June 20, 2023

CERTIFIED LETTER
RETURN RECIEPT REQUESTED

Soilutions, LLC
Attn: Ethan D. Epps
255 Welcome Drive
Myrtle Beach, SC 29573

RE: Approval of Application and Reclamation Plan for a Mine Operating Permit
Issuance of Mine Operating Permit I-002375
Edge Road Mine, Horry County

Dear Mr. Ethan D. Epps,

The S.C. Department of Health and Environmental Control (DHEC) has approved the application and reclamation plan for the Edge Road Mine as of June 20, 2023. DHEC has approved the reclamation bond submitted in the amount of $25,000.00.

With the receipt of the reclamation bond and the approval of the application and reclamation plan, this letter serves as official notification that the Mine Operating Permit for the Edge Road Mine is being issued as of the date of this letter. Enclosed are the permit document, reclamation plan, and mine and reclamation maps.

A guide to board review outlining the procedure for requesting a final review may be found at www.scdhec.gov/BoardReview. Should there be any questions or if we may be of further assistance, please do not hesitate to contact the project manager, Kaylin E. Joye, at (803) 898-1367 or by e-mail at *joyeke@dhec.sc.gov*. Marissa Maria is the regional mine inspector for Horry County and can be reached at (843) 438-3496 or by email at *mariama@dhec.sc.gov*.

Sincerely,

Jeremy E. Eddy

Jeremy E. Eddy, P.G.
Manager - Mining and Reclamation Section
Division of Mining and Solid Waste Management

cc: Kaylin E. Joye – DMSWM
Marissa Maria – Regional Inspector
Brett Caswell – BoW
Steve Gosnell (gosnells@horrycounty.org) - Horry County
Andy Markuna (MarkunaA@horrycounty.org) - Horry County
Craig Kennedy - Consultant

S.C. Department of Health and Environmental Control

MINE OPERATING PERMIT

PART I:

Edge Road Mine
Soilutions, LLC

Soilutions, LLC, a corporation, has been granted a Mine Operating Permit, Mine Permit Number I-002375, to operate the Edge Road Mine in accordance with the S.C. Mining Act (S.C. Code Sections 48-20-10 *et seq*., 1976) and Regulations 89-10 *et seq*. The operator shall conduct this operation as represented in documents submitted to support the issuance of this permit.

Jeremy E. Eddy

JEREMY E. EDDY, P.G.
MANAGER - MINING AND RECLAMATION SECTION
DIVISION OF MINING AND SOLID WASTE MANAGEMENT

PERMIT NUMBER: I-002375
ORIGINALLY ISSUED: June 20, 2023

In accordance with Section 48-20-60 of the South Carolina Mining Act, this Mine Operating Permit will remain valid unless it terminates as set forth in R.89-270 or is revoked in accordance with Section 48-20-160 and R.89-280. The anticipated mining completion date is shown on the *Schedule for Conservation and Reclamation Practices* in the *Reclamation Plan.*

The approved *Permit Application, Reclamation Plan*, and all supplemental information referenced herein, are an integral part of this permit. *Land Entry Agreements and Mine Maps* as identified in Part II and Part IV, respectively, are also a part of this permit.

Soilutions, LLC

Home Office Address:

Soilutions, LLC
255 Welcome Drive
Myrtle Beach, SC 29573

Address for Official Mail:

Soilutions, LLC
Attn: Ethan D. Epps
255 Welcome Drive
Myrtle Beach, SC 29573

Company personnel and title to be the contact for official business and correspondence [South Carolina Department of Health and Environmental Control (DHEC) should be notified in writing immediately of any change in contact, address, telephone or fax numbers]:

Ethan D. Epps
Owner/Operator

Telephone*:* (803) 968-1637
Email: ethan@swiftcreekhomes.com

LOCATION: The mine is located on the Hand, SC U.S.G.S. 7.5' Topographic Map. The approximate geographic coordinates for the site are:

Latitude: 33.824897 Longitude: -78.821669

DESCRIBE LOCATION: The operation is located in Horry County, approximately 5.5 mile(s) southwest of Wampee, S.C. Specifically, the site is located 1.5 miles southeast of the intersection of Old Highway 90 and Edge Road.

Part II: MINE OPERATIONS

Soilutions, LLC, also referred to as the operator, is permitted to mine sand and clay at the Edge Road Mine. The maximum depth to the pit floor will be 50 feet below ground surface (to an elevation of -36 feet mean sea level) measured from the lowest ground surface elevation. Mining will take place on tracts of land owned by the referenced operator. These tracts of land are identified in the submitted *Land Entry Agreement*s (LEAs).

MINE/PIT CHARACTERIZATION:
The sand/clay will be excavated and stockpiled on site. Ground clearing will be accomplished by backhoe. Excavation, stockpiling, and the loading of material will be done by excavator. Mining will be conducted in four (4) segments, as shown on the mine map; Segment 1 will be limited to a depth of 30-feet and used as the primary sediment basin during the excavation of the remaining segments. A rim ditch will be constructed within Segment 1 in order to mitigate the potential for groundwater impacts during mining of Segment 1. Dump trucks will be used to haul material off-site. Grading for reclamation will be done with a bulldozer. Adequate amounts of topsoil shall be stockpiled for reclamation of the affected area. Excess topsoil not needed for reclamation may be sold.

PROCESSING PLANT LOCATED ON MINE SITE:
Processing plants are not permitted at this mine site. Screens set to remove roots or other organic matter from the topsoil are not considered to be processing and are allowed on this site.

MINE DEWATERING:
The water table at the mine site is relatively shallow and lowering of the water table via dewatering is necessary to facilitate mining. Additionally, where feasible, stormwater runoff shall be diverted into the pit, collected into the sump, and discharged in the same manner as groundwater. Any accumulation of groundwater and stormwater shall be pumped into a sediment basin prior to discharge. Water discharged from the mine to a receiving stream must be discharged through an outfall regulated by an NPDES permit.

If the operator receives a complaint concerning adverse impacts to neighboring wells, the operator is to notify DHEC's Manager of the Mining and Reclamation Section, Columbia, SC, within 24 hours of receipt of the complaint. After investigation, if DHEC determines dewatering activities at the mine are adversely affecting a drinking water well or water supply well, the operator shall be responsible for repairing, deepening, or re-drilling such wells. Until that permanent water supply is re-established, the operator shall supply the owner with a temporary water supply (e.g., bottled water for drinking, provisions for laundry).

If the operator receives a complaint concerning adverse impacts to nearby wetland areas, the operator is to notify DHEC's Manager of the Mining and Reclamation Section, Columbia, SC, within 48 hours of receipt. After investigation, if DHEC determines dewatering activities at the mine are adversely affecting nearby wetlands, the operator shall be responsible for initiating the Wetland Hydrology Monitoring Plan (Appendix C) submitted in support of the application package until it is successfully resolved.

Active pumping and discharge of water shall cease if it is determined by the operator or DHEC that the dewatering discharge causes flooding conditions to property downstream of the mine site until water the flooding subsides.

See Part X: *Additional Terms and Conditions* #4-5.

BLASTING:
Blasting operations are not permitted at this mine site.

SIGNIFICANT CULTURAL OR HISTORICAL SITES:
No significant cultural or historical sites have been identified. Note Part X: *Additional Terms and Conditions* of this Mine Operating Permit.

VISUAL SCREEN: To appropriately screen the operation from view, the operator shall maintain a minimum 50ft. undisturbed buffer between mining activity and all adjacent properties excluding the Lewis Ocean Bay Heritage Preserve, where a minimum 100ft undisturbed buffer shall be maintained excluding around the southeastern area around Segment one where a 50ft buffer under the General Permit footprint is pre-existing and allowable.

NOISE MONITORING AND CONTROL: The operator shall use Best Management Practices (BMPs) to minimize noise from the mine site. These noise BMPs shall include, at a minimum, proper maintenance of mufflers on equipment (trucks, trackhoes, pumps, etc.) and consideration of special buffering measures if planning to operate equipment during nighttime hours.

OTHER STATE OR FEDERAL PERMITS: The operator must obtain, maintain, and update, as appropriate, all necessary State and Federal permits in order to construct and operate the mine.

LAND ENTRY AGREEMENTS: The operator is required to furnish and maintain up-to-date *Land Entry Agreements* on all lands covered under this permit. Any change in ownership on any portion of land covered by this permit, the operator is responsible for furnishing the appropriate and completed *Land Entry Agreements* (Forms MR-600 or MR-700) to DHEC within 30 days of the change of ownership.

Land Owner(s) as Listed on *Land Entry Agreement*(*s*):

TMS #	Land Owner(s)
361-05-01-0001	Soilutions, LLC
361-00-00-0009	Soilutions, LLC
361-00-00-0010	Soilutions, LLC

Total acres of the contiguous tract(s) of land for which the permit is granted:

OWNED 33.0 LEASED 0.0 TOTAL 33.0

Part III: PERMITTED LAND

This permit allows the operator to conduct mining operations within the permitted land as defined through the *Land Entry Agreement* submitted as part of the application. Permitted land as defined by Section 48-20-40(18) is "the affected land in addition to (a) lands identified for future mining to become affected land; (b) and undisturbed or buffer area that is or may become adjacent to the affected land." Therefore, this permit grants the operator the right to conduct active mining operations within the specified affected land, delineate land for future mine areas as future reserves, and to establish undisturbed buffer zones to mitigate any adverse effects to the surrounding environment.

AFFECTED LAND: 22.6 acres of land are to be affected by Soilutions, LLC under the current mine plan; 22.6 of the affected acres are currently bonded. The affected acres are derived from the operator's response in the *Application for a Mine Operating Permit* and are shown on the approved mine map(s).

FUTURE RESERVES: 0.0 acres are identified as future reserves and are specified on the mine site map. Prior to the initiation of activity in future reserves, the operator shall submit detailed mine and reclamation plans to DHEC for approval.

BUFFER AREAS: 10.4 acres are identified as buffer area, setbacks, or areas that will not be disturbed beyond the pre-mine natural state. These buffer areas are identified on the mine site map. Acres designated as buffer areas are not bonded under the reclamation bond. Any activity within the buffer areas (e.g. removal of timber) shall require **prior** notification and approval by DHEC.

TOTAL PERMITTED AREA: 33.0 acres as submitted on the *Land Entry Agreement*(s).

Part IV: MAPS

The mine site maps were prepared by Kennedy Consulting Services, LLC. These maps are further identified with the following SCDHEC map numbers and are part of the operating permit:

SM-2375-1V1	Edge Road Mine Map	Dated: March 1, 2023
SM-2375-2V1	Edge Road Mine Sediment Pond Map	Dated: March 1, 2023
SM-2375-3V1	Edge Road Mine Cross Section Map	Dated: March 1, 2023
SM-2375-4V1	Edge Road Mine Monitoring Well Map	Dated: March 1, 2023

The reclamation map was prepared by Kennedy Consulting Services, LLC. This map is further identified with the following SCDHEC map number and is part of the operating permit:

RM-2375-1V1	Edge Road Mine Reclamation Map	Dated: March 1, 2023

Part V: RECLAMATION BOND

The Reclamation Bond is based upon the total affected acres. Pursuant to Section 48-20-70 and R.89-200, the reclamation bond for this mining permit is set at $25,000.00. The reclamation bond shall remain in force and continuous throughout the life of the mining operation and shall only be released, partially or in full, back to the operator after the operator has completed reclamation in accordance with the approved *Reclamation Plan* and the minimum standards in R.89-330.

Part VI: PROTECTION OF NATURAL RESOURCES

1. Describe the area of and around the mine site. Specify topography, surface water systems, wildlife habitats, residential houses, commercial properties, recreational areas, and/or public roads.
Prior to mining activities, this site's land use type was mostly undeveloped; the immediate area around this site is rural residential, agricultural, and undeveloped with the public recreational area of the Lewis Ocean Bay Heritage Preserve bordering the eastern and southern property boundaries. A portion of the site was previously mined under the General Mine Operating Permit, GP1-002336, prior to the issuance of this permit. The topography of this area is slightly variable (i.e., mostly flat), with surface elevation ranging from 36 - 42 ft. MSL. There are 2.26 ac. of identified wetlands located on-site and Boggy Swamp is located approximately 150ft. to the east of the site boundary. Common wildlife typical to this area can be found in and around this site; there are no threatened or endangered species believed to inhabit this area according to the Threatened and Endangered Species habitat assessment report dated July 16, 2021 by J.H Carter III & Associates, Inc. (See Additional Term & Condition #6.)

2. Methods used to prevent physical hazards to persons and to any neighboring dwelling, house, school, church, hospital, commercial or industrial building, or public road.
A gate shall be installed at the entrance to the mine site and kept locked during inactive periods. *Warning* and/ or *Danger* signs shall be posted around the perimeter of the property. The operator shall establish a protected area or establish procedures to minimize fuel spillage or incidental spillage of other petroleum products during storage, refueling of equipment or in the performance of routine maintenance on equipment. Contaminated materials resulting from contact with petroleum products shall be removed from the site and disposed of properly to prevent contamination to ground and surface water resources.

3. Methods used to prevent an adverse effect on the purposes of a publicly owned park, forest, or recreation area.
In order to prevent any adverse effect on publicly owned land, the operator shall implement silt fencing and other BMP's around the site as well as maintain a 100ft. undisturbed buffer between mining activity and the Lewis Ocean Bay Heritage Preserve, with the exception of the southeast corner of the mine footprint that was previously excavated under the GP1 permit where a 50-foot buffer shall be maintained. Additionally, the operator shall limit the depth of Segment 1 (as delineated on the approved mine map) to 30ft. Three (3) piezometers shall be installed inside on-site wetlands as depicted in the approved Wetland Monitoring Well Location Map in order to monitor wetland hydrology during dewatering activities and active mining. See Part X: Additional Term and Condition #5 and #6.

4. Measures taken to insure against substantial deposits of sediment in stream beds or lakes.
The operator shall comply with the NPDES General Permit for Non-metallic Mineral Mining and Stormwater Pollution Prevention Plan developed for the mine.

5. Measures taken to insure against landslides or unstable mine walls.
To minimize the potential for landslides or unstable mine walls, the operator shall grade side slopes as excavation progresses at a 2H:1V slope and maintain slopes no steeper than a 3H:1V gradient above the waterline for final reclamation, as shown on the approved mine and reclamation maps. The operator is responsible for maintaining stable mine walls and appropriate setbacks to prevent significant slumping that may encroach into non-permitted lands.

6. Measures taken to insure against acid water generation at the mine site that may result in pollution on adjacent property.
Acid water is not anticipated to be generated from the oxidation of existing minerals currently found on this site.

7. Measures taken to minimize or eliminate fugitive dust emissions from the permitted area.
The mine operator will use appropriate measures (e.g. water truck, dust suppressants) to control fugitive dust created by moving equipment along haul roads. The operator, where feasible, shall establish vegetation in non-active mine areas barren of vegetation to stabilize the soil and reduce potential for wind erosion and dust emissions.

Part VII: STANDARD CONDITIONS OF MINE OPERATING PERMIT

1) SURVEY MONUMENTS: In accordance to R.89-130, the operator shall install and maintain the two required permanent survey monuments, or control points, within the permitted area as shown on the mine site map. At the discretion of DHEC, the operator may be required to mark the area to be affected with flagging or other appropriate measures.

2) RIGHT OF ENTRY: Pursuant to Section 48-20-130 and R.89-240, the operator shall grant DHEC and/or duly appointed representatives access to the permitted area for inspection to determine whether the operator has complied with the reclamation plan, the requirements of this chapter, rules and regulations promulgated hereunder, and any terms and conditions of this permit.

3) RECORDS RETENTION: All records are to be maintained through additional terms and conditions of this permit or by regulations. Records shall be kept on site or at the office identified for receipt of official mail and open for inspection during normal business hours. The records shall be maintained for a minimum of three (3) years or as specified by DHEC. The operator shall furnish copies of the records upon request to DHEC.

4) PERMIT MODIFICATIONS: Pursuant to Section 48-20-80, the operator may modify the permit and/or *Reclamation Plan* upon approval by DHEC. Requests for permit and/or *Reclamation Plan* modifications may be made to DHEC on Form MR-1300. The operator shall submit any requested supporting data for consideration during DHEC's evaluation of the modification request. If a modification request is determined to be substantial by DHEC, the modification request will be public noticed pursuant to R.89-100 and a modification fee will be required as specified in R.89-340. If DHEC determines activities proposed under the *Reclamation Plan* and other terms and conditions of the permit are failing to achieve the purpose and requirements of the S.C. Mining Act and Regulations, DHEC shall notify the operator of its intentions to modify the permit and/or *Reclamation Plan* in accordance with Section 48-20-150.

5) TRANSFER OF PERMIT: Pursuant to Section 48-20-70, this permit may be transferred to another responsible party. The transfer of the permit must be conducted in accordance with R.89-230. The transferor of the permit will remain liable for all reclamation obligations until all required documents, plans, and the replacement reclamation bond have been submitted and approved by DHEC. The transfer will be considered complete when all parties have received notification by certified letters of the approval of the transfer by DHEC.

6) DURATION OF MINE OPERATING PERMIT: In accordance with Section 48-20-60, this Mine Operating Permit will remain valid unless this permit terminates as set forth in R.89-270 or is revoked in accordance with Section 48-20-160 and R.89-280. The proposed anticipated mining completion date is shown on the *Schedule for Conservation and Reclamation Practices* in the *Reclamation Plan.*

Pursuant to R.89-80(B), the operator shall conduct reclamation simultaneously with mining whenever feasible. Reclamation shall be initiated at the earliest practicable time, but no later than 180 days following termination of mining of any segment of the mine, and shall be completed within two years after completion or termination of mining on any segment of the mine.

Part VIII: ENFORCEMENT ACTIONS

Pursuant to Section 48-20-30 of the S.C. Mining Act, "DHEC has ultimate authority, subject to the appeal provisions of this chapter, over all mining, as defined in this chapter, and the provisions of the chapter regulating and controlling such activity." This allows DHEC to assist, cooperate with, or supersede other State agencies in taking enforcement action on violations of the State Regulations or violations of the S.C. Mining Act to ensure the purposes of this Act are enforced.

COMPLIANCE: The operator shall comply at all times with all conditions of this mine operating permit. Non-compliance with this mining permit, statute, or regulations could lead to permit revocation and bond forfeiture pursuant to Sections 48-20-160 and 48-20-170 or other enforcement action allowed by law.

Compliance with the Mine Operating Permit requires the operator to conduct the mining operation as described in the approved *Application for a Mine Operating Permit*. Variance from the *Application for a Mine Operating Permit,* this permit, statute or regulation, without first receiving DHEC approval, shall be deemed non-compliance with the permit.

An operator or official representative of the mine operator who willfully violates the provisions of the S.C. Mining Act, rules and regulations, or willfully misrepresents any fact in any action taken pursuant to this chapter or willfully gives false information in any application or report required by this chapter shall be deemed guilty of a misdemeanor and, upon conviction, shall be fined not less than one hundred dollars nor more than one thousand dollars for each offense. Each day of continued violation after written notification shall be considered a separate offense.

The operator is responsible for all mining activity on the permitted mine site.

Part IX: REPORTS

1) ANNUAL RECLAMATION REPORTS: The operator shall comply with Section 48-20-120 and Regulation 89-210 and submit an *Annual Reclamation Report* on Form MR-1100 as supplied by DHEC. The form for the report will be sent by regular mail to the operator to the mailing address shown on the previous year's *Annual Reclamation Report*. The operator should receive the report form from DHEC by July 1 of each year; however, the operator is ultimately responsible for obtaining the *Annual Reclamation Report* form and is not excused from penalty fees for failure to submit the report on time.

The Annual Operating Fee is a part of the *Annual Reclamation Report*. Failure to submit a complete *Annual Reclamation Report* and fee, in accordance with Section 48-20-120 and R.89-340, will result in a late penalty payment. The *Annual Reclamation Report* and Annual Operating Fee are required if there is any permitted land not fully reclaimed and released by DHEC by June 30 of ***each*** year.

2) SPECIAL REPORTS: DHEC may at any time request information, data, or explanations from the operator as to conditions relating to the permitted mine site. Such requests from DHEC shall be made in writing to the operator with a time certain for the submittal of the requested information to DHEC. The operator must produce the information requested within the timeframe specified by DHEC, unless DHEC grants an extension.

Part X: ADDITIONAL TERMS AND CONDITIONS

1. If archaeological materials are encountered prior to or during the construction of mine facilities or during mining, the S.C. Department of Archives and History, the S. C. Institute of Archaeology and Anthropology, and DHEC should be notified immediately. Archaeological materials consist of any items, fifty years or older, which were made or used by humans. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, oyster shell, worked wood, bone and stone, metal and glass objects, human skeletal remains, and concentrations of charcoal and stones below the ground surface. These materials may be present on the ground surface and/or under the surface of the ground.

2. Temporary or permanent placement of refuse and debris (e.g., concrete, brick, asphalt) from off-site locations is prohibited without approval by DHEC. Topsoil fill approved by DHEC may be brought in from off-site sources only for the purposes of mine land reclamation.

3. In the future, if determined to be necessary by DHEC, DHEC will notify the operator in writing that an appropriate fence must be installed around the affected area and give the operator a time certain to perform such installation.

4. The operator shall maintain a minimum 50ft. undisturbed buffer between all land disturbance activity and any USACE jurisdictional wetlands. This buffer shall be permanently flagged prior to the initiation of any mine activity. The flags shall be maintained throughout the active mine operation of the site. The operator is allowed to discharge accumulated stormwater–that meets NPDES permit limits–into wetlands through a regulated NPDES outfall.

5. The operator shall install three (3) piezometers within the on-site wetlands, as specified in the approved mine maps. The piezometers should be installed to a 30-inch depth in identified hydric soils indicative of wetlands, in order to monitor the 12-18 inch surface groundwater. The piezometers shall be measured monthly, and the data shall be submitted quarterly to the Division of Mining and Solid Waste Management by the 28th of the next month following the end of the quarter. The records should include a record of daily precipitation measurements, with monthly rainfall totals graphed to facilitate comparison to the on-site well hydrographs and piezometer graphs.

6. The operator shall comply with the approved Coastal Zone Consistency Determination issued under the SC Coastal Zone Management Program by SCDHEC's Office of Ocean and Coastal Resource Management (OCRM). See Appendix B.

7. If spotted turtles (*Clemmys guttatta*) are in the project area, the mine operator shall consult with SCDNR to develop a project specific management plan, including but not limited to, collection and radio tracking, capture and relocation, or no further action. Mine operator shall train staff to identify the spotted turtle. Staff will be directed to protect any identifiable turtle and take pictures, if possible, without disrupting the spotted turtle. Upon confirmation of the turtle's identification by the mine operators contract biologist(s), the siting shall be reported to SCDNR for consultation. See Appendix B for additional information.

In order to avoid the take of Southern Hognose snake (*Heterodon simus*), the operator shall install silt fencing around mining activities as soon as feasible (preferably during winter months), but no later than one (1) week before mining activities commence in that segment, in order to restrict the snakes' access to the site. The operator shall monitor the fence line daily during the week prior to mining activities commencing, and safely remove any trapped specimens. (The southern hognose snake is non-venomous to humans, but care should be taken to prevent workplace injuries; professional consultation is recommended.) The operator shall monitor the fence line weekly for the duration of activities in that area to ensure that the silt fence remains intact and effective at deterring intrusion.

APPENDIX A

MODIFICATIONS TO MINE PERMIT I-002375

NUMBER	DATE	DESCRIPTION OF MODIFICATION (PA= Permitted Acreage; AA= Affected, Bonded Acreage; FR= Reserves Acreage, B= Buffer Acreage)
Issue	6/20/2023	PA = 33.0ac., AA = 22.6ac., FR = 0.0ac., B = 10.4ac. Permit issued

APPENDIX B

Coastal Zone Consistency Determination

To:	Kaylin Joye, BLWM Mining and Reclamation Permitting Section
From:	Benjamin Thépaut, OCRM Coastal Zone Consistency Section BT
Applicant:	Ethan Epps, Soilutions, LLC
Project Name:	Edge Road Mine
Finding:	Conditionally Consistent with the SC Coastal Zone Management Program
Site Location:	Edge Road, Horry County, South Carolina (TMS#: 361-05-01-0001, 361-00-00-0009, 361-00-00-0010)
Reference #:	HPF-JZNH-WJBQ4
Date:	May 15, 2023

The staff of the Office of Ocean and Coastal Resource Management (OCRM) reviewed the above referenced Coastal Zone Consistency project request for land disturbance associated with construction of new mine for sand/clay. Mining activities include excavation by earthwork equipment and removal offsite using dump trucks. Stormwater Management includes BMP's and conveyance to sediments basin for infiltration and discharge. A proposed reclamation plan involves restoring the site to a lake and grasslands. The total area of disturbance will be 22.6 acres of a 33.0 acre project site.

We hereby certify that the above referenced project is **Conditionally Consistent** with the ***Guidelines for Evaluation of All Projects*** as well as the Coastal Industries (Mining), and Stormwater Management (Mines) policies contained in the S.C. Coastal Zone Management Program provided the following conditions are included in the permits and adhered to by the applicant.

1. In the event that any historic or cultural resources and/or archaeological materials are found during the course of work, the applicant must notify the State Historic Preservation Office and the South Carolina Institute of Archaeology and Anthropology. Historic or cultural resources consist of those sites listed in the National Register of Historic Places and those sites that are eligible for the National Register. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials.

2. All construction BMPs must be installed, inspected and maintained to hold sediment onsite and to protect any adjacent or downstream critical area, wetlands and waters through the life of the project. Upon completion of construction activities, all disturbed (includes undeveloped) areas, including those impacted for access, must be immediately stabilized.

3. The project must be fully consistent with local zoning and comprehensive plans prior to work being conducted.

4. The applicant is not authorized to impact any wetlands. In the event any impacts to wetlands occur, the US Army Corps of Engineers and DHEC-OCRM must be notified and all work must cease to minimize additional impacts until the applicant receives authorization.

5. The pumping of groundwater from sediment basins must be done with floating intakes only. Pumping of the basin must cease whenever the water levels come to within 2 feet of the pond bottom.

6. The applicant has agreed to implement groundwater monitoring plan to collect data on hydrological trends of mining effects onsite.

7. The applicant has agreed to the following exclusionary methods for Spotted Turtle Habitat and Wildlife Management:
    a) Avoid any construction in areas within or adjacent to aquatic resources (wetlands, streams, etc.) from January 15th through May 31st.
    b) Prior to any construction activity, install silt fencing from November 15th through January 15th. Silt fencing should include 45-degree arms to direct spotted turtles to the uplands adjacent to the waterbody and away from the construction site. The 45-degree arms should be placed at a minimum of 100 ft from the waterbody and no more than 300 ft from the waterbody. Additionally, silt fence arms should extend at least 50-ft and extend in each direction so that the ends of each 45-degree angle to the fence meet to form a triangle. Silt fencing should remain in place throughout the duration of the proposed construction activities.
    c) Prior to construction, monitor the silt fencing to ensure it is effectively working properly on a monthly basis. This should effectively exclude the species from the project area prior to construction activities. Once construction activities begin, the silt fence should be monitored weekly for the integrity of the fencing and the presence of spotted turtles or other herpetofauna or small wildlife species. If spotted turtles are encountered, the SCDNR state herpetologist should be notified immediately by calling 843-527-8448.
    d) Spotted turtles may be allowed to be relocated into areas of suitable habitat, management, and conservation status; however, any plans for relocation should be submitted for review to SCDNR with a detailed description and images of the current and future habitat and proposed work plan and methodologies as it pertains to a relocation project. It should be noted that not all habitats are suitable for relocation.

8. The applicant has agreed to the following exclusionary methods for Southern Hognose Snake Habitat and Wildlife Management
    a) Erect silt fencing around the project area in the winter when snakes are dormant. If the timing of this would impact project timelines, the SCDNR asks that the silt fencing be erected now and that a monitoring plan be in place to walk the perimeter of the silt fence daily the week prior to construction beginning to ensure that any herpetofauna within the project footprint along the fencing be moved to outside of the project area prior to any work taking place.
    b) Monitor the silt fencing to ensure it is effectively working properly on a monthly basis prior to construction activities occurring. This should effectively exclude any herpetofauna and other small wildlife species from the project area prior to excavation. Once construction activities begin, it should be monitored weekly.

This determination shall serve as the SCDHEC OCRM Coastal Zone Consistency Determination for the work described above. However, this determination ***does not*** serve as a Department permitting decision and ***does not*** alleviate the applicant's responsibility to obtain any applicable State or Federal permit(s) for the work. Local government authorizations ***may also*** be required.

APPENDIX C

Environs
LANDSCAPE ARCHITECTURE & ECOLOGICAL PLANNING

March 3, 2023

Mr. Jeremy Eddy, PG Manager
Mining and Reclamation Section
SC Department of Health and Environmental Control
2600 Bull Street
Columbia, SC 29201

RE: Soilutions, LLC
Edge Road Mine; Application for Mine Permit
Wetland Hydrology Monitoring Plan

Dear Mr. Eddy:

On behalf of Soilutions, LLC, please find below the *Wetland Hydrology Monitoring Plan for the Edge Road Mine* developed by Environs, LLC and Kennedy Consulting Services, LLC. The plan was developed in response to a request for supplemental information from SC DHEC to address third-party concerns of effects on wetlands from mine dewatering at the Edge Road Mine.

Please feel free to contact me if you have any questions.

Respectfully submitted,

Kent Campbell, *RLA, PWS*
Principal

cc Jessica King
Josh Epps
Craig Kennedy

Wetland Hydrology Monitoring Plan for Edge Road Mine

Wetland Monitoring

Although we do not believe that mine-dewatering will negatively affect wetlands in the area of the mine, with the expressed concerns about effects to wetland hydrology of mining operations in the Edge Road Mine, Soilutions, LLC has voluntarily taken proactive steps to address these concerns by contracting with Environs to develop and install an on-site wetland hydrology monitoring system. The plan is to install 3 piezometer type shallow wells with **In-situ TROLL** or similar data loggers. The monitoring wells will be located within wetlands in the mine permit area. One well will be located in the western most wetland and 2 wells in the eastern wetland. Depths of the wells will be a minimum of 30 inches to continuously monitor the groundwater levels. The eastern wetland will have one well located upstream of the mine water discharge and one well downstream of the discharge. A separate datalogger will also be deployed solely for measuring atmospheric pressures within the mine permit area. Locations of the wells and elevations will be surveyed by a SC Registered Land Surveyor.

Based on the U.S. Army Corps of Engineers' *Technical Standard for Wetland Hydrology*,[1] normal wetlands should be inundated or saturated within the 12 inches of the soil surface for a minimum of 14 consecutive days during a growing season.

The wells will be installed during the month of February and March 2023 before the start of mining and the growing season. This will allow groundwater level baseline data to be collected. Permanent wetland plots will be established for each of the wetland monitoring sites to collect pre-mining vegetative data. Additionally, precipitation records will be maintained to account for weather related impacts to the local wetlands.

Reporting

The data loggers will collect depth to groundwater data every 12 hours. The data will be downloaded quarterly for review by Environs and reported to DHEC. At the end of each year's growing season, at least by the end of November, the collected data will be reviewed, and a summary report submitted to DHEC by January 15th of the following year. Should the wetland hydrology not saturate the upper 12 inches for 14 consecutive days during the growing season, on average generally mid - March to mid-November, Environs will investigate to determine the cause and consider the following information to determine if wetlands have suffered any detrimental effects:

1) Consult antecedent rainfall records to determine if below normal rainfall occurred during the growing season that could have impacted the wetland hydrology.
2) Compare pre-mining vegetation data in the plots to the current vegetation. Has the vegetation exhibited stress and/or do species differ from baseline due to any changes in hydrology?
3) Investigate the hydric soils to determine if there are any oxidation or lack of reduction.
4) Inquire at nearby wetland mitigation banks if they had experienced drought conditions during the growing season.

Contingency Plan

Should it be determined that a hydrology change has had a negative effect to the wetlands, Soilutions has several options available.

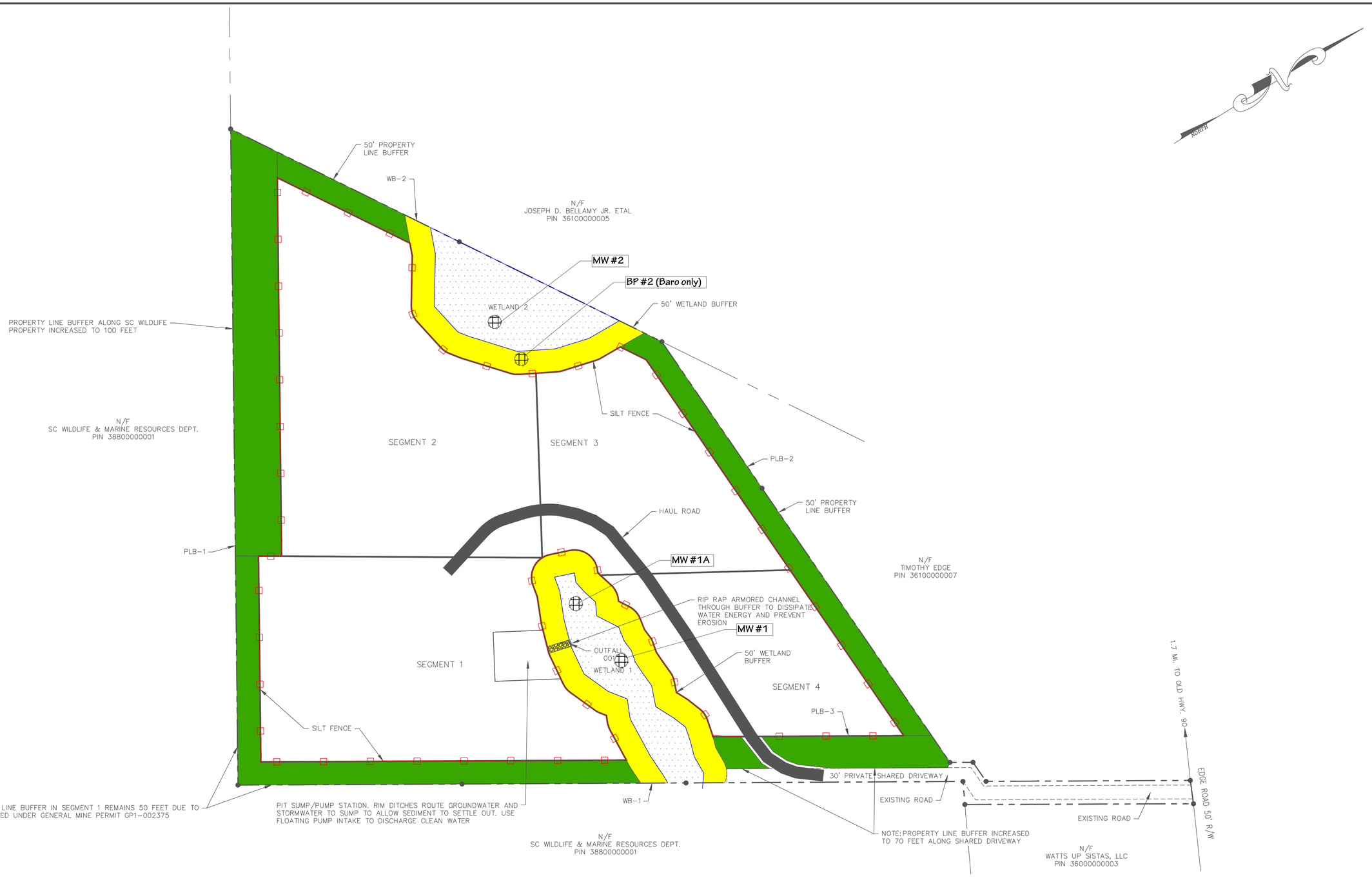
1) The wetlands can be artificially hydrated as part of the mine dewatering process. Water from the pit that complies with NPDES permit discharge limits can be introduced directly to the wetland to

[1] U. S. Army Corps of Engineers. (2005). "Technical Standard for Water-Table Monitoring of Potential Wetland Sites," *WRAP Technical Notes Collection* (ERDC TN-WRAP-05-2), U. S. Army Engineer Research and Development Center, Vicksburg, MS

saturate the hydric soils. It's understood this may require a modification of the NPDES permit coverage for the Edge Road Mine.

2) The mine operator can reduce the length of time for each mine dewatering cycle in consultation with DHEC.
3) Dewatering of the mine can be scheduled to occur only during the non-growing season time of year.

Soilutions believes this plan will allow the company to create a baseline of the current wetlands, monitor any perceived effects on the wetlands from mining or other causes, and respond to ensure the wetlands are protected. In the event the Department believes a Contingency Plan is needed, Soilutions will work with DHEC to come up with the most effective plan based on real time data and investigations.



Note:
Monitoring well locations shown are approximate. Locations and elevations shall be provided upon collection of survey data by total station.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

REVISIONS

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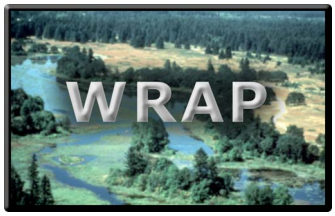
Edge Road Mine
Prepared for
Soilutions, LLC
Dogwood Neck Township, Horry County, South Carolina

Project No.:	KCS 21-147
DATE:	05-25-2022
Approved by:	RCK
Drawn by:	B.C.
Scale:	1"=100'

Sheet No. 1 of 1



Technical Standard for Water-Table Monitoring of Potential Wetland Sites

by U.S. Army Corps of Engineers

PURPOSE: This technical note describes national standards for the collection, analysis, interpretation, and reporting of hydrologic data, which may be used to help determine whether wetlands are present on disturbed or problematic sites that may be subject to Clean Water Act regulatory jurisdiction. These standards may be supplemented or superseded by locally or regionally developed standards at the discretion of the appropriate Corps of Engineers District.

BACKGROUND: Wetland determinations in the majority of cases are based on the presence of readily observable field indicators of hydrophytic vegetation, hydric soils, and wetland hydrology, according to procedures given in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) (hereafter called the Corps Manual). These three characteristics are the best available evidence that an area has performed in the past, and continues to perform, the functions associated with wetland ecosystems.

The Corps Manual (Part IV, Section F, Atypical Situations) recognizes that wetland determinations on some sites may be difficult because of human disturbance that may have altered or destroyed wetland indicators. In addition, some naturally occurring wetland types may lack indicators or may have indicators present only at certain times of year or during certain years in a multi-year cycle (Part IV, Section G, Problem Areas). Wetland determinations in these atypical and problem situations increasingly involve the use of direct hydrologic monitoring to confirm the presence of wetlands in cases where soils or vegetation have been significantly disturbed or are naturally problematic, or where the hydrology of the site has been altered recently such that soil and vegetation indicators may give a misleading impression of the site's current wetland status.

The Corps Manual provides only a general discussion of wetland hydrology concepts and does not provide a suitable standard that can be used to design a hydrologic monitoring study or interpret hydrologic data, particularly in cases where groundwater is an important water source. Therefore, the purpose of this Technical Standard is to provide a minimum standard for the design, construction, and installation of water-table monitoring wells, and for the collection and interpretation of groundwater monitoring data, in cases where direct hydrologic measurements are needed to determine whether wetlands are present on highly disturbed or problematic sites.

USE OF THE TECHNICAL STANDARD: The Technical Standard is intended for use in atypical and problem situations as described in the Corps Manual. Atypical situations are broadly defined as any wetlands where indicators of hydrophytic vegetation, hydric soil, or wetland hydrology may be lacking due to recent human activities or natural events. Problem areas are wetlands that may lack wetland indicators at certain times due to normal variations in environmental conditions. This standard is designed to determine a site's current hydrologic status and may not be appropriate for evaluating past or pre-disturbance conditions.

This standard should not be used to overrule a wetland determination based on indicators of hydrophytic vegetation, hydric soil, and wetland hydrology on sites that are not significantly disturbed or problematic. Wetland indicators reflect natural processes that occur in wetlands and generally provide the best evidence that functioning wetlands are present on a site. The actual hydrologic regime required to produce and maintain a wetland may vary locally and regionally due to climate, landforms, geology, soils, and plant and animal adaptations. Therefore, any wetland hydrologic standard is necessarily an approximation and should be used only when an indicator-based wetland determination is not possible or would give misleading results.

In addition, this standard is not intended to overrule other scientific evidence that particular regional or local wetland types may be associated with hydrologic conditions different from those described here, including the seasonal timing, depth, duration, and frequency of saturation. Standards used to verify wetland hydrology in such cases should be based on the best available scientific information concerning a particular local or regional wetland type.

The Technical Standard is designed solely to determine the location of the water table for wetland jurisdictional purposes. It should not be used for water-quality monitoring or other purposes. This national standard may be supplemented or superseded by locally or regionally developed standards at the discretion of the District, and well-documented and justified deviations from the standard are acceptable with the approval of the District. It is always good practice to discuss the goals and design of the monitoring study with Corps regulatory personnel before initiating work. This may help to avoid disagreements and problems of interpretation later. This standard is subject to periodic review and revision as better scientific information becomes available.

SITE CHARACTERIZATION: A detailed site characterization should be completed before initiating the groundwater monitoring program. Site information is needed to determine appropriate well locations, installation depths, and other design features. The site characterization should begin with a review of all pertinent off-site information including county soil surveys, topographic maps, aerial photographs, and National Wetland Inventory (NWI) maps, if available. This review should be followed by a field investigation to verify the off-site information and gather additional data. At a minimum, the following site information should be collected (see Warne and Wakeley (2000) for detailed guidance):

- Detailed site map showing the location of property and project-area boundaries (determine coordinates of boundary points and landmarks, if possible).
- Topographic map showing the watershed boundary, water features (e.g., lakes, streams, minor drainages), and direction of water movement across the site.
- Current vegetation and land use.
- Detailed description of any modifications to site hydrology (e.g., water diversions or additions including ditches, subsurface drains, dams, berms, channelized streams, irrigation, modified surface topography, etc.).
- Soil profile descriptions including locations of soil test pits (indicate on site map and determine coordinates, if possible).

Soil profile descriptions are an important part of the site characterization because they may dictate appropriate depths for installation of water-table monitoring wells. Of critical importance is the identification of soil strata that can restrict downward water movement and create a perched water table. Examples of soil strata that may produce perched water tables include fragipans, spodic horizons, argillic horizons, and shallow bedrock. If a shallow restrictive soil layer is identified, care must be taken during well installation to ensure that the layer is not penetrated. Penetration of the restrictive layer may result in misleading water-level readings.

Soil profile descriptions should include horizon depths and (for each horizon) information about texture, color, induration (cementation), redoximorphic features, and roots, so that significant differences in permeability can be evaluated (Sprecher 2000). A blank Soil Characterization Data Form is provided for this purpose (Appendix A). Soil profiles must be described at least to the anticipated installation depth of the wells; profile descriptions to 24 in. or more are recommended. Several soil characteristics indicate that downward water flow may be impeded and that perched water tables may exist. Features to note include the following (Sprecher 2000):

- Abrupt change from many roots to few or no roots.
- Abrupt change in soil texture.
- Abrupt change in ease of excavation.
- Abrupt change in water content, such as presence of saturated soil horizons immediately above soil horizons that are dry or only moist.
- Redoximorphic features at any of the distinct boundaries listed above.

WELL PLACEMENT: A detailed discussion of monitoring well placement within the project site is beyond the scope of this Technical Standard. In general, well placement depends on the objectives of the investigation and characteristics of the site. If the objective is to determine whether wetland hydrology is present at a particular point, a single well may be sufficient. However, multiple wells may be necessary to determine if wetland hydrology occurs on a complex site where topography and human alterations (e.g., road construction, ditching) have produced considerable hydrologic variation. Well locations and depths are dictated by site conditions including topographic relief and the depth and continuity of restrictive soil layers. Portions of a site that are most likely to meet wetland hydrology standards (e.g., low-lying areas such as depressions, floodplain backwaters, swales and washes, fringes of lakes and ponds, toes of slopes, or other areas with shallow restrictive soil layers) should be identified during site characterization and considered for well placement.

If the objective is to confirm wetland boundaries based on groundwater measurements, then multiple wells installed along transects perpendicular to the expected wetland boundary are needed (Figure 1). The number and spacing of wells along each transect depend on the topographic gradient and the precision needed in defining the wetland boundary. Other site information that may help in placing wells and identifying boundaries includes changes in topographic gradient, proximity to hydrologic alterations (e.g., ditches), and changes in soil characteristics or vegetation.

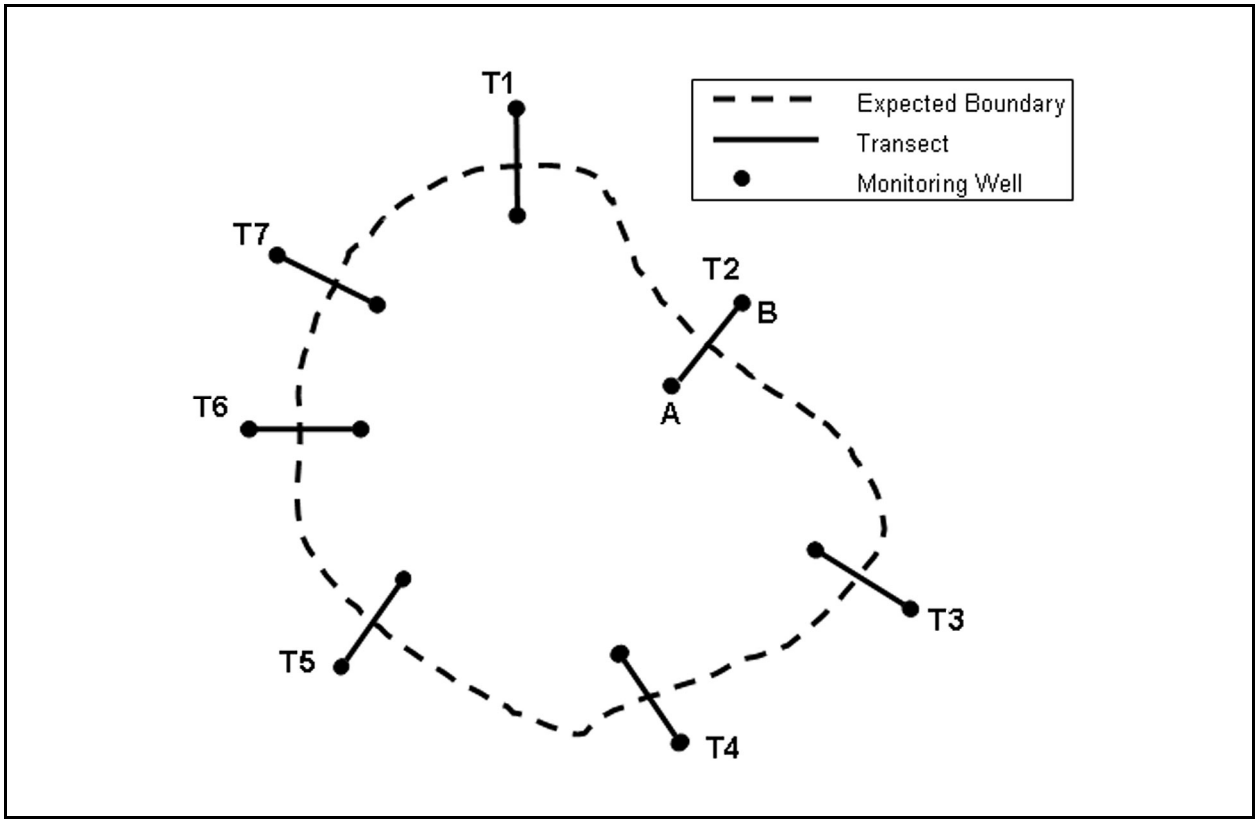


Figure 1. Example of monitoring wells located along transects across the expected wetland boundary. Transects extend from obvious upland to obvious wetland. Two or more wells are needed along each transect (e.g., at locations A and B).

MONITORING WELL CONSTRUCTION: In most cases, a standard monitoring well installed to a depth of 15 in. below the soil surface should be used to measure water-table depth on potential wetland sites. Shallower installation depths may be needed if restrictive soil layers exist within 15 in. of the surface. Monitoring wells must not penetrate any such restrictive layer. The standard design is for a well installed by augering. Depending upon site conditions, wells installed by driving may also be acceptable (see the section on Monitoring Well Installation). Installation of one or more additional deeper (4-5 ft) wells at each site is also encouraged to help in interpreting water-table fluctuations and warn of sudden changes in water-table depth. Deeper wells are not required but, if used, should not penetrate any restrictive soil layers. The performance of all wells must be tested and verified before use.

Monitoring Well Components. A standard monitoring well installed by augering is shown in Figure 2 and consists of the following main components: well screen, riser, well caps, sand filter pack, and bentonite sealant. Specifications for each of these components are given below.

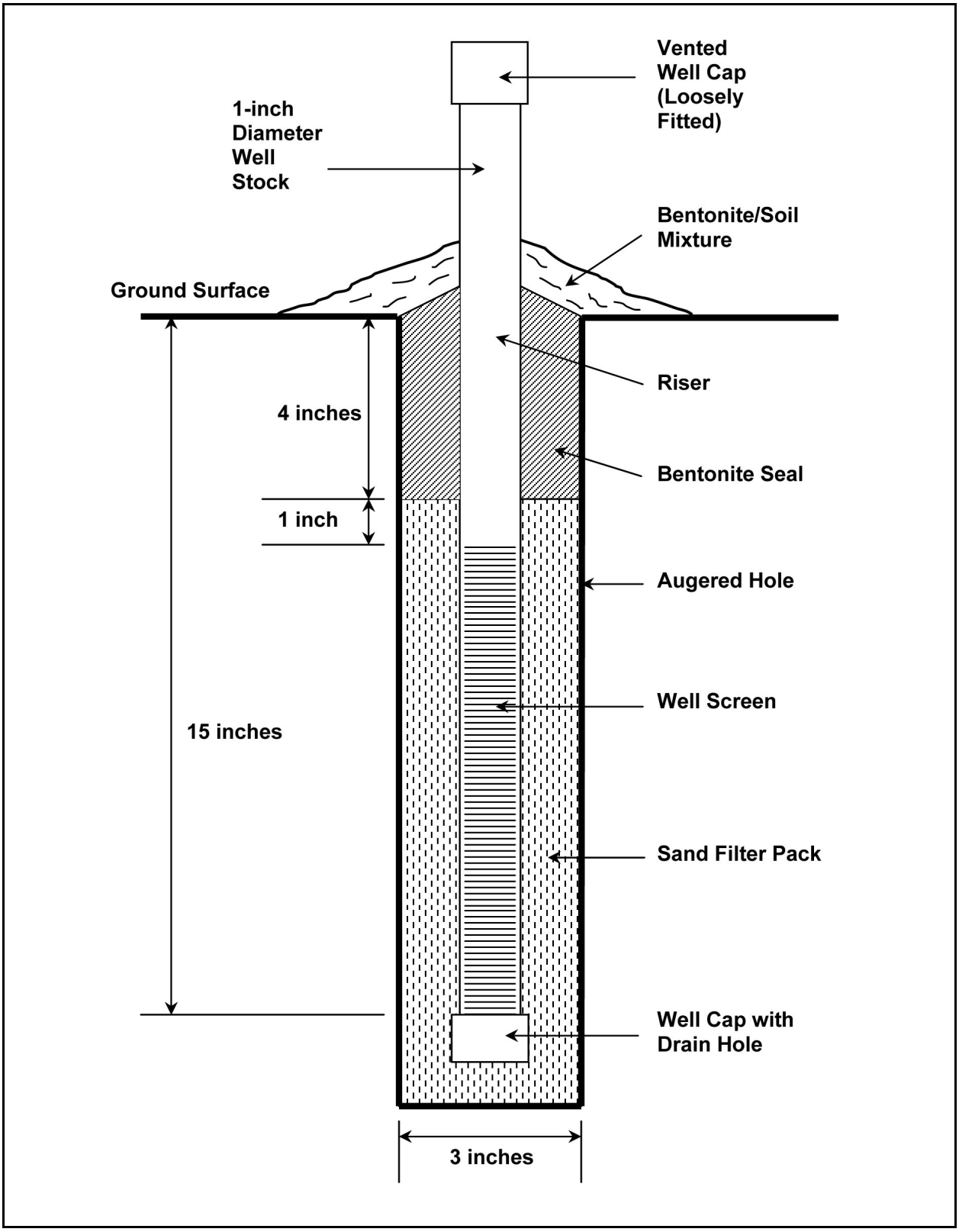


Figure 2. Standard 15-in. monitoring well installed by augering

Well Stock. Shallow monitoring wells should be made from commercially manufactured well stock. Schedule 40, 1-in. inside diameter PVC pipe is recommended. The diameter of the pipe allows sufficient room for hand measurement of water levels while minimizing well volume and maximizing responsiveness to water-table changes. The small diameter also minimizes auger hole diameter, volume of the filter pack, and the quantity of bentonite needed to seal the bore hole. However, if required by automated water-level recorders, then 2-in.-diam pipes can be substituted. Well stock larger than 2 in. in diameter should be avoided.

Well Screen and Bottom Cap. Recommended slot opening and slot spacing for the well screen are 0.010 in. and 0.125 in., respectively. The slotted screen should extend from approximately 5 in. below the ground surface down to the bottom of the well. Hand-slotted or drilled well screens should not be used.

One problem with the use of commercial well screen for very shallow monitoring wells is that there often is a length of unslotted pipe and joint or threads below the screen. In shallow monitoring situations, this extra length often must be inserted into underlying soil material that should be left undisturbed. In combination with a commercial well point, this extra length also provides a reservoir where water can remain trapped after the outside groundwater has dropped, resulting in the potential of misleading or incorrect readings during water-table drawdown. To avoid this problem, commercial well screen should be cut to the desired length within the slotted portion of the pipe. A PVC cap should be glued at the bottom of the screen and a small drain hole should be drilled in the bottom cap (Figure 2).

Riser. The riser is the unslotted PVC pipe that extends from the top of the well screen to above the ground surface (Figure 2). The riser should extend far enough above the ground to allow easy access but not so high that the leverage of normal handling will crack below-ground seals. In locations that do not pond or flood, 9 to 12 in. above the ground surface is usually sufficient. A longer riser may be needed on inundated sites or where automatic recording devices are used.

Well Top Cap. A well cap is required to protect the top of the well from contamination and rainfall. Caps should be attached loosely so they can be removed easily without jarring or dislodging the well, or cracking the bentonite seal. Tight-fitting caps, either threaded or unthreaded, should be avoided because they may seize to the riser and require rough handling to remove. A suitable well cap can be constructed from a short length of PVC pipe of a larger diameter than the riser, with a glued PVC cap at one end (Sprecher 2000). The constructed well cap can be attached loosely to the riser by drilling a hole through both the cap and the riser and connecting the two with a wire lock pin. The cap should be vented to allow equilibration of air pressure inside and outside of the well.

Filter Pack. A filter pack is placed around the well screen to remove fine particles and provide a zone of high hydraulic conductivity that promotes water movement toward the well (Figure 2). Filter packs can be classified into two major categories, natural and artificial. Natural packs are created by manually repacking any excavated soil around the well screen, ensuring that large voids are absent. Natural packs are recommended in coarse-textured, sandy soils. In fine-textured soils, an artificial pack should be used. See Table 1 for recommendations on the use of filter packs for soils of different textures.

Commercially available silica sand is recommended for use as artificial pack material and is usually well-sorted, well-rounded, clean, chemically inert, and free of all fine-grained clays, particles, and organic material. Silica sand is available from water-well supply houses in uniformly graded sizes. Sand that passes a 20-mesh screen and is retained by a 40-mesh screen (20-40 sand) is recommended with a 0.010-in. well screen.

Table 1
USDA Soil Texture Classes and Recommendations for Sand Filter Packs

USDA Soil Texture	Sand Pack
Muck, Mucky Peat, Peat	None
Coarse Sand	None
Medium Sand	None
Fine Sand	None
Loamy Sand	None
Sandy Loam	Recommended
Loam	Recommended
Silt Loam	Recommended
Silt	Recommended
Sandy Clay Loam	Required
Silty Clay Loam	Required
Clay Loam	Required
Sandy Clay	Required
Silty Clay	Required
Clay	Required

Bentonite Sealant. Bentonite is a type of clay that absorbs large quantities of water and swells when wetted. It is used in well installation to form a tight seal around the riser to prevent water from running down the outside of the pipe to the well screen. With this protective plug, only groundwater enters the slotted well screen.

When installing a monitoring well, 4 in. of bentonite should be placed around the riser immediately at and below the ground surface (Figure 2). This 4-in. ring of bentonite rests directly on top of the filter pack around the well screen. Above the bentonite ring, additional bentonite mixed with natural soil material should be mounded slightly and shaped to slope away from the riser so that surface water will run away from the pipe rather than pond around it at the ground surface.

Bentonite is available from well drilling supply companies in powder, chip, or pellet form. Chips are easiest to use in the field. They can be dropped directly down the annular space above the sand filter pack. If this zone is already saturated with water, the chips will absorb water in place, swell tight, and seal off the sand filter from above. If the bentonite chips are dropped into a dry annular space, they should be packed dry and then water should be added down the annular space so the clay can swell shut.

Modified Well Design for Clay Soils. In heavy clay soils, such as Vertisols, water movement occurs preferentially along cracks and interconnected large pores. These cracks may deliver water to a standard monitoring well through its vertical, slotted walls. Even when the surrounding soil is unsaturated, water may remain in the well for days due to impeded drainage into the slowly permeable clay. This problem can be reduced, but not eliminated, by using a well that is slotted or open only at the bottom. In addition, the sand filter pack should be installed only around the immediate well opening and should not extend up the riser. The annular space around the riser should be packed with the natural clay soil material or filled with bentonite.

Because Vertisols in wetland situations tend to be episaturated (i.e., they perch water at or near the surface but may remain unsaturated below), monitoring should focus on detection of surface ponding

and saturation in the upper few inches of the soil. For this purpose, wells shorter than 15 in. may be needed.

MONITORING WELL INSTALLATION

Installation Methods. The recommended method for installing shallow monitoring wells involves the use of a bucket auger with an outside diameter 2 in. greater than the well diameter (e.g., 3 in. for a standard 1-in. well). As an alternative, wells may be installed by driving them into the ground. Driven wells may be preferred in areas with noncohesive coarse-grained (sandy) soils, rocky soils (e.g., glacial tills), or in saturated organic materials (i.e., mucks or peats). Procedures for both installation methods are given below. No matter which installation method is selected, wells must be tested for performance before being used. These procedures assume that the soil profile at the well location has already been described and that the appropriate well depth (i.e., 15 in. or less) has been determined based on the presence or absence of restrictive soil layers. A Monitoring Well Installation Data Form (Appendix B) should be completed to document the design and installation of each well (Sprecher 2000).

Augering. Recommended equipment includes a bucket auger 2 in. larger than the diameter of the well being installed, a tamping tool (e.g., wooden or metal rod), bentonite chips, silica sand, and the constructed monitoring well. A pump or bailer may be needed to test the well after installation. The following procedure is used to install the well:

1. Auger a hole in the ground to a depth approximately 2 in. deeper than the bottom of the well. Be sure the hole is vertical.

2. Scarify the sides of the hole if it was smeared during augering.

3. Place 2 to 3 in. of silica sand in the bottom of the hole.

4. For a 15-in. well with 10 in. of well screen, make a permanent mark on the well riser 5 in. above the top of the screen. Insert the well into the hole to the proper depth; the permanent mark on the riser should be even with the soil surface. Do not insert through the sand.

5. Pour and gently tamp more of the same sand in the annular space around the screen and 1 in. above the screen.

6. Pour and gently tamp 4 in. of bentonite chips above the sand to the ground surface. If necessary, add water to cause the bentonite sealant to expand.

7. Form a low mound of a soil/bentonite mixture on the ground surface around the base of the riser to prevent surface water from puddling around the pipe.

Driving. Well installation by driving is recommended when site conditions prevent augering (e.g., noncohesive sandy soils, soils with many coarse fragments, saturated organic soils). In addition, driven wells are acceptable whenever their performance can be shown to be equivalent to that of an augered well. Plans to use driven wells for regulatory purposes should be discussed in advance with the appropriate Corps of Engineers District office.

A driven well is similar in design and construction to the augered well described previously, with the addition of a well point in place of the bottom cap (Figure 3). Well points are commercially available and can be vented to permit draining by drilling a hole in the bottom. A special driving tool may be needed to install the well without damaging the PVC pipe.

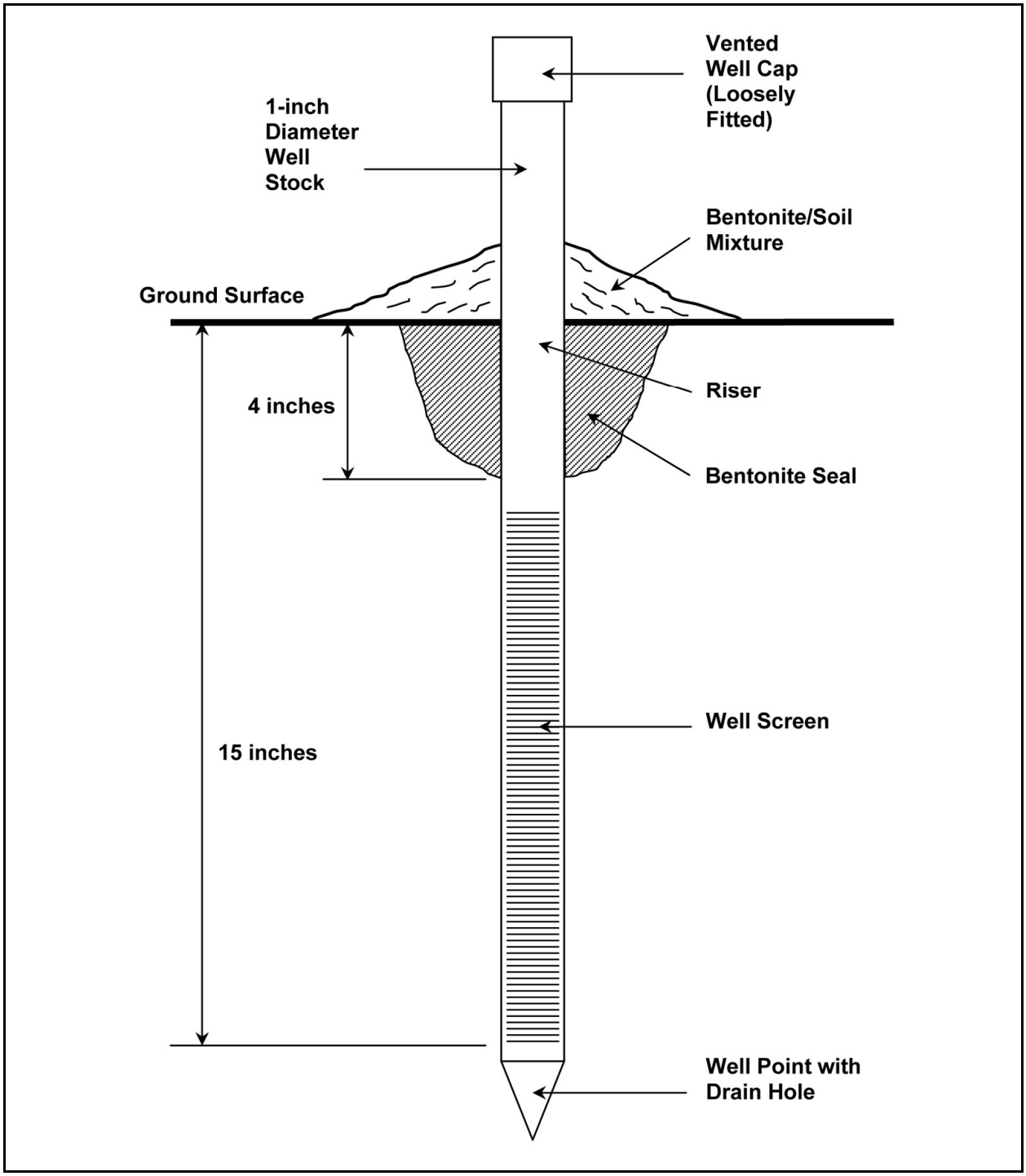


Figure 3. Standard 15-in. monitoring well installed by driving

Required materials include bentonite chips and the constructed monitoring well with vented well point. A pump or bailer may be needed to test the well after installation and, depending on site conditions, a driving device may be required. The following procedure is used to install the well:

1. For a standard 15-in. well, make a permanent mark on the riser 15 in. above the bottom of the well screen. With the well cap removed, use a driving device to drive the well vertically into the ground until the mark is at the ground surface. In organic soil materials, the well may simply be pushed into the ground.

2. Dig out a ring of soil around the well riser to a depth of 4 in. Fill this space with bentonite chips and add water, if necessary, to form a tight seal.

3. Form a low mound of a soil/bentonite mixture on the ground surface around the base of the riser to prevent surface water from puddling around the pipe.

Establishing Riser Height. Water-level measurements are typically recorded as the "depth to water" from the top of the well riser. The depth of the water table below the ground surface is determined by subtracting the riser height from the "depth to water" measurement. Therefore, after installing the well, measure and permanently record the height of the riser above the ground surface. If automated water-level recording devices are used, follow the manufacturer's instructions for calibration of water-level readings relative to the ground surface. Riser height should be checked after soils have thawed in spring, and should be re-checked periodically when water-table measurements are taken or electronic data are downloaded.

Surface Water. In areas subject to flooding or ponding, a separate staff gauge or automated device is required to measure the depth of surface water.

MONITORING WELL TESTING AND MAINTENANCE: During well installation, particularly with driven wells, fine soil particles may clog the well screen, impeding water flow and increasing the response time of the well. The performance of the well should be tested by (1) emptying the well by pumping or bailing and monitoring how quickly the water level returns to the initial level, or (2) if the well is dry, filling it with water and monitoring the rate of outflow. The water level in the well should reestablish itself at approximately the same rate as it would in a freshly dug hole without any pipe. In soils with a high percentage of clay, this could require several hours. If the water does not return to the initial level in a reasonable amount of time, pull the instrument out of the ground, clean it, reinstall it, and retest it. If water-table readings are questionable at any time during the monitoring period, one option is to move some distance away from the well location, auger to the depth in question, and determine whether the water level in the auger hole is the same as that indicated by the monitoring well.

Routine Maintenance. Monitoring well responsiveness should be tested at the beginning of the monitoring period and at least every 2-3 months thereafter by the procedure described above, because wells can plug over time due to bacterial growth and movement of fine soil particles. Well performance can also be affected by cracking of the bentonite seal, sediment deposition in the well, and movement of the ground surface and/or monitoring well due to frost heaving or shrink-swell action. To ensure accurate water-level readings, check for vertical displacement of the well after spring thaw and periodically during sampling by re-measuring the height of the riser above the ground surface and adjusting water-table measurements or resetting the well, as needed.

MAKING WATER-LEVEL MEASUREMENTS: Water levels in monitoring wells should be measured with an accuracy of ±0.25 in., if possible. Measurements may be made manually or with automated equipment. The use of automated water-level recorders is recommended unless an uninterrupted schedule of frequent site visits can be maintained. Automated recorders are also recommended in areas with highly variable or flashy hydrology. Whichever method is selected, it should be used consistently throughout the duration of the monitoring study.

Manual Readings. Water-level measurements can be made easily with a steel measuring tape marked with chalk or a water-soluble marker. Another approach is to use an electric device that sounds or flashes when the sensor, attached to the end of a graduated tape, makes contact with the water. Measurement devices that displace large amounts of water (e.g., dowel rods) should not be used.

Automated Readings. Automated recording devices record water levels with down-well transducers or capacitance-based sensors. An important consideration when purchasing automatic recording devices is the ability to compensate internally for variations in barometric pressure. These variations can be significant in wetland determinations. Automated equipment is more costly than hand measurement, but the devices can be used again in future studies. The credibility of monitoring results is enhanced with the high frequency of water-level readings that automated wells allow. Automated water-level recorders should be checked frequently for accuracy by comparison with manual readings. If automated readings are not within instrument specifications, the device should be recalibrated.

Required Timing, Frequency, and Duration of Readings. Water-level measurements must be taken at least once each day, beginning 5-7 days before the first day of the growing season and continuing until the end of the growing season or until the minimum standard for wetland hydrology is met that year. If automated recorders are used, readings four times per day are recommended (use the lowest reading each day). On sites subject to flooding or ponding, depth of surface water must be measured each day that water-table readings are made.

Growing season beginning and ending dates shall be based on the median dates (i.e., 5 years in 10, or 50 percent probability) of 28 °F air temperatures in spring and fall as reported in WETS tables provided by the USDA-NRCS National Water and Climate Center. WETS tables are based on long-term temperature data collected at National Weather Service (NWS) cooperative weather stations throughout the United States and are available on the Internet at http://www.wcc.nrcs.usda.gov/climate/wetlands.html. For a particular project site, growing season information from the nearest available weather station should be used unless, due to elevation or other factors, a more distant weather station is considered to be more representative of conditions at the project site. Alternative local or regional procedures for determining growing season dates may be used at the District's discretion.

Because hydrologic conditions are naturally variable, many years of groundwater monitoring data may be needed to establish what is typical for a given site. This is particularly true in the arid western United States where rainfall can be sparse, unpredictable, and highly localized. In general, ten or more years of water-table monitoring data may be needed to determine whether minimum standards for water-table depth, duration, and frequency in wetlands are met. However, because long-term monitoring is often impractical in a regulatory context, short-term studies may provide

sufficient information if the normality of precipitation during the monitoring period is considered. Determining "normal" rainfall is addressed in the following section.

ANALYSIS AND INTERPRETATION OF MONITORING DATA

Technical Standard for Wetland Hydrology. Wetland hydrology is considered to be present on an atypical or problem site if the following standard is met:

> *The site is inundated (flooded or ponded) or the water table is ≤12 inches below the soil surface for ≥14 consecutive days during the growing season at a minimum frequency of 5 years in 10 (≥50% probability). Any combination of inundation or shallow water table is acceptable in meeting the 14-day minimum requirement. Short-term monitoring data may be used to address the frequency requirement if the normality of rainfall occurring prior to and during the monitoring period each year is considered.*

The Corps Manual discusses wetland hydrology in general, but does not provide a wetland hydrology criterion suitable for use in interpreting monitoring well data. The standard given above is based on recommendations by the National Academy of Sciences (National Research Council 1995). By requiring a water table within 12 in. of the surface, this standard ensures that saturation by free water or the capillary fringe occurs within the "major portion of the root zone" described in the Manual. A 14-day minimum duration standard is assumed to apply nationwide unless Corps Districts have adopted a different standard at the local or regional level. The Corps Manual addresses the need for long-term data (10 or more years) in analyses of stream-gauge data but does not consider the use of short-term data in wetland determinations, nor does it address the frequency issue in relation to water-table monitoring. This Technical Standard allows the use of short-term monitoring data to address the frequency requirement for wetland hydrology, if the normality of rainfall is considered.

The depth to saturation depends both on the position of the water table and the height of the tension-saturated capillary fringe (National Research Council 1995). While its presence has an influence on both plant growth and soil features, the upper limit of the capillary fringe is difficult to measure in the field and impractical as a basis for hydrologic monitoring. The Technical Standard for Wetland Hydrology is based on the depth of the water table because, in most cases, water-table depth can be monitored readily and consistently through the use of shallow wells with either manual or automated data collection. Water-table measurements should not be corrected for a capillary fringe unless other evidence, such as tensiometer readings, laboratory analysis of soil water content, or evidence of soil anoxia, indicates that the height of the saturated capillary fringe is greater than a few inches.

Determining Normal Precipitation. Short-term water-table monitoring data (i.e., <10 years) must be interpreted in relation to the amount of precipitation that fell during and for at least 3 months prior to the monitoring period each year. This is done by comparing the precipitation record for a given year with the normal range of precipitation based on long-term records collected at the nearest appropriate NWS cooperative weather station. The USDA-NRCS National Water and Climate Center calculates normal precipitation ranges for each month (defined as between the 30th and 70th percentiles of monthly precipitation totals) for NWS stations throughout the United States. The information is published in WETS tables available on the Internet (http://www.wcc.nrcs.usda.gov/climate/wetlands.html).

Sprecher and Warne (2000, Chapter 4) describe three methods for evaluating precipitation normality within a given year. The first method is taken from the NRCS Engineering Field Handbook (Natural Resources Conservation Service 1997) and involves the direct application of WETS tables in relation to monthly rainfall totals at the project site. At a minimum, this method shall be used to determine whether rainfall was normal immediately before and during a groundwater monitoring study. The analysis should focus on the period leading up to and during the time when water tables are usually high in that climatic region. In many parts of the country, this is at the beginning of the growing season, when precipitation is abundant and evapotranspiration is relatively low. The second method described by Sprecher and Warne (2000) evaluates daily precipitation data on the basis of 30-day rolling sums, and the third method combines the two procedures. If daily precipitation data are available, the combined method is recommended. The evaluation of precipitation normality should include the three months prior to the start of the growing season and extend throughout the entire monitoring period each year.

For many wetlands, water tables in a given year may be affected by precipitation that occurred in previous years, especially if monitoring occurs after an extended period of drought or precipitation excess. After a series of dry years, for example, it may take several years of normal or above-normal rainfall to recharge groundwater and return water tables to normal levels. Therefore, in evaluating wetland hydrology based on short-term monitoring, it is necessary to consider the normality of rainfall over a period of years prior to the groundwater study. Recent precipitation trends can be determined by comparing annual rainfall totals at the monitoring site with the normal range given in WETS tables for two or more years prior to the monitoring study, or by examining trends in drought indices, such as the Palmer Drought Severity Index (Sprecher and Warne 2000). This issue may not be important in soils with perched water tables that respond to the current year's rainfall and dry out seasonally.

Interpreting Results. If ten or more years of water-table monitoring data are available for a site, the long-term record probably includes years of normal, below normal, and above normal precipitation and thus reflects the average hydrologic conditions on the site. Therefore, wetland hydrology can be evaluated directly by the following procedure:

1. For each year, determine the maximum number of consecutive days that the site was either inundated or the water table was ≤12 in. from the ground surface during the growing season. Wetland hydrology occurred in a given year if the number of consecutive days of inundation or shallow water tables was ≥14 days.

2. The Technical Standard for Wetland Hydrology was met if wetland hydrology occurred in at least 50 percent of years (i.e., ≥5 years in 10).

This procedure may not be appropriate during extended periods of drought or precipitation excess. Furthermore, in some regions with highly variable precipitation patterns (e.g., the arid West) more than ten years of groundwater monitoring data may be needed to capture the typical hydrologic conditions on a site.

If fewer than ten years of water-table data are available, then the normality of precipitation preceding and during the monitoring period must be considered. One option is to apply the procedures described in the section on "Determining Normal Precipitation" for each year that water tables were monitored. In addition, annual precipitation or drought severity indices should be

evaluated for two or more years prior to the monitoring period on any site that lacks a perched water table. Wetland hydrology can then be evaluated by the following procedure:

1. Select those years of monitoring data when precipitation was normal, or select an equal number of wetter-than-normal and drier-than-normal years.

2. If wetland hydrology (i.e., any combination of inundation or water table ≤12 in. from the surface for ≥14 consecutive days during the growing season) occurred in ≥50 percent of years (e.g., 3 years in 5), then the site most likely meets the Technical Standard for Wetland Hydrology.

It is important to remember that, even in normal rainfall years, many wetlands will lack wetland hydrology in some years due to annual differences in air temperatures (which affect evapotranspiration rates) and the daily distribution of rainfall that are not considered in this analysis. This is particularly true of borderline wetlands that may have shallow water tables in only 50-60 percent of years. Therefore, this procedure may fail to identify some marginal wetlands.

Another option, particularly for very short-duration monitoring studies (e.g., ≤3 years), is to evaluate water-table measurements in conjunction with groundwater modeling. Hunt et al. (2001) described one such approach, called the Threshold Wetland Simulation (TWS), which uses the DRAINMOD model. Actual water-table measurements in a given year are compared with those of a simulated, threshold wetland (i.e., one that meets wetland hydrology requirements in exactly 50 percent of years). The TWS approach requires detailed long-term precipitation and temperature data, soil characteristics, and considerable expertise with the DRAINMOD program.

No method to determine wetland hydrology based on short-term water-table measurements is entirely reliable or free of assumptions. Therefore, ultimate responsibility for the interpretation of water-table monitoring data rests with the appropriate Corps District.

REPORTING OF RESULTS: Warne and Wakeley (2000) provided a comprehensive checklist of information that should be included in the report of a groundwater monitoring study. The report should also include a justification for any deviations from procedures given in this Technical Standard.

The report should include a clear, graphical presentation of daily water-table levels at each well plotted over time and shown in relation to the soil surface and the 12-in. depth, the depth of the monitoring well, growing season starting and ending dates, local precipitation that year, and normal precipitation ranges based on WETS tables. Another useful feature is a diagram of the soil profile at the well location including depths and textures of each major horizon. An example graph with many of these features is shown in Figure 4 (Sprecher 2000).

ACKNOWLEDGMENTS: The initial outline for this Technical Standard was developed at a workshop in Decatur, GA, in September 2003. Participants (in alphabetical order) were Mr. William Ainslie, U. S. Environmental Protection Agency (USEPA), Region 4; Mr. Bradley Cook, Minnesota State University, Mankato; Mr. Jason Hill, Tennessee Tech University (TTU); Ms. Julie Kelley, Geotechnical and Structures Laboratory (GSL), U. S. Army Engineer Research and Development Center (ERDC); Dr. Barbara Kleiss, Environmental Laboratory (EL), ERDC; Dr. Vincent Neary, TTU; Mr. Chris Noble, EL-ERDC; Dr. Bruce Pruitt, Nutter and Associates, Inc.; Dr. Thomas Roberts, TTU; Mr. Paul Rodrigue, USDA Natural Resources Conservation Service (NRCS);

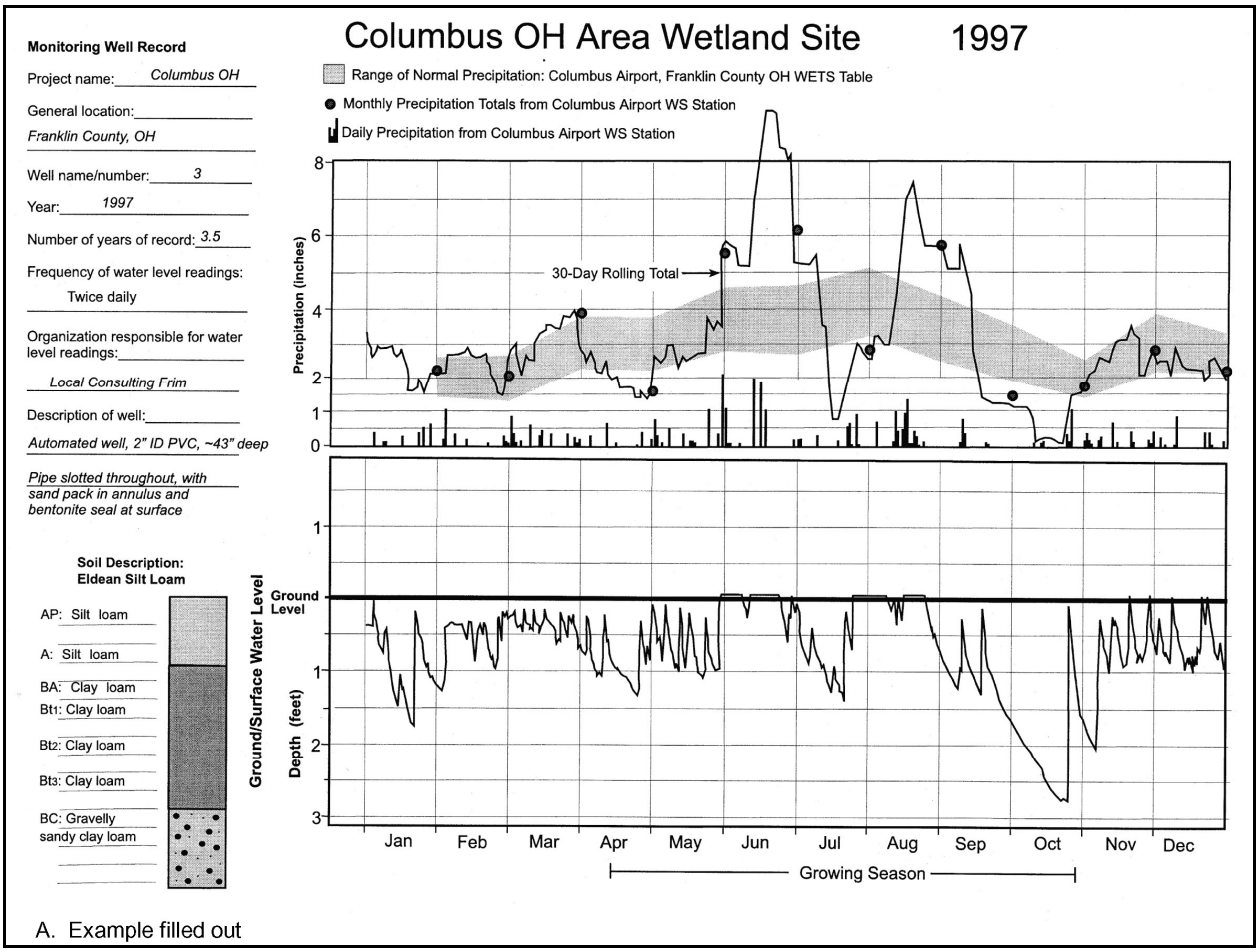


Figure 4. Example of graphical presentation of water-table monitoring data (Note that this example uses a deeper well than the 15 in. specified in this Technical Standard)

Dr. Steven Sprecher, U. S. Army Engineer (USAE) District, Detroit; and Dr. James Wakeley, EL-ERDC. The first draft was written by Drs. Neary and Wakeley and Messrs. Hill and Noble. Technical reviewers included Harry Baij, Jr., USAE District, Anchorage; Mark Clark, NRCS; David D'Amore, U. S. Forest Service (USFS); Jackie DeMontigny, USFS; Michiel Holley, USAE District, Anchorage; Wesley Miller, NRCS; James Miner, Illinois State Geological Survey; Joe Moore, NRCS; Dr. Chien-Lu Ping, University of Alaska, Fairbanks; Ann Puffer, USFS; and Ralph Rogers, USEPA Region 10. A subcommittee of the National Technical Committee for Hydric Soils (NTCHS) provided an independent peer review in accordance with Office of Management and Budget guidelines. The authors are grateful to NTCHS members Drs. Michael Vepraskas and R. Wayne Skaggs, North Carolina State University; and Mr. Ed Blake, Mr. P. Michael Whited, Ms. Lenore Vasilas, and Mr. G. Wade Hurt, NRCS, for their comments and suggestions. The work was supported by Headquarters, U. S. Army Corps of Engineers through the Wetlands Regulatory Assistance Program (WRAP).

POINTS OF CONTACT: For additional information, contact Dr. James S. Wakeley, U. S. Army Engineer Research and Development Center (ERDC), Vicksburg, MS, (601-634-3702, *James.S.Wakeley@erdc.usace.army.mil*) or the Program Manager of the Wetlands Regulatory

Assistance Program, Mr. Bob Lazor (601-634-2935, *Bob.L.Lazor@erdc.usace.army.mil*). This technical note should be cited as follows:

> U. S. Army Corps of Engineers. (2005). "Technical Standard for Water-Table Monitoring of Potential Wetland Sites," *WRAP Technical Notes Collection* (ERDC TN-WRAP-05-2), U. S. Army Engineer Research and Development Center, Vicksburg, MS.

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APPENDIX A. SOIL CHARACTERIZATION DATA FORM

Soil Characterization Data Form

Project Name_____ Date_____
Personnel_____ Soil Pit ID_____

Horizon Depths (inches)	Texture	Matrix Color (Munsell moist)	Redoximorphic Features		Induration (none, weak, strong)	Roots
			Color	Abundance		

Comments:

APPENDIX B. MONITORING WELL INSTALLATION DATA FORM

Monitoring Well Installation Data Form

Project Name _____ Date of Installation _____
Project Location _____ Personnel _____
Well Identification Code _____
Attach map of project, showing well locations and significant topographic and hydrologic features.

Characteristics of Instrument:
Source of instrument/well stock_____
Material of well stock _____ Diameter of pipe _____
Slot width_____ Slot spacing _____
Kind of well cap _____ Kind of well point/end plug _____
Installation:
Was well installed by augering or driving? _____
Kind of filter sand_____ Kind of bentonite_____
Depth to lowest screen slots _____ Riser height above ground _____
Was bentonite wetted for expansion? _____
Method of measuring water levels in instrument _____
How was instrument checked for clogging after installation?_____

	Soil Characteristics					
			Redoximorphic Features			
Instrument Diagram[a]	Texture	Matrix Color	Color	Abundance	Induration (none, weak, strong)	Roots

[a]Show depths (heights) of riser, well screen, sand pack, and bentonite in relation to soil horizons.

dhec	**Mining Form MR-500**	**S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL BUREAU OF LAND AND WASTE MANAGEMENT DIVISION OF MINING AND SOLID WASTE PEMITTING 2600 BULL STREET, COLUMBIA, SC 29201 PHONE:803-898-1362 FAX: 803-898-1426 EMAIL: AskMines@dhec.sc.gov**

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
BUREAU OF LAND AND WASTE MANAGEMENT
DIVISION OF MINING AND SOLID WASTE MANAGEMENT
2600 Bull Street; Columbia, SC 29201

RECLAMATION PLAN

FORM MR-500 DATE VERSION ADOPTED: 7/1/94

****

As required in Section 48-20-90 of the South Carolina Mining Act, "An operator shall submit with his application for an operating permit a proposed reclamation plan. The reclamation plan for an operating permit only must be furnished to the local soil and water conservation district in which the mining operation is to be conducted. The plan must include as a minimum each of the elements specified in the definition of 'reclamation plan' in Section 48-20-40 and information required by the department. The reclamation plan must provide that reclamation activities, particularly those relating to control of erosion, to the extent feasible, must be conducted simultaneously with mining operations and be initiated at the earliest practicable time after completion or termination of mining on a segment of the permitted land. The plan must provide that reclamation activities must be completed within two years after completion or termination of mining on each segment of the area for which an operation permit is requested unless a longer period specifically is permitted by the department."

****

I. APPLICANT INFORMATION

1. Name of Company: Soilutions, LLC

2. Name of Proposed Mine: Edge Road Mine County: Horry

3. Home Office Address: 255 Welcome Dr. 503-968-1637
(Street **and** P.O. Box) (Telephone No.)

Myrtle Beach SC 29573 None
(City) (State) (Zip Code) (Fax. No.)

4. Local Office Address: Same No office at mine
(Street **and** P.O. Box) (Telephone No.)

(City) (State) (Zip Code) (Fax. No.)

5. Designate to which office Official Mail is to be sent:

Home Office: x Local Office:

6. Name of company personnel and their title to be the contact for official business and

correspondence: Ethan Epps, Member

II. ENVIRONMENTAL PROTECTION

1. Describe practices to protect adjacent resources such as roads, wildlife areas, woodland, cropland and others during mining and reclamation.

During mining, wildlife areas, woodlands, cropland and residences will be protected with a variety of methods. Protection of these resources can be achieved in part by observing setbacks to property lines, conducting concurrent reclamation as feasible, using accepted agronomic practices to establish temporary and permanent vegetation. Wildlife may be temporarily displaced during mining; however, experience has shown once mining ceases and reclamation completed new wildlife habitats are formed and populated by indigenous animal species.

2. Describe proposed methods to limit significant adverse effects on adjacent surface water and groundwater resources.

Additionally, all surface waters will be protected by complying with the NPDES permit requirements. Parameters are set to be protective of aquatic life in the receiving streams and human health and safety. Stormwater will be managed using best management practices and complying with SC DHEC's *NPDES General Permit for Discharges Associated with Nonmetal Mineral Mining*. Furthermore, the operator will implement accepted soil and water conservation practices to stabilize disturbed soil. These practices include, at a minimum, proper soil preparation (e. g, grading, scarifying, fertilizing, etc.), seed selection, planting techniques and maintenance until vegetation becomes self sustaining.

Potential for groundwater contamination will be low to non-existent because mining will not use chemicals. Groundwater drawdown will be limited in area by pumping groundwater from active segments into previous mined segments. After mining, groundwater levels will rebound to approximate original elevations.

3. Describe proposed methods to limit significant adverse effects on known significant cultural or historic sites within the proposed permitted area.

A cultural resources reconnaissance survey conducted by Terracon Consultants; Inc. determined no historic resources will be adversely affected. Terracon's report is being submitted with this application.

4. Describe method to prevent or eliminate conditions that could be hazardous to animal or fish life in or adjacent to the permitted area.

Proper reclamation of the mine site will include stabilizing all disturbed soils with vegetation, removal of mine equipment, cleanup of any spillage of petroleum products, and removal of scrap material. Buffer for active mine segments and sediment basin will provide protection to fisheries in nearby streams. Establishing 3:1 slopes around the pit edge will remove hazardous conditions for the public and indigenous animal populations.

5. Describe how applicant will comply with State air quality and water quality standards as established by the S.C. Department of Health and Environmental Control.

Site will not use a process plant. Fugitive dust emissions from mobile equipment will be controlled during active mining with use of water truck. Mine is in a rural area with significant buffers between mining and nearby homes or businesses. After mining, vegetation will be established to stabilize the soil and prevent windblown dust from occurring.

III. RECLAMATION OF AFFECTED AREA

6. State useful purpose(s) the affected land is being proposed to be reclaimed to. More than one purpose may be checked, but information should be submitted to support the feasibility for each proposed purpose.

a. Lake or pond x

b. Agriculture_____

c. Woodlands_____

d. Residential_____

e. Commercial_____

f. Grassland x

g. Recreation_____

h. Wetlands_____

i. Park_____

j. Other_____

7. State the final maximum surface gradient(s) (slope) in soil, sand, or other unconsolidated materials on reclaimed land. Surface gradients steeper than 3H:1V (18 degrees or 33 percent) may be required to submit geotechnical data and studies to demonstrate that the steeper slopes will remain stable following final reclamation.

Final maximum gradient for pit slopes to approximately 5 feet of pond depth will be 3:1. From approximately 5 feet of water depth to the pit floor, the slope will be 2:1.

8. How will the final slopes in unconsolidated material be accomplished? If the slope will be by backfilling, demonstrate that there is adequate material to accomplish the stated final gradient. If gradient is to be achieved by bring in material from outside the permitted area, state the nature of the material and approximate quantities. If the gradient is to be achieved by grading, show that there is adequate area for grading to achieve gradient (ie. adequate distance between the property line and edge of highwall). Operator should show calculations or other appropriate information to demonstrate that there is adequate material in backfilling and grading to meet the requirements for final slope.

Backfilling will not be necessary to achieve the 3:1 slope. All required sloping can be achieved by grading or mining on a slope. Any overburden removed will be backfilled in the pit.

9. Describe the plan for revegetation or other surface treatment of affected area(s). The revegetation plan shall include but not be limited to the following: (a) planned soil test; (b) site preparation and fertilization; (c) seed or plant selection; (d) rate of seeding or amount of planting per acre; (e) maintenance.

Mine operator will follow soil test, seed bed preparation, seed mix selection, soil amendments (fertilizer, lime, growth stimulants, etc.), cover and seeding rates based upon SC DOT's *Supplemental Technical Specification (SC-M-810-4 (07/17)) for Seeding*.

Revegetated site will be maintained with periodic inspections to detect areas with significant erosion, seed germination failure or significant plant die off. Site will be inspected after significant storm events to detect wash outs or gullies in planted areas. Damaged areas will be repaired where necessary by fixing erosion damage and reseeding as necessary.

10. Provide, as a separate document, a closure plan of the mine and permitted facilities to prevent a release of contaminants from being harmful to the environment. A closure plan is not necessary for all mines, but is required where the possibility exist for (a) acid rock drainage; (b) where the National Pollutant Discharge Elimination Systems (NPDES) Permit have discharge limitation parameters other than pH and Total Suspended Solids (TSS); (c) chemically treated tailings or stockpiles (excludes fertilizer or lime for revegetation purposes).

Reclamation will not require a closure plan. A) The sand and clay are chemically inert and will not generate acid waters. B) This mine qualifies for coverage under the *NPDES General Permit for Discharges Associated with Nonmetal Mineral Mining Facilities (SCG731593)* with no additional parameters other than pH and TSS. C) No chemicals will be used in the mining process.

11. Method of control of contaminants and disposal of mine waste soil, rock, mineral, scrap, tailings, slimes, and other material directly connected with the mining, cleaning, and preparation of mineral substances mined and includes all waste materials deposited on or in the permit area from any source.

A process plant will not be a part of this mine. No mine waste will be generated.

12. Method of reclaiming settling and/or sediment ponds.

At the end of mining, the sediment pond will remain. The berm between sediment pond and segment 2 will be below the anticipated pool level and allow the pond to extend throughout the full mined area.

13. Describe method of restoration or establishment of stream channels, stream banks and site drainage to a condition minimizing erosion, siltation and other pollution.

Not applicable - no streams will be diverted or relocated by mining. All streams and surface drainages and delineated wetlands will be protected by minimum 50-foot upland buffers.

14. What are the maintenance plans to insure that the reclamation practices established on the affected land will not deteriorate before released by the Department?

Areas that have undergone final reclamation practices will be maintained through periodic inspections and conducting any necessary repairs in a timely manner.

15. For final reclamation, submit information about practices to provide for safety to persons and to adjoining property in all excavations. Identify areas of potential danger (vertical walls, unstable slopes, unstable surface on clay slimes, etc.) and provide appropriate safety provisions. These provisions can include but are not limited to setbacks, fencing, signs, benching, guardrails and boulders.

The upper 10 feet of the mine highwall will be graded to 3:1 slope. This slope will extend below the anticipated pond level. From 10 feet down, the mine wall will be mined at a 2:1 slope and will remain to ensure slope stability. By extending the 3:1 slope beneath the water and also constructing shallow littoral zones at various locations, it provide gentler slopes that would allow for exiting the pond should someone fall in.

16. What provisions will be taken to prevent noxious, odious, or foul pools of water from collecting and remaining on the mined area? For mines to be reclaimed as lakes or ponds, provide supporting information that a minimum water depth of four (4) feet on at least fifty percent (50%) of the pond surface area can be maintained.

Areas of the affected land will be properly graded to prevent unwanted pools of water from collecting and prevent foul water from forming. The pond created by mining will comply with the required depth of a minimum of 4 feet over 50% of the pond surface area.

17. Identify any structures (e.g. buildings, roads) that are proposed to remain as part of final reclamation. Provide justification for leaving any structures.

No structures will remain after mining is terminated.

18. Attach <u>two (2)</u> copies of a map of the area (referred to as the RECLAMATION MAP) that shows the reclamation practices and conservation practices to be implemented. The following should be shown:

A. The outline of the proposed final limits of the excavation, during the number of years for which the permit is requested.

B. The approximate final surface gradient(s) and contour(s) of the area to be reclaimed. This would include the sides and bottoms of mines reclaimed of ponds and lakes.

C. The outline of the tailings disposal area.

D. The outline of disposal areas for spoil and refuse (exclusive of tailings ponds).

E. The approximate location of the mean shore line of any impoundment or water body and inlet and/or outlet structures which will remain upon final reclamation.

F. The approximate locations of access roads, haul roads, ramps or buildings which will remain upon final reclamation.

G. The approximate locations of various vegetative treatments.

H. The proposed locations of re-established streams, ditches or drainage channels to provide for site drainage.

I. The proposed locations of diversions, terraces, silt fences, brush barriers or other Best Management Practices to be used for preventing or controlling erosion and off-site siltation.

J. Proposed locations of the measures to provide safety to persons and adjoining property.

K. Segments of the mine that can be mined and reclaimed as an ongoing basis.

L. The boundaries of the permitted area.

M. The boundaries of the affected area for the anticipated life of the mine.

N. The boundaries of the 100-year floodplain, where appropriate.

O. Identify sections of mine where the final surface gradient will be achieved by grading and/or backfilling.

P. A legend showing the name of the applicant, the name of the proposed mine, the north arrow, the county, the scale, the date of preparation and the name and title of the person who prepared the map.

THE REQUIRED RECLAMATION MAP SHALL HAVE A NEAT, LEGIBLE APPEARANCE AND BE OF SUFFICIENT SCALE TO CLEARLY SHOW THE REQUIRED INFORMATION LISTED ABOVE. THE BASE FOR THE MAP SHALL BE EITHER A SPECIALLY PREPARED LINE DRAWING, AERIAL PHOTOGRAPH, ENLARGED USGS TOPOGRAPHIC MAP OR A RECENTLY PREPARED PLAT. RECLAMATION MAP SHOULD BE THE SAME SCALE USED FOR THE SITE MAP.

IV. SCHEDULE FOR IMPLEMENTATION OF CONSERVATION AND RECLAMATION PRACTICES

19. As stated in Section 48-20-90 of the S.C. Mining Act, reclamation activities, to the extent feasible, must be conducted simultaneously with mining operations. Identify which areas or segments of the mine are <u>not</u> feasible to reclaim simultaneously with mining. Provide reasons why reclamation cannot proceed simultaneously with mining in these areas.

Not applicable

Edge Road Mine

20. Section 48-20-40(16)(1) of the S.C. Mining Act requires a time schedule, including the anticipated years for completion of reclamation by segments.

This time schedule should meet the requirements of Section 48-20-90 of the Mining Act.

SCHEDULE FOR IMPLEMENTING CONSERVATION AND RECLAMATION PRACTICES

Conservation & Reclamation Practices	Segment or Area	Planned		*Applied		Notes
		Amount	Year	Amount	Month/Year	
Mark 50' wetland and property line buffers	WB-1, WB-2 & all property line buffers	6,050 lf	2023			
Establish silt fence/brush barriers	Seg 1	1,800 lf	2023			
Establish pit sump for pit dewatering and sediment control during construction of sediment pond	Seg 1	6.7 ac	2023			
Grade pond slopes to 3:1 grade, topsoil revegetate	Seg 1	1.1 ac	2024			
Establish littoral shelves	Seg 1	0.7 ac	2024			
Establish silt fence/brush barriers	Seg 2	1,700 lf	2024/25			
Grade pond slopes to 3:1 grade, topsoil revegetate	Seg 2	0.8 acs	2027/28			
Establish littoral shelves	Seg 2	0.9 ac	2027			
Establish silt fence/brush barriers	Seg 3	900 lf	TBD			
Grade pond slopes to 3:1 grade, topsoil revegetate	Seg 3	0.4 ac	TBD			
Establish littoral shelves	Seg 3	0.2 ac	TBD			
Establish silt fence/brush barriers	Seg 4	1,350 lf	TBD			
Grade pond slopes to 3:1 grade, topsoil revegetate	Seg 4	1.1ac	TBD			
Establish littoral shelves	Seg 4	0.8 ac	TBD			
End of mining, remove equipment	All		End of Mining			
Allow Pit to fill with water to create pond	Pit	+/- 22 ac				
Monitor for stable slopes and vegetation establishment and sustainability	All	2 growing seasons				

AA – Affected Area BMPs – Best Management Practices Fert. – Fertilize LOM – Life of Mine MW - Monitoring Well PA – Permitted Area
PL – Property Line SB – Sediment Basin ST – Sediment Traps SW – Stormwater TS – Topsoil WL – Wetlands

* Completed by the Department

YOU ARE NOTIFIED THAT:

1) you, the operator, must file an application to modify the reclamation plan in the event actual reclamation varies from the set forth hereinabove, and

2) if at any time it appears to the Department that the activities under the reclamation plan are failing to achieve the purposes and requirements of the S.C. Mining Act, the Department may modify the RECLAMATION PLAN in accordance to Section 48-20-150.

Signature of Applicant/Operator or his Authorized Representative

JOSHUA M. EPPS

Printed Name of Applicant/Operator or his Authorized Representative

MEMBER & MANAGER

Title

1/12/2022

Date

Department Use Only

Permit No. I-002375 Date Application Approved 6/20/2023 Date Bond Rec'd 5/23/2023

Bond Amount $25,000.00 Blanket or Single Bond Permit Issuance Date 6/23/2023

ACTION TAKEN ON THIS RECLAMATION PLAN

_____ Approved _____ Denied _X_ Approved with Additional Terms and Conditions

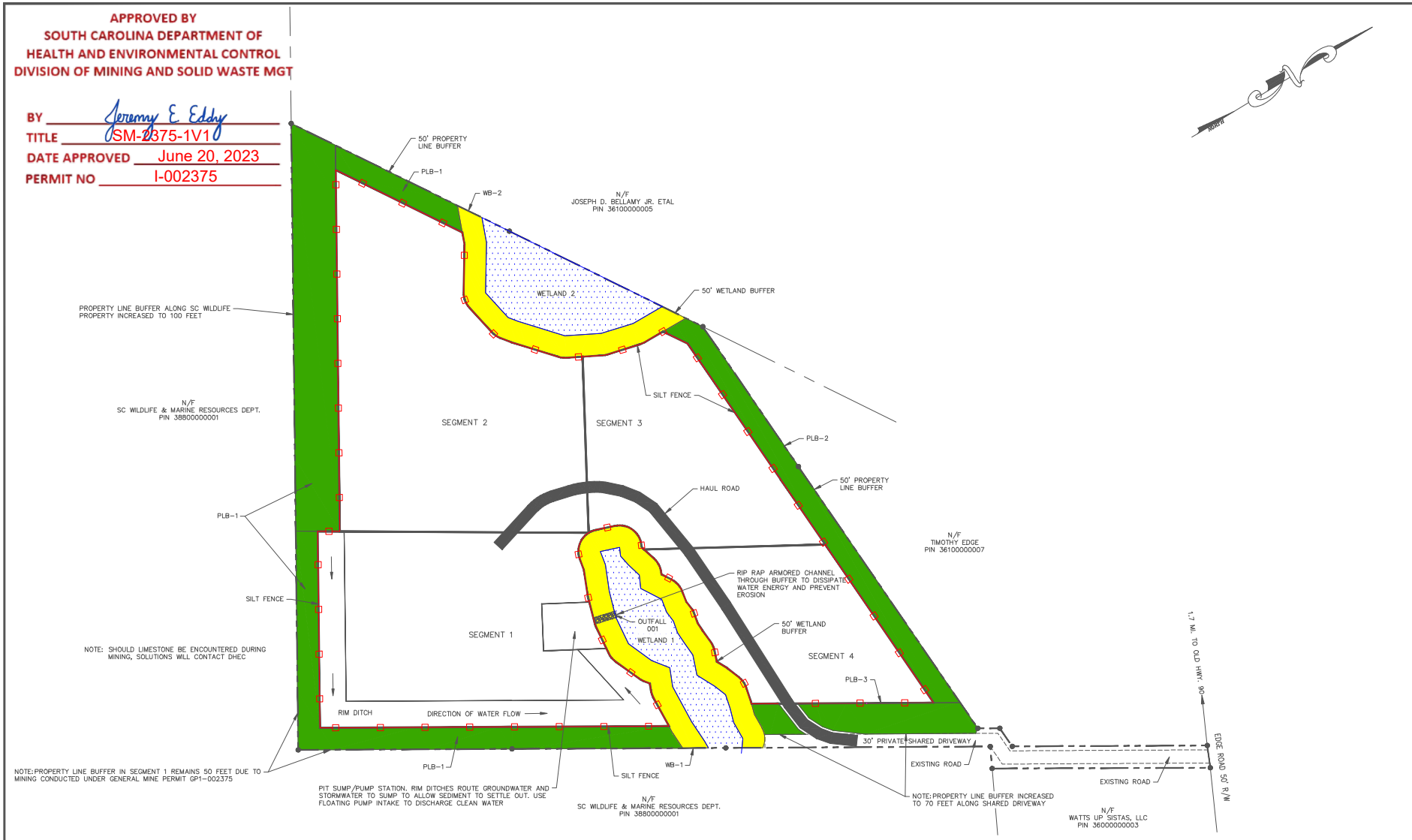
By: Jeremy E. Eddy

~~DIVISION DIRECTOR~~
SECTION MANAGER

Date: June 20, 2023

APPROVED BY
SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL
DIVISION OF MINING AND SOLID WASTE MGT

BY Jeremy E. Eddy
TITLE SM-2375-1V1
DATE APPROVED June 20, 2023
PERMIT NO I-002375



AFFECTED ACREAGE

SEGMENT 1 = 6.7 AC.
SEGMENT 2 = 6.7 AC.
SEGMENT 3 = 4.0 AC.
SEGMENT 4 = 4.3 AC.
HAUL ROAD = 0.9 AC.
TOTAL = 22.6 AC.

BUFFERS

WETLANDS (DELINEATED BY BRIGMAN COMPANY)
W-1 = 0.98 AC.
W-2 = 1.28 AC.
TOTAL 2.26 AC.

WETLAND BUFFERS
WB-1 = 1.4 AC.
WB-2 = 0.8 AC.
TOTAL 2.2 AC.

PROPERTY LINE BUFFERS
PLB-1 = 3.9 AC.
PLB-2 = 1.3 AC.
PLB-3 = 0.7 AC.
TOTAL 5.7 AC.

TOTAL BUFFERS = 10.4 AC.

LEGEND
WETLANDS
WETLANDS BUFFER
PROPERTY LINE BUFFER
SILT FENCE

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

REVISIONS

	Description	Date	By
1	INCREASE PROPERTY LINE BUFFER ADJACENT TO LOB TO 100 FEET	3-1-23	BC
2	REDUCE DEPTH OF MINING IN SEGMENT 1 TO 30 FEET	3-1-23	BC
3	ADJUST NOTE STATING DHEC TO BE CONTACTED IF LIMESTONE ENCOUNTERED	3-1-23	BC
4	ADD RIM DITCH TO SEGMENT 1	3-1-23	BC

Kennedy Consulting Services, LLC
Craig Kennedy, P.G.
KCS
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403 Sasade court Lexington, SC 29072
Tel: 803.399.1133 • Cell 803.960.3562
Mail:
P.O. Box 364 Irmo, SC 29063
craigkennedyKCS@gmail.com

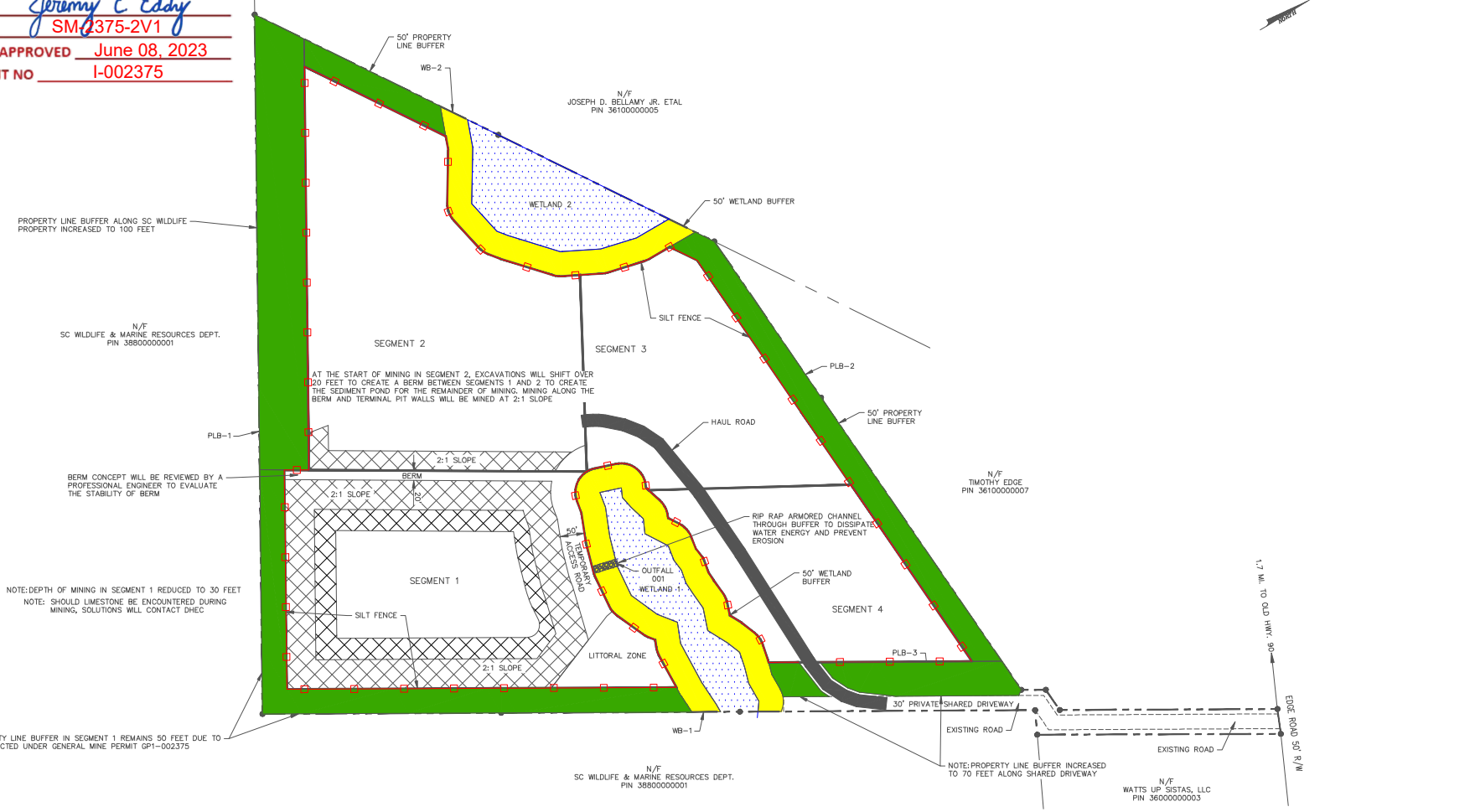
Edge Road Mine
Prepared for
Soilutions, LLC
Dogwood Neck Township, Horry County, South Carolina

Project No.: KCS 21-147
DATE: 05-25-2022
Approved by: RCK
Drawn by: B.C.
Scale: 1"=100'

Sheet No. 1 of 4

APPROVED BY
SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL
DIVISION OF MINING AND SOLID WASTE MGT

BY Jeremy E Eddy
TITLE SM-2375-2V1
DATE APPROVED June 08, 2023
PERMIT NO I-002375



LEGEND
WETLANDS
WETLANDS BUFFER
PROPERTY LINE BUFFER
SILT FENCE

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

REVISIONS

	Description	Date	By
1	INCREASE PROPERTY LINE BUFFER ADJACENT TO LOB TO 100 FEET	3-1-23	BC
2	REDUCE DEPTH OF MINING IN SEGMENT 1 TO 30 FEET	3-1-23	BC
3	ADDED NOTE STATING DHEC TO BE CONTACTED IF LIMESTONE ENCOUNTERED	3-1-23	BC

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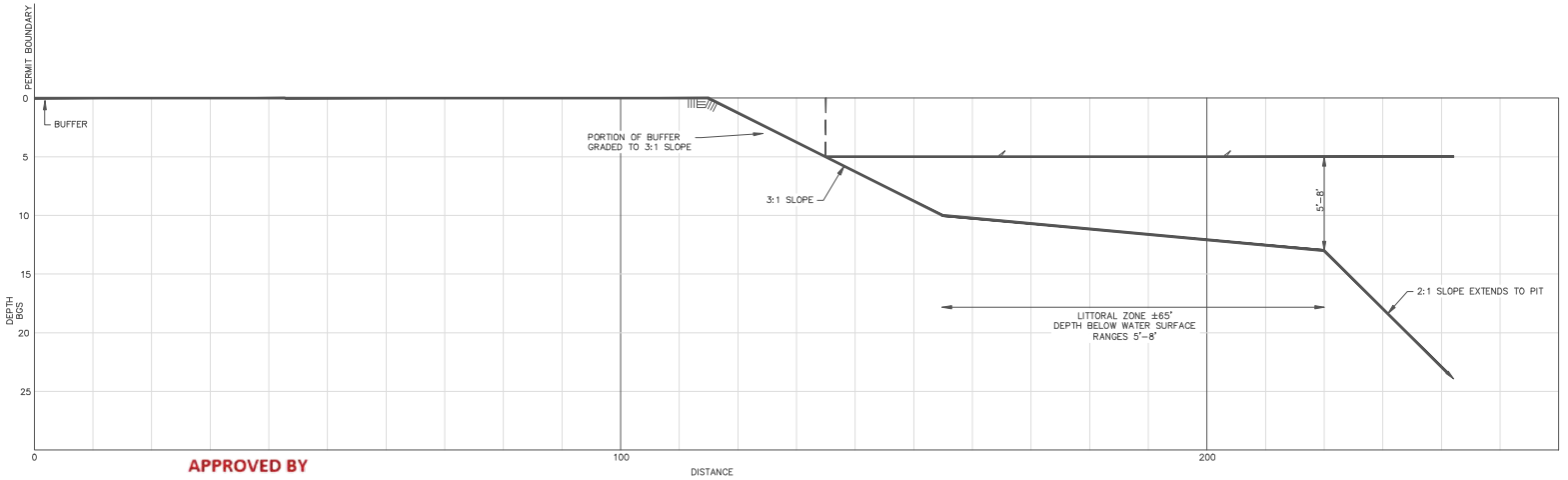
Edge Road Mine - Sediment Pond
Prepared for
Soilutions, LLC
NPDES Permit
Dogwood Neck Township, Horry County, South Carolina

Project No.: KCS 21-147
DATE: 05-25-2022
Approved by: RCK
Drawn by: B.C.
Scale: 1"=100'

Sheet No. 2 of 4

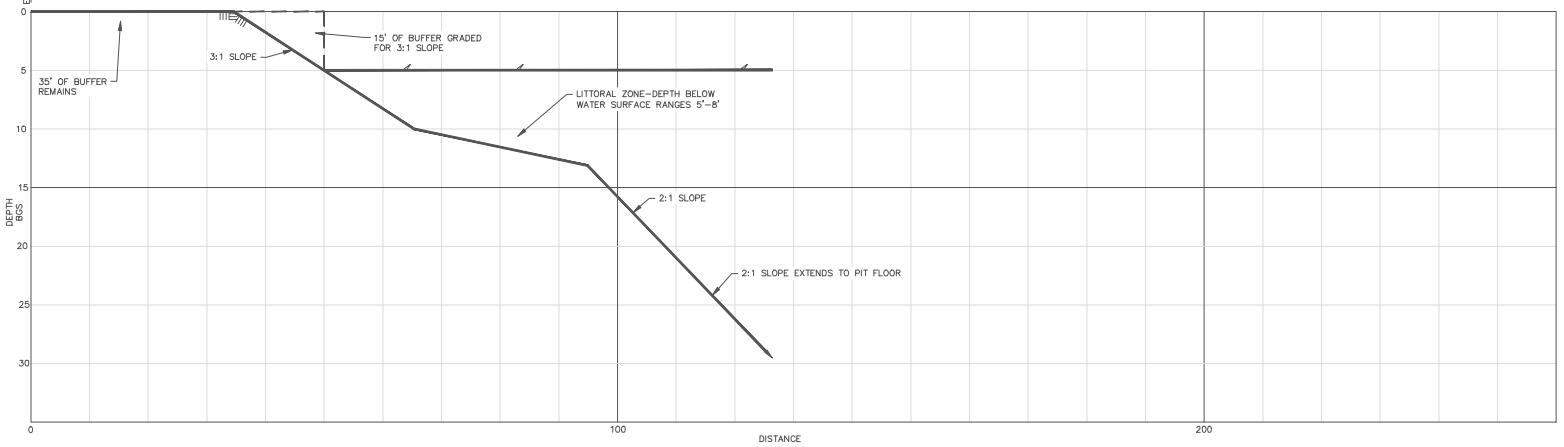


SECTION A--A'

SCALE:
HOR. 1" = 10'
VERT. 1" = 5'

APPROVED BY
SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL
DIVISION OF MINING AND SOLID WASTE MGT

BY Jeremy E. Eddy
TITLE SM-2375-3V1
DATE APPROVED June 06, 2023
PERMIT NO I-002375



SECTION B--B'

SCALE:
HOR. 1" = 10'
VERT. 1" = 5'

REVISIONS

	Description	Date	By
1	INCREASE PROPERTY LINE BUFFER ADJACENT TO LOB TO 100 FEET	3-1-23	BC
2	REDUCE DEPTH OF MINING IN SEGMENT 1 TO 30 FEET	3-1-23	BC

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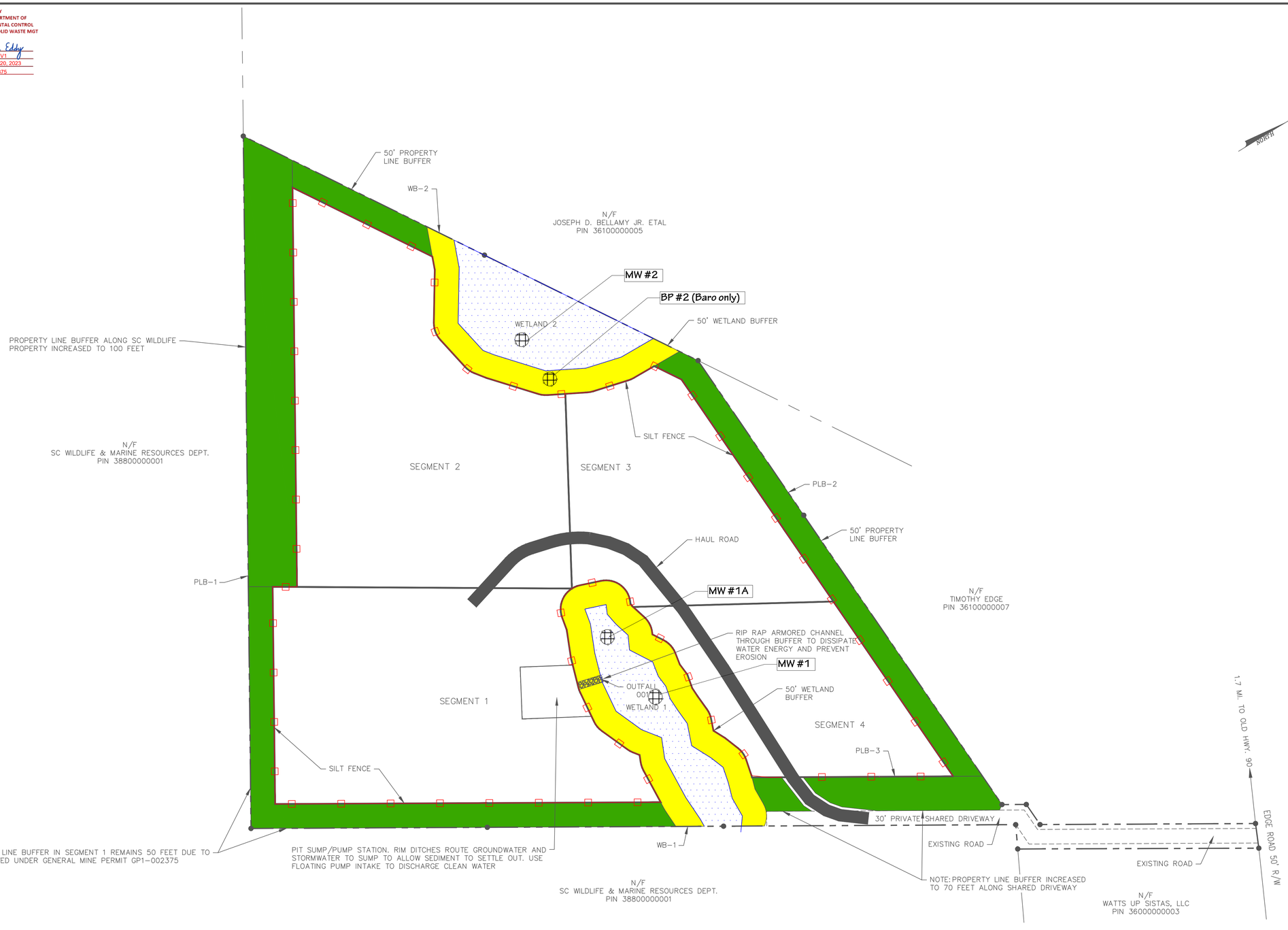
Edge Road Mine
CROSS SECTIONS
Prepared for
Soilutions, LLC
Dogwood Neck Township, Horry County, South Carolina

Project No.: KCS 21-147
DATE: 03-29-21
Approved by: RCK
Drawn by: B.C.
Scale: AS SHOWN

Sheet No. 4 of 4

APPROVED BY
SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL
DIVISION OF MINING AND SOLID WASTE MGT

BY Jeremy E. Eddy
TITLE SM-GTS-4V1
DATE APPROVED June 20, 2023
PERMIT NO I-002375



Note:
Monitoring well locations shown are approximate. Locations and elevations shall be provided upon collection of survey data by total station.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

REVISIONS

Description	Date	By

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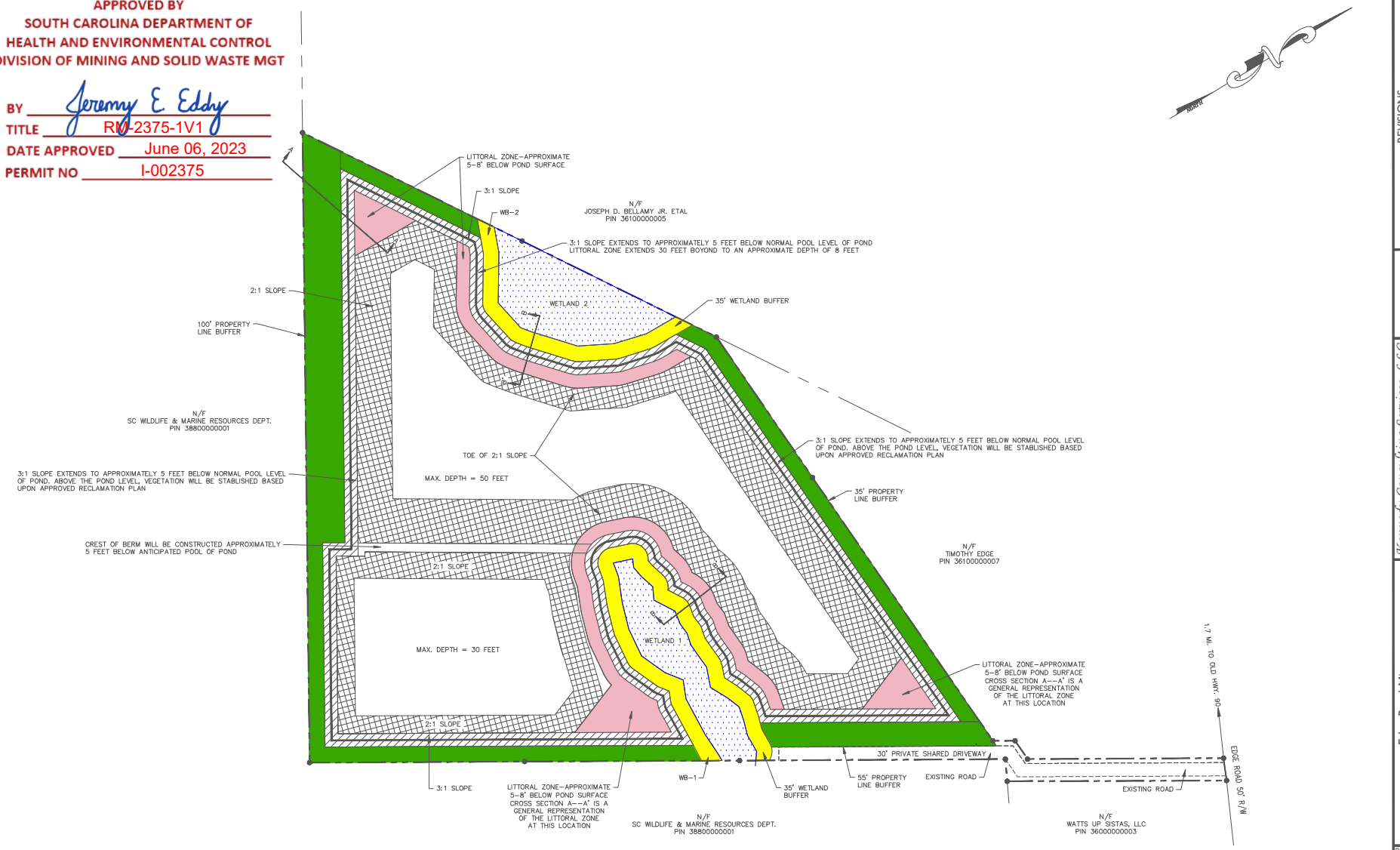
Edge Road Mine
Wetland Monitoring Well Locations
Prepared for
Soilutions, LLC
Dogwood Neck Township, Horry County, South Carolina

Project No.: KCS 21-147
DATE: 03-03-2023
Approved by: RCK
Drawn by: B.C.
Scale: 1"=100'

Sheet No.
1
of
1

APPROVED BY
SOUTH CAROLINA DEPARTMENT OF
HEALTH AND ENVIRONMENTAL CONTROL
DIVISION OF MINING AND SOLID WASTE MGT

BY Jeremy E Eddy
TITLE RM-2375-1V1
DATE APPROVED June 06, 2023
PERMIT NO I-002375



REVISIONS

	Description	Date	By
1	INCREASE PROPERTY LINE BUFFER ADJACENT TO LOB TO 100 FEET	3-1-23	BC
2	REDUCE DEPTH OF MINING IN SEGMENT 1 TO 30 FEET	3-1-23	BC

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Edge Road Mine
Reclamation Map
Prepared for
Soilutions, LLC
Dogwood Neck Township, Horry County, South Carolina

Project No.: KCS 21-147
DATE: 03-29-21
Approved by: RCK
Drawn by: B.C.
Scale: 1"=100'

Sheet No. 3 of 4