. 3 as reflected in their respective detailed design plans.

See the attached [Watershed Map](#)

**SPECIFICATIONS FOR COAL PROCESSING WASTE IMPOUNDMENTS
IMPOUNDING LESS THAN 20 AC-FT OR LESS THAN 20 FEET HIGH**

The embankment for coal processing waste will be designed and constructed using the following as minimum criteria:

1. EMBANKMENT REQUIREMENTS

A) The minimum width of the top of the embankment will under no circumstance be less than twelve (12) feet.

B) The embankment will have a minimum front and back slope no steeper than the slopes listed on the detailed design sheet.

C) The foundation area of the embankment will be cleared and grubbed of all organic matter with no surface slope steeper than 1 horizontal to 1 vertical. The entire wet area, as measured from the upstream toe of the embankment to the normal pool level, will be cleared of trees and large brush.

D) A core will be constructed in a cutoff trench along the centerline of the embankment. The cutoff trench will be of suitable depth and width to attain relatively impervious material.

E) The embankment construction material will be free of sod, roots, stumps, rocks, etc., which exceed six (6") inches in diameter. The embankment material will be placed in layers of twelve (12") inches or less and compacted to ninety five (95%) percent of the standard proctor density, as set forth in ASTM. Coal processing waste will not be used in the construction of dams and embankments .

F) The embankment, foundation and abutments will be designed and constructed to be stable under normal construction and operating conditions, with a minimum static safety factor of 1.5 at normal pool level with steady seepage saturation conditions.

G) The actual constructed height of the embankment will be a minimum of five (5%) percent higher than the design height to allow for settling over the life of the embankment.

H) The design embankment height for temporary impoundments will be a minimum of one (1) foot above the maximum water level anticipated from a 10 Year - 24 Hour or a 25 Year - 6 Hour precipitation event (whichever is greater). The design embankment height for permanent impoundments will be a minimum of one (1) foot above the maximum water level anticipated from a 10 Year - 24 Hour or a 25 Year - 6 Hour precipitation event (whichever is greater).

I) For embankments constructed as point source discharges, the embankment will be constructed and abutments keyed into undisturbed, virgin, ground if at all possible. In the event

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that this cannot be achieved, additional design and construction specifications will be submitted in the detailed design plans.

J) The embankment and all areas disturbed in the construction of the embankment will be seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure restabilization. Hay dams, silt fences, rock check dams, etc. will be installed, where deemed necessary, as additional erosion prevention methods.

2. DISCHARGE STRUCTURE REQUIREMENTS

A) The primary spillway will be designed to adequately carry the anticipated peak runoff from a 10 Year - 24 Hour precipitation event. The combination primary and secondary (emergency) spillway system will be designed to safely carry the anticipated peak runoff from a 25 Year - 6 Hour precipitation event. When waste impoundments are proposed in the drainage course of a public water supply, the spillway system will be designed and constructed to adequately carry the runoff from a 50 Year - 24 Hour precipitation event.

B) Channel linings, for secondary (emergency) spillways will be a trapezoidal open channel constructed in natural ground and planted with a mixture of both annual and perennial grasses being predominantly fescue and bermuda. In the event that the spillway can not be constructed in natural ground the spillway will be lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).

C) When consisting of pipe, the primary spillway will be installed according to Class "C" pipe installation for embankment bedding.

D) Waste impoundments with a single spillway system, such as a skimmer board, will be a trapezoidal open channel constructed in consolidated, nonerodible material and lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).

E) The primary spillway will be designed and constructed with device to eliminate floating solids from leaving the impoundment. This device will consist of a turned down elbow when using pipe or a skimmer system when using an open channel spillway.

F) When necessary, to prevent erosion of the embankment or discharge area, a splash pad of riprap, durable rock, sacrete, etc. will be installed at the discharge end of the primary spillway.

G) The combined spillway systems, for waste impoundments constructed in series, will be designed to adequately accommodate the entire drainage area.

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3. INSPECTION, MAINTENANCE AND CERTIFICATION REQUIREMENTS

A) Inspections will be conducted regularly during construction of the sediment basin by a qualified registered professional engineer or other qualified person under the direction of a professional engineer. Upon completion of construction, the sediment basin will be certified, by a qualified registered professional engineer, to the Regulatory Authority as having been constructed in accordance with the approved detailed design plans.

B) Waste impoundments will be inspected semi-monthly for erosion, instability, etc., with maintenance performed as necessary, until the removal of the structure or until a Phase III Bond Release is granted.

C) Waste Impoundments will be examined quarterly for structural weakness, instability, erosion, slope failure, or other hazardous conditions with maintenance performed as necessary.

D) Formal inspections will be made annually, by a qualified registered professional engineer or other qualified person under the direction of a professional engineer, including any reports or modifications, in accordance with 880-X- 10C- .20 of the Alabama Surface Mining Regulations.

E) Slurry pumping will cease when the accumulated slurry reaches the maximum allowable slurry volume as set forth in the detailed design plans.

4. SLURRY IMPOUNDMENT REMOVAL REQUIREMENTS

A) Each slurry impoundment will be reclaimed when slurry accumulates to the design allowable slurry volume or when mining is completed, whichever comes first. Reclamation of each slurry impoundment will take place as follows:

B) The slurry discharge pipe will be disconnected and removed from the site.

C) In the event that the slurry impoundment must be abandoned prior to the slurry level reaching its maximum design capacity, the embankment will be breached down to an elevation two feet above the existing slurry level, constructing a new spillway channel adequate to carry the anticipated flows. The impoundment will then be dewatered in an environmentally safe manner such as pumping, siphoning, etc.

D) After abandonment and/or successfully dewatering the slurry impoundment, a composite sample will be taken of the final slurry surface. Said sample will be transported to a laboratory where the sample will be analyzed for paste pH, total sulfur and neutralization potential. Using these three parameters, the acid-base account will be calculated for sample. If the results show the material to be acid forming then lime will be administered on the impoundment for 2 feet of depth. After the lime has been applied, using the approved borrow material (existing spoil material), a working surface will be constructed on the impoundment that will permit equipment

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travel and provide for positive drainage. All spoil material slopes on the impoundment shall have a maximum and minimum grade of 5 percent and 1 percent, respectively.

E) All spoil material fill shall be spread in one (1) foot maximum layers with a minimum compaction of 90 percent of its maximum dry density as determined by the standard proctor compaction test. The thickness of the spoil material will be no more than is necessary to support equipment that will be working upon the impoundment surface.

Including the completion of the above mentioned working surface, the final limed slurry surface will be covered with a minimum of two (2) feet of the best available non-toxic, noncombustible and non-acid forming material. The area will then be reclaimed and revegetated in accordance with the approved reclamation plan.

Note: Please see the Detailed Design Plans for Slurry Impoundment No. 2 and Slurry Impoundment 003A for details of the abandonment plans.

SEDIMENT BASIN CONSTRUCTION SPECIFICATIONS

Sediment basins (temporary or permanent) will be designed and constructed using the following as minimum specifications:

1. EMBANKMENT REQUIREMENTS

A) The minimum width of the top of the embankment will under no circumstance be less than twelve (12) feet.

B) The embankment will have a minimum front and back slope no steeper than the slopes listed on the detailed design sheet.

C) The foundation area of the embankment will be cleared and grubbed of all organic matter with no surface slope steeper than 1 horizontal to 1 vertical. The entire wet area, as measured from the upstream toe of the embankment to the normal pool level, will be cleared of trees and large brush.

D) A core will be constructed in a cutoff trench along the centerline of the embankment. The cutoff trench will be of suitable depth and width to attain relatively impervious material.

E) The embankment construction material will be free of sod, roots, stumps, rocks, etc., which exceed six (6") inches in diameter. The embankment material will be placed in layers of twelve (12") inches or less and compacted to ninety five (95%) percent of the standard proctor density, as set forth in ASTM.

F) The embankment, foundation and abutments will be designed and constructed to be stable under normal construction and operating conditions, with a minimum static safety factor of 1.3 at normal pool level with steady seepage saturation conditions.

G) The actual constructed height of the embankment will be a minimum of five (5%) percent higher than the design height to allow for settling over the life of the embankment.

H) The design embankment height for temporary impoundments will be a minimum of one (1) foot above the maximum water level anticipated from a 10 Year - 24 Hour or a 25 Year - 6 Hour precipitation event (whichever is greater). The design embankment height for permanent impoundments will be a minimum of one (1) foot above the maximum water level anticipated from a 10 Year - 24 Hour or a 25 Year - 6 Hour precipitation event (whichever is greater).

I) For embankments constructed as point source discharges, the embankment will be constructed and abutments keyed into undisturbed, virgin, ground if at all possible. In the event that this cannot be achieved, additional design and construction specifications will be submitted in the detailed design plans.

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J) The embankment and all areas disturbed in the construction of the embankment will be seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure restabilization. Hay dams, silt fences, rock check dams, etc. will be installed, where deemed necessary, as additional erosion prevention methods.

2. DISCHARGE STRUCTURE REQUIREMENTS

A) The primary spillway will be designed to adequately carry the anticipated peak runoff from a 10 Year - 24 Hour precipitation event. The combination primary and secondary (emergency) spillway system will be designed to safely carry the anticipated peak runoff from a 25 Year - 6 Hour precipitation event. When sediment basins are proposed in the drainage course of a public water supply, the spillway system will be designed and constructed to adequately carry the runoff from a 50 Year - 24 Hour precipitation event.

B) Channel linings, for secondary (emergency) spillways will be a trapezoidal open channel constructed in natural ground and planted with a mixture of both annual and perennial grasses being predominantly fescue and bermuda. In the event that the spillway can not be constructed in natural ground the spillway will be lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).

C) When consisting of pipe, the primary spillway will be installed according to Class "C" pipe installation for embankment bedding.

D) Sediment basins with a single spillway system, such as a skimmer board, will be a trapezoidal open channel constructed in consolidated, nonerodible material and lined with riprap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).

E) The primary spillway will be designed and constructed with device to eliminate floating solids from leaving the impoundment. This device will consist of a turned down elbow when using pipe or a skimmer system when using an open channel spillway.

F) When necessary, to prevent erosion of the embankment or discharge area, a splash pad of rip-rap, durable rock, sacrete, etc. will be installed at the discharge end of the primary spillway.

G) The combined spillway systems, for sediment basins constructed in series, will be designed to adequately accommodate the entire drainage area.

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3. INSPECTION, MAINTENANCE AND CERTIFICATION REQUIREMENTS

A) Inspections will be conducted regularly during construction of the sediment basin by a qualified registered professional engineer or other qualified person under the direction of a professional engineer. Upon completion of construction, the sediment basin will be certified, by a qualified registered professional engineer, to the Regulatory Authority as having been constructed in accordance with the approved detailed design plans.

B) Sediment basins will be inspected semi-monthly for erosion, instability, etc., with maintenance performed as necessary, until the removal of the structure or until a Phase III Bond Release is granted.

C) Sediment basins will be examined quarterly for structural weakness, instability, erosion, slope failure, or other hazardous conditions with maintenance performed as necessary.

D) Formal inspections will be made annually, by a qualified registered professional engineer or other qualified person under the direction of a professional engineer, including any reports or modifications, in accordance with 880-X- 10C- .20[1(j)] of the Alabama Surface Mining Regulations.

E) Retained sediment will be removed from each sediment basin when the accumulated sediment reaches the maximum allowable sediment volume as set forth in the detailed design plans.

4. BASIN REMOVAL REQUIREMENTS

A) Upon completion of mining, reclamation, restabilization and effluent standards being met, each sediment basin not proposed as a permanent water impoundment will be dewatered in a controlled manner by either pumping or siphoning. Upon successful dewatering, a determination will be made as to the retained sediment level in the basin. After determining the retained sediment level, a channel will be cut into the embankment down to the retained sediment level on the side of the embankment deemed most suitable to reach natural ground without encountering prohibiting rock. The embankment material removed from this newly constructed channel will be spread and compacted over the previous impoundment (wet area) area to prevent erosion and ensure restabilization. The newly constructed channel will be of adequate width (minimum 30 feet) and sloped to a grade (approximately 1% to 3%) which will cause all surface drainage to travel across this area in sheet flow, minimizing the possibility of erosion. Also, where necessary, hay dams will be installed in strategic locations across the width of the channel to retain sediment and slow the water velocity to a favorable rate. Upon removal of the embankment section, all disturbed areas will be graded in such a manner to ensure slope stability, successful restabilization and to minimize erosion. All disturbed areas will be seeded with a mixture of annual and perennial grasses, fertilized and mulched. No slope, existing or created in the removal of the sediment basin, will be left on a grade that will slip or slough.

5. PERMANENT WATER IMPOUNDMENT REQUIREMENTS

A) Prior to a request for a Phase II Bond Release, all sediment basins being left as permanent water impoundments will have supplemental data submitted to the Regulatory Authority concerning water quality, water quantity, size, depth, configuration, postmining land use, etc.

B) Final grading slopes of the entire permanent water impoundment area will not exceed a slope of 2 Horizontal to 1 Vertical to provide for safety and access for future water users

TYPICAL DRAWINGS FOR EMBANKMENT TYPE BASIN

[Typical Pond Plan View](#)

[Typical Embankment Cross Section](#)

[Typical Clay Liner](#)

3. Diversions [780.29, 816.43, 816.44]

Are diversions of overflow or stream channel diversions proposed?

(XX) Yes () No

If yes, complete the following:

- (a) Is the diversion to be permanent? () Yes (XX) No
- (b) Describe in detail the proposed diversion and include plans, maps and cross-sections that comply with 816.43 and 816.44.

[See Attachment III-B-3](#) , [Watershed Map](#), [Typical Diversion Ditch Cross Section](#) and [Detailed Design Plans for Diversion SI-2](#)

Diversion D-1 and D-2 plans will be submitted as part of Excess Spoil Fill No. 1 design plan (Attachment III-B-2-D).

- (c) If diversions are temporary, enclose plans for removal including a timetable and plans for restoration of vegetation, channel characteristics, etc.

[See Attachment III-B-3](#)

- (d) Enclose approvals of other governmental agencies where required.

Not Required

**DIVERSION DITCH AND DIVERSION BERM
DESIGN AND CONSTRUCTION SPECIFICATIONS**

- 1) Temporary diversions will be designed and constructed to adequately carry the runoff from a 2 Year - 6 Hour precipitation event.
- 2) Permanent diversions will be designed and constructed to adequately carry the runoff from a 10 Year - 6 Hour precipitation event.
- 3) Permanent diversions will be designed and constructed with gently sloping banks stabilized with appropriate vegetation.
- 4) All diversions will be designed, constructed and maintained, using the best technology currently available, whereas additional contribution of suspended solids to stream-flow and to runoff outside the permit area is prevented.
- 5) Maintenance of appropriate gradient, channel lining, revegetation, roughness structures, detention basins, etc. will be used, when necessary, as sediment control measures for these diversions.
- 6) Diversions will not be constructed on existing land slides nor be located so as to increase the potential for land slides.
- 7) Temporary diversions will be removed and the affected area regraded, topsoiled (if required) and revegetated in accordance with Rules 880-X-10C-.10, 880-X-10C-.11, 880-X-10C-.52 thru 880-X-10C-.57 and 880-X-10C-.58, 880-X-10C-.60 and 880-X-10C-.62, when no longer needed.
- 8) Channel linings, for diversions with slopes of three (3%) percent or less, will consist of a mixture of both annual and perennial grasses being predominantly fescue and bermuda. Channel linings, for diversions with slopes greater than three (3%) percent, will consist of riprap or other non-erodible material or cut into non-erodible material.
- 9) Adequate freeboard will be provided for protection for transition of flows and critical areas such as swales and curves along the entire diversion length.
- 10) At discharge points, where diversions intersect with natural streams or exit velocities of the diversion are greater than that of the receiving streams, energy dissipaters will be installed when deemed necessary.

**DIVERSION DITCH AND DIVERSION BERM
DESIGN AND CONSTRUCTION SPECIFICATIONS
(continued)**

- 11) Topsoil removed from the diversion area (if required) will be handled in accordance with Rules 880-X-10C-.07 thru 880-X-10C-.11.
- 12) Excess material excavated in the construction of the diversion, not needed for diversion channel geometry or the regrading of the channel, will be disposed of in accordance with Rule 880-X-10C-.36.
- 13) Diversions will not be designed or constructed to divert water into underground mines without written approval from the Regulatory Authority.
- 14) The entire area in which a diversion berm is proposed will be cleared and grubbed of all organic material, scarified, and no surface slopes will be left steeper than 1V:1H.
- 15) Diversion berms will be constructed with desirable material, free of sod, stones, roots, limbs, etc. over six (6") inches in diameter. This material will be spread in layers no greater than twelve (12") inches in thickness and compacted to ninety five (95%) percent of the standard proctor density, as outlined in ASTM, until the design height is reached.
- 16) Upon completion of construction of diversion ditches or diversion berms, all disturbed areas will be seeded with a mixture of both annual and perennial grasses, fertilized, and mulched in order to minimize erosion and ensure restabilization.
- 17) All diversions (berms or ditches) will be examined quarterly for erosion, instability, structural weakness, or other hazardous conditions and maintenance performed as necessary

5. Transportation Facilities (780.33, 780.37)

See the attached [Road Map](#). Revision R-19 adds an ancillary access road to Sediment Basin 002 and Slurry Impoundment No. 2.

- (a) Describe the measures to be taken to ensure the interest of the public and landowners affected are protected if disturbance within 100 feet of the right-of-way or relocation of a public road is proposed.
 - (1) Appropriate warning signs will be posted along the road right-of-way a minimum of five (500') hundred feet from the entrance of the proposed disturbance.
 - (2) Appropriate advertisements, informing the public and affected landowners, will be run in the local newspaper prior to any disturbance within the one hundred (100') feet setback of or the relocation of any public road right-of-way.
 - (3) All safety requirements of the appropriate Federal, State, County, or Local governments, concerning public health and safety, will be followed.
 - (4) In areas where disturbance is proposed within one hundred (100') feet of the road right-of-way, earthen berms, guard rails, or barricades will be constructed as necessary to prevent accidental entrance into the mine area and to prevent safety hazards.
- (b) Describe any unique design, feature, or structure which is necessary for the road to meet the performance standards of Subchapter K using any necessary maps, plans, or cross-sections.

See previous approved [Attachment III-B-5](#)

- (c) Describe, in detail, the measures to be taken during construction, maintenance and use of the transportation facilities to prevent damage to fish and wildlife and their habitat; public and private property; and erosion, siltation, and pollution of water.

Silt fences, hay filter dams, dust control on roads, vegetation, diversion ditches and other prudent practices will be utilized in controlling runoff. Cut and fill slopes created by road construction shall be grassed to insure stabilization and prevent erosion.

**DESIGN, CONSTRUCTION, MAINTENANCE, AND
RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS**

1. LOCATION

- A) Ancillary roads will be located on ridges or high areas or on the most stable available slopes so as to control and prevent erosion, siltation, flooding, and adverse impacts to fish and wildlife, or their habitat and related environmental values, to the extent possible.
- B) No part of any ancillary road will be located in the channel of an intermittent or perennial stream without written approval from the Regulatory Authority, in accordance with 880-X-10C-.12 thru 880-X-10C-.14 and 880-X-10C-.28.
- C) If at all possible, ancillary roads will be located upstream of sediment basins to prevent, control and minimize additional contributions of suspended solids to stream flow or runoff outside the permit area, the violation of applicable State or Federal water quality standards, seriously altering the normal flow of water in stream-beds or drainage channels, and damage to all public or private property.
- D) In instances where it is not possible to locate ancillary roads in the above manner, sediment control will be achieved by the use of silt fences, rock check dams, hay bale berms, etc.

2. DESIGN REQUIREMENTS

- A) Ancillary roads will be designed, constructed, reconstructed and maintained to have adequate drainage control structures to safely pass the peak runoff anticipated from a 10 year, 6 hour precipitation event.

3. CONSTRUCTION REQUIREMENTS

- A) The foundation area of the roadbed will be cleared and grubbed of all organic material and the topsoil will be removed. The disturbed area will be kept to the minimum necessary to accommodate the roadbed and/or associated drainage ditch construction.
- B) The road construction material will be suitable subgrade material, free of sod, roots, stumps, etc., and will not contain rocks which exceed twelve (12) inches in diameter. The road construction material will be placed in layers (12 inch maximum thickness) and compacted to ninety five (95%) percent of the standard proctor density, as set forth in ASTM.
- C) The minimum top width of ancillary roads will under no circumstance be less than ten (10) feet and will be of maximum width necessary to facilitate the largest equipment using the road.

**DESIGN, CONSTRUCTION, MAINTENANCE, AND
RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS
(Con't.)**

- D) Roadbeds for ancillary roads will be cut into consolidated, non-erodible material or will be surfaced with sufficiently durable, non-toxic, non-acid forming material as needed for the anticipated duration and frequency of use of the road. Because of the short term duration and infrequency of use of most ancillary roads, sufficiently durable mine overburden material from the mine site will be used for surfacing material, placed and compacted on the roadbed surface a minimum depth of four (4) inches. In instances where ancillary roads are proposed for an extended duration or heavy usage is anticipated, then durable, non-toxic, non-acid forming material, such as chert, crushed limestone, redrock, and/or crushed sandstone will be placed and compacted on the roadbed surface a minimum depth of four (4) inches .
- E) Ancillary roads will be constructed with no sustained grades of ten (10%) percent, unless unavoidable. If unavoidable, sediment control facilities such as silt fences, hay dams and/or rock check dams will be installed at strategic locations to prevent erosion and insure stability. Grades greater than fifteen (15%) percent will require ditch relief drains, cross over drains and road drainways at a minimum of three hundred (300) feet apart.

4. DRAINAGE AND SEDIMENT CONTROL REQUIREMENTS

- A) Ancillary roads will be constructed, reconstructed, and maintained to have adequate drainage control, using structures such as, but not limited to bridges, culverts, drainage pipes, ditches, cross drains, and ditch relief drains designed to safely pass the peak runoff anticipated from a 10 year, 6 hour precipitation event. All drainage control structures will be designed and constructed in such a manner whereas, to allow a free and operating conditions to prevent, control, and minimize erosion at the inlets and outlets.
- B) Culverts and drainage pipes will be designed and installed to provide adequate support for the load of the largest equipment using the road. All culverts or drainage pipes with diameters of forty-eight (48) inches or less will be covered with a minimum of one (1) foot and the maximum cover will not exceed fifty-seven (57) feet of desirable compacted material. All culverts or drainage pipes with diameters greater than forty-eight (48) inches will be covered with a minimum of two (2) feet and the maximum cover will not exceed forty-one (41) feet of desirable compacted material.
- C) Culverts and drainage pipes will be designed and installed to allow adequate freeboard to prevent overtopping of the embankment.
- D) Drainage ditches, cross drains, and ditch relief drains will be constructed and maintained, as needed, to prevent uncontrolled surface drainage over the road surface and roadway embankment.
- E) Drainage ditches will be constructed with no sustained grades greater than five (5%) percent, unless unavoidable. If ditches must be constructed with grades in excess of five (5%) percent, drainage ditches will be lined with suitable liner material, such as, riprap, concrete, asphalt or durable rock, to prevent erosion and insure stabilization.

**DESIGN, CONSTRUCTION, MAINTENANCE, AND
RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS
(Con't.)**

- F) Sediment control will be achieved by the use of silt fences, rock check dams, hay bale berms, etc. in strategic locations, where necessary.
- G) Upon completion of construction of ancillary roads, the side slopes of the roadway cut and fill sections, including all borrow areas formed in the construction, areas used for disposal of excess material, ditches, etc. will be seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure restabilization. Grass mixtures will include, but not be limited to, fescue, bermuda, rye grass, browntop millet, clover and sericea.

5. INSPECTION AND MAINTENANCE REQUIREMENTS

- A) Routine inspections and maintenance (such as regrading, resurfacing, maintenance of sediment control structures, spot replanting, and dust control) will be conducted regularly during the life of each road to ensure that each road continually meets design and performance standards.
- B) Dust control will be achieved by the periodic application of water, chemical binders and/or other dust suppressants.
- C) Any road damaged by a catastrophic event, such as a flood, or earthquake, will be repaired as soon as is practicable after the damage has occurred.

6. REMOVAL AND RECLAMATION REQUIREMENTS

- A) All roads not to be retained under an approved postmining land use will be removed and reclaimed in accordance with the approved grading and reclamation plans as soon as practicable after it is no longer needed for mining and reclamation purposes. This removal and reclamation will include:
 - 1. Closing the road to traffic;
 - 2. Removing all bridges, culverts, drainage pipes, and other drainage control structures, unless otherwise approved as part of the postmining land use;
 - 3. Removing and/or otherwise disposing of road surfacing materials, that are not compatible with the postmining land use and revegetation requirements, onsite or removed and stored for re-use;
 - 4. Reshaping and regrading cut and fill slopes as necessary to be compatible with the postmining land use and to compliment the natural drainage pattern of the surrounding terrain;
 - 5. Protecting the natural drainage patterns by installing dikes or cross drains as necessary to control surface runoff and erosion;

**DESIGN, CONSTRUCTION, MAINTENANCE, AND
RECLAMATION SPECIFICATIONS FOR ANCILLARY ROADS
(Con't.)**

6. Scarifying or ripping the roadbed, replacing topsoil or substitute material, and revegetating the entire disturbed area in accordance with the approved reclamation plan.

7. TYPICAL ROADBED CONFIGURATION

See [attached typical ancillary road drawing](#) for an illustration of the typical roadbed configurations..