



April 25, 2017

Wayne Griffin
RESOLUTE FP US INC
5300 CURETON FERRY RD
CATAWBA, SC 29704

Re: Construction Permit No. 20098-IW
RESOLUTE FP US INC
CATAWBA OPERATIONS
EQ BASIN & SLUDGE DEWATERING IMPROVEMENTS
York County

Dear Mr. Griffin:

Enclosed is a SC Wastewater Construction Permit for the above referenced project. Construction is to be performed in accordance with this permit and supporting engineering report, plans, and specifications approved by this Office.

This system cannot be placed into operation until final approval is granted by the appropriate Bureau of Environmental Health Services (BEHS) Regional Office. Your Regional contact is Kristen L Jones, in the MIDLANDS REGION BEHS LANCASTER. This regional office should be notified when construction begins at the following address and phone number: 2475 DHEC RD, LANCASTER SC 29720, 803-285-7461.

Upon completion of any construction, a letter must be submitted to the BEHS Regional Office from the registered engineer certifying that the construction has been completed in accordance with the approved plans and specifications. An inspection may then be scheduled. The BEHS Regional Office will approve the system for operation upon successful completion of this project.

Sincerely,

A handwritten signature in black ink, appearing to read 'Byron M Amick', is written over a light blue horizontal line.

Byron M Amick
Industrial Wastewater Permitting Section
Water Facilities Permitting Division

cc via email: Kristen L Jones, MIDLANDS REGION BEHS LANCASTER
James M Kirlin, TRC Environmental Corporation

Wastewater Construction Permit

Bureau of Water



**PROJECT NAME: RESOLUTE FP US INC - CATAWBA OPERATIONS
EQ BASIN & SLUDGE DEWATERING IMPROVEMENTS**

COUNTY: YORK

PERMISSION IS HEREBY GRANTED TO: **RESOLUTE FP US INC**
 Catawba Operations
 5300 Cureton Ferry Rd
 Catawba SC 29704

for the construction of an upgrade to an existing wastewater treatment plant in accordance with the construction plans, specifications, engineering report and the Construction Permit Application signed by James M Kirlin, Registered Professional Engineer, S.C. Registration Number: 19829.

PROJECT DESCRIPTION: Modification of the existing Equalization (EQ) Basin and Sludge Dewatering system. See Page 2.

The effluent will be discharged to the Catawba River at a daily average rate of 25,000,000 (no new flow) gallons per day.

The effluent concentrations of those constituents the wastewater treatment system is designed to remove or reduce are contained in NPDES Permit #SC0001015.

CONDITIONS: See page 3.

In accepting this permit, the owner agrees to the admission of properly authorized persons at all reasonable hours for the purpose of sampling and inspection. This is a permit for construction only and does not constitute DHEC approval, temporary or otherwise, to place the system in operation. An Approval to Place in Operation is required and can be obtained following the completion of construction by contacting the LANCASTER EQC OFFICE at 803-285-7461. Additional permits may be required prior to construction (e.g., Stormwater).

PERMIT NUMBER:	20098-IW
ISSUANCE DATE:	April 25, 2017
EXPIRATION DATES:	April 25, 2019 (to begin construction) April 25, 2020 (to obtain Approval to Place in Operation)


Jeffrey P. deBessonnet, P.E., Director
Water Facilities Permitting Division

PROJECT DESCRIPTION

The modifications, will consist of the following:

- installation of approximately 500 LF of 12-inch HDPE gravity piping, to divert primary sludge to a new pipe discharge outlet on the EQ Basin
- sludge dredging equipment dredged material conveyance piping will be provided by a third-party contractor
- installation of Geotextile Tubes for sludge watering, while maintaining the option to use third-party mobile sludge dewatering units
- installation of a polymer feed system, with an 8,000-gallon holding/mix tank for the 1% polymer solution and a chemical feed pump capable of pumping up to 200 gpm
- installation of three finger dikes in the EQ Basin, to enable shore-based mechanical excavation
- replacement of two (2) existing aspirating aerators with a 75-HP and a 84-HP aspirator aerators.
- all associated piping and appurtenances

The existing process wastewater treatment system which consists of:

- Bar Screens
- a 275-foot diameter Primary Clarifier
- a 31 acre, 840 acre-foot (approx. 275 million gallons) Sludge Basin (No. 1 Sludge Basin)
- a 16.3 acre, 495 acre-foot (approx. 162 million gallons) Sludge Basin (No. 2 Sludge Basin)
- a 16.2 acre, 55 million gallon Equalization (EQ) Basin (aka No. 3 Sludge Basin)
- a 64 acre, 375 million gallon Aerated Stabilization Basin (ASB)
- a 132 acre, 1675 million gallon effluent Holding Basin (No. 1 Holding Basin)
- a 160 acre, 1400 million gallon effluent Holding Basin (No. 2 Holding Basin)
- a 80 foot long by 40 foot wide by 35 foot deep concrete Post Aeration Basin with three (3) aerators (75-HP surface aerator, **75-HP aspirator aerator** and **84-HP aspirator aerator**) and a chemical defoaming feed system
- a 0.5 million gallon Sludge Storage Tank
- **sludge removal and dewatering system**
- a 89 acre, 3280 acre-feet Sludge Basin (No. 4 Sludge Basin)
- a Color Removal System, which consists of four (4) 3,000 gallon Alum/Cationic Polymer storage tanks, one 8,000 gallon Acid storage tank, one 3,000 gallon Polymer mix tank, one 3,000 gallon Polymer Day tank, one 20,000 gallon coagulant mix tank, one 20,000 gallon Flocculent mix tank, one circular (70 ft. Dia.) Dissolved air flotation clarifier, and one 12,000 gallon sludge tank
- a lined 84 acre 2-Cell Temporary Wastewater Storage Basin (No. 5 Sludge Basin; aka Dove Pond)
- an effluent diffuser system (which consists of three (3) 100 foot sections of HDPE piping with each sections diameters being 48 inches, 36 inches, and 30 inches, fifty-one (51) 8-inch diffuser check valves as nozzles spaced equally along the diffuser)
- all associated piping and appurtenances

* Items in bold are new to the overall system

PROJECT DESCRIPTION

The treated sanitary wastewater enters the process wastewater system at the primary clarifier overflow structure. The existing sanitary wastewater treatment system which consists of:

- two (2) in-ground in-series digester/settling tanks
- a chlorine contact chamber located at the end of the second tank of the series
- mechanical agitator
- a 1150-gallon hypochlorite solution storage poly-tank with secondary containment
- a metering chemical feed pumps
- an 8-inch Palmer-Bowlus Flume flow measuring device
- all associated pumps, piping and appurtenances

CONDITIONS

1. This Permit supersedes the following Permits to Construct: 136 issued March 6, 1957, 287 issued June 20, 1960, 1138 issued November 8, 1967, 1660 issued August 21, 1970, 4519 issued March 29, 1977, 4672 issued June 14, 1977, 5864 issued December 1, 1978, 12670 issued October 20, 1986, 15045 issued March 8, 1989, 16745 issued October 24, 1990, 17706-IW issued July 18, 1994, 18010-IW issued July 5, 1996, 18209-IW issued October 22, 1997, 18220-IW issued December 8, 1997, 18395-IW issued June 1, 1999, 18449-IW issued November 8, 1999, 18535-IW issued August 21, 2000, 19109-IW issued April 5, 2007, 19148-IW issued September 19, 2007 and 19349-IW issued January 29, 2010.
2. All waste oil and solid and hazardous waste shall be properly disposed of in accordance with the rules and regulations of the Bureau of Land and Waste Management of SCDHEC.
3. Resolute has used mobile sludge dewatering systems provided by a third-party contractor in the past and may continue to use third-party owned dewatering equipment. The owner of the mobile dewatering equipment must have a DHEC issued Wastewater Construction Permit for the mobile equipment, and must receive a written approval from the Bureau of Water to use the equipment at the site.
4. In accordance with Regulation 61-67, Standards for Wastewater Facility Construction, all wastewater treatment facilities shall be closed out within one hundred eighty (180) days when the facility is closed or the effluent disposal permit is inactivated, terminated or revoked, unless otherwise determined by the Department. Closure of wastewater treatment facilities necessitates the submittal of a closure plan and approval of the plan by the Department in accordance with R.61-82 prior to closure of any wastewater treatment unit(s).



Equalization Basin and Sludge Dewatering Improvements

Wastewater Construction Permit Application Package

Resolute FP US Inc. – Catawba Operations

March 2017

S.C. DEPT. OF HEALTH & ENVIRONMENTAL CONTROL
BUREAU OF WATER

WASTEWATER FACILITIES
APPROVED FOR CONSTRUCTION

(SUBJECT TO THE TERMS AND CONDITIONS OF THE PERMIT)

ALL WRITTEN CORRECTIONS TO THE PERMIT MUST
BE SUBMITTED TO THE BUREAU OF WATER AFTER COMPLETION OF CONSTRUCTION

PERMIT NO. 20098-14 DATE 4-25-12

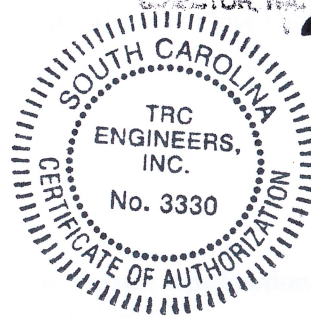
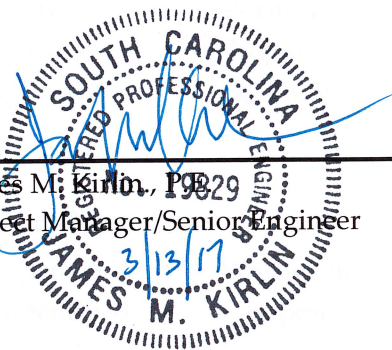
DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL

RECEIVED

MAR 14 2017

WATER FACILITIES
PERMITTING DIVISION

James M. Kirlin, P.E. 19829
Project Manager/Senior Engineer



TRC Environmental Corporation | Resolute FP US Inc.
Equalization Basin and Sludge Dewatering Improvements
Wastewater Construction Permit Application Package

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Section 1

Introduction

1.1 Background

Resolute FP Us Inc. (Resolute) operates a pulp and paper manufacturing facility in Catawba, York County, South Carolina (see Figure 1). Wastewater generated from the facility is treated in an onsite wastewater treatment system and discharged to the Catawba River in accordance with the National Pollutant Discharge Elimination System (NPDES) Permit Number SC0001015. The treatment systems consists of a primary clarifier, an Equalization Basin (EQ Basin), an Aerated Stabilization Basin (ASB), two treated effluent holding ponds, a Post-Aeration Basin (PAB), an effluent diffuser, sludge dewatering operations, and sludge disposal basins. The flow rate of wastewater generated at the mill averages 25 to 30 million gallons per day (MGD).

The mill has experienced operating challenges with the primary sludge dewatering operations performed since the early 2000s. These challenges have resulted in reduced sludge dewatering efficiencies, which have contributed to high solids remaining in the sludge press filtrate streams, high dewatering aid chemistry costs, and reduced sludge throughput.

In an effort to improve sludge dewatering operations, Resolute initiated a pilot study in April 2016 to evaluate sending clarifier underflow sludge to the EQ Basin. The goal of the study was to evaluate the impact on sludge dewatering from using the EQ Basin to thicken and equalize primary sludge. The pilot study also evaluated utilizing a hydraulic dredge to convey the thickened sludge to four mobile belt filter presses. The dredge and belt presses were owned and operated by Bio-Nomic Services, Inc. for Resolute. This pilot study was approved by the South Carolina Department of Health and Environmental Control (SC DHEC) in a Letter of Approval dated February 12, 2016. SC DHEC extended the approval for the pilot study until March 31, 2017 requiring Resolute to obtain a construction permit if Resolute intended to implement the operations on a permanent basis.

The pilot study was successful in demonstrating the viability of utilizing the EQ Basin to equalize and thicken the clarifier underflow stream improving the efficiency, cost effectiveness, and safety of the sludge dewatering operations. Therefore, Resolute intends to implement specific aspects of the pilot study full time at the mill as a series of improvements to the site wastewater treatment system.

1.2 Construction Permit Application Purpose

This construction permit application submittal has been prepared to notify SC DHEC of the following improvement/modification projects listed below and described in detail in this engineering report.

- Implement improvements related to the EQ Basin pilot study approved by SC DHEC on February 12, 2016, specifically;
 - Piping to convey clarifier underflow sludge to the EQ Basin on a permanent basis to thicken and equalize sludge quality, but retain the ability to convey clarifier underflow sludge directly to sludge dewatering equipment at the No. 4 Sludge Basin, as necessary
 - Use of a hydraulic dredge to remove settled solids from the clarifier
 - Use of mobile presses to dewater routine dredged material from the EQ Basin
- Use of geotextile tubes to dewater routinely dredged material from the EQ Basin and primary sludge pumped directly from the clarifier as an alternative to using belt presses to allow the mill flexibility in managing this material,
- Installation of a series of finger dikes in the EQ Basin to allow access for land-based equipment to perform maintenance dredging of existing bark and heavier solids, and
- Replacement of submerged, supplemental aerators in the Post-Aerator Basin that have become inoperable.

1.3 Construction Permit Application Contents

This construction application package contains the following components,

1. Engineering Report prepared in accordance with S.C. Regulation 61-67.200,
2. Wastewater System Construction Application (Appendix A),
3. Site Location Map (Figure 1),
4. Wastewater System Improvements Process Flow Diagram (Figure 2),
5. Project Site Layout Map (Figure 3),
6. EQ Basin Finger Dike Sketch (Figure 4)
7. Equipment Information and Specifications (Appendix B),
8. Engineering Calculations (Appendix C), and
9. Check for \$550 for the construction application fee for a modification (no expansion) to a wastewater treatment system for facilities that discharge greater than 1 MGD (attached).

Section 2

Project Description

2.1 Existing Treatment and Primary Solids Management

Resolute generates 25 to 30 MGD of wastewater as part of mill operations. The majority of the heavier solids in the wastewater are removed in the clarifier as underflow. These solids include including grit, lime, fiber, wood ash, and bark. Historically, the clarifier underflow was pumped to the No. 4 Sludge Basin directly for settling. Decant from the No. 4 Sludge Basin flowed by gravity to the ASB inlet ditch. Overflow from the clarifier has historically flowed by gravity to the EQ Basin for equalization and mixing with process streams that are not treated in the clarifier, e.g., the bleach plant effluent and treated sanitary wastewater.

In the early 2000s, the mill began pumping the clarifier underflow to onsite sludge dewatering operations managed by outside contractors. The contract dewatering operations generated a sludge cake that was then placed in the No. 4 Sludge Pond for disposal. Filtrate from the dewatering operations flowed by gravity to the ASB inlet ditch.

2.2 EQ Basin Pilot Study Conclusions

Resolute initiated a SC DHEC-approved pilot study in April 2016 to evaluate the use of the EQ Basin to equalize and thicken primary sludge. The study involved pumping the clarifier underflow to the EQ Basin and diverting clarifier overflow wastewater around the EQ Basin.

This allowed the EQ Basin to serve to equalize the sludge stream that at times could be variable in consistency and constituents. The additional settling time provided by the EQ Basin allowed the settled sludge to thicken to improve the ability of the filter presses to dewater the sludge. A hydraulic dredge was used to remove the settled solids from the EQ Basin and pump the sludge to mobile filter presses located adjacent to the location of the former permanent sludge dewatering operation at the No. 4 Sludge Basin. The dewatered sludge cake was placed in the sludge basin.

Conveying clarifier underflow sludge to the EQ basin has proven to be a useful method for thickening and equalizing the sludge prior to dewatering. Attenuating sludge inconsistencies has resulted in a more homogenized sludge quality, reduced the need for dewatering aid chemicals, and provided the means to potentially hold sludge allowing dewatering operations to only be performed during daylight hours which improves worker safety.

The use of a dredge to remove the settled solids from the EQ Basin and convey them to the mobile belt filter presses has also proved successful. Based on the success of the pilot study,

Resolute intends to implement the ability to convey clarifier underflow to the EQ Basin and dredging the settled material to mobile filter presses or geotextile tubes on a permanent basis. With either system, dewatered sludge will be placed in the No. 4 Sludge Basin.

While the pilot study was successful at demonstrating improved primary solids dewatering, there were two concerns encountered during the course of the project. Very old, thick bark solids were discovered in the western end of the EQ Basin that appeared to have been present in the basin prior to the study. As an option to enable access to remove these solids through mechanical excavation techniques, Resolute is considering installing finger dikes in the EQ Basin to allow access for shore-based excavators to remove the aged, bark-containing sludge for placement in the No. 4 Sludge Pond.

2.3 Clarifier Underflow Sludge Conveyance Piping

Resolute utilized 12-inch High Density Polyethylene (HDPE) piping to tie into existing sludge conveyance piping during the pilot study to divert primary sludge to the EQ Basin (see Figure 3). Resolute intends to use this piping on a permanent basis, but move the pipe discharge outlet to the location shown on Figure 3. The flowrate of clarifier underflow is approximately 3 MGD. At this flowrate pipe flow velocity is 5.9 feet per second (fps), which meets the minimum recommended velocity of 2 fps to minimize solids settling in piping. Supporting engineering calculations are provided in Appendix C. The path to the EQ Basin (~ 500 ft) is much shorter than the path to the former sludge dewatering operations (~ 2,800 ft); therefore, upgrades to the existing clarifier sludge pumps will not be necessary.

Resolute intends to retain the existing piping and capability of conveying clarifier underflow sludge directly from the existing underflow pumps to the sludge dewatering operations at No. 4 Sludge Basin.

2.4 EQ Basin Dredge Operations

Resolute's contractor utilized a hydraulic dredge with a horizontal cutter/suction head in the EQ Basin during the pilot study. The dredge used a variable speed pump that had the capacity to convey dredged material up to 2,000 gallons per minute (gpm) to the mobile presses, though the flowrate utilized during the study was much less. Resolute intends to continue contract dredging in the EQ basin to remove settled material as needed. The type and size of dredge may change as conditions, the dewatering method, and the selected contractor's equipment warrant. While the dredge itself may not need to be permitted; the information on the dredge is being provided as supporting information for the overall project.

The piping for the dredged material conveyance will continue to be portable 8 and 12-inch HDPE pipe provided by the dredging contractor.

2.5 Sludge Dewatering Modifications

As described above, since the early 2000's, Resolute has utilized contracted filter press systems to dewater primary solids that were pumped directly from the clarifier. Prior to the pilot study the sludge dewatering operations involved a permanently mounted dewatering system. Mobile presses were utilized during the pilot study, and the permanent presses were removed from the site by the outgoing contractor. Resolute intends to continue utilizing mobile belt presses as needed and understands that contractor/owners of mobile presses would need SC DHEC approval specific to each mobilization.

While retaining the option to utilize mobile presses, Resolute also intends to implement the use of geotextile tubes for sludge dewatering. Geotextile tubes are large, disposable "socks" made of synthetic filter fabric. Sludge material dredged from the EQ Basin, or directly from existing clarifier underflow pumps, will be pumped into these geotextile tubes. The filter fabric media will retain solids within the tube and allow water filtrate to permeate out of the tube. The tubes would be placed on graded pads in the No. 4 Sludge Basin on top of existing dewatering sludge (see Figure 3) utilizing a liner material to contain filtrate from the tubes.

The tubes themselves are fabricated by a geotextile fabric manufactured and shipped to the site as needed in rolls. An example manufacturer's information sheet is provided in Appendix B. Typically the tubes are provided in circumferences of 30 to 100 feet with lengths up to 300 feet, but can be fabricated to custom dimensions to suit project needs.

Portable HDPE dredge piping will be used to convey sludge from the EQ basin dredge or the clarifier underflow pumps to the geotextile tubes. Dewatering aid polymer chemical will be injected into the HDPE conveyance line from a chemical make-down unit. The polymer chemical metering pump is capable of pumping up to 200 gallons per minute of the 1 percent polymer solution. The flow rate will depend on dredging rate and solids consistency in the dredged material. Polymer will be delivered to the site by tanker trucks and mixed to 1 percent in an 8,000-gallon poly tank. The polymer feed pump will pull from this tank.

Information on the chemical make-down unit and a Safety Data Sheet for the polymer is provided in Appendix B. The anticipated flowrate of dredged material pumped to the geotextile tubes will be 1,500 to 3,500 gpm depending on the dredge used and the size and quantity of geotextile tubes used.

Once filled with dewatered sludge, the geotextile tubes will remain in the No. 4 Sludge Basin.

Filtrate (also referred to as "weep water") from the tubes will be collected in perimeter ditches around the tube pads and routed by gravity through portable HDPE pipe to the basin perimeter ditches that drain to the inlet ditch to the ASB.

Resolute is currently utilizing geotextile tubes as part of a maintenance dredging project from the ASB (see Figure 3) that is separate from the EQ basin project. The tubes utilized for this project are staged within the No. 4 Sludge Basin. The proposed primary sludge dredging and dewatering project would be operated very similar to the ASB maintenance dredging project.

2.6 EQ Basin Finger Dikes

The pilot study involved pumping clarifier underflow sludge to the EQ Basin. At the same time clarifier overflow was also continuing to flow by gravity into the basin until the bypass line for the clarifier overflow around the EQ Basin could be re-established. Resolute discovered during the pilot study that the existing bypass line was damaged by collapses in the line and could not be reused. A mobile pumping system was brought in to aid in the bypassing until a new gravity line could be installed.

During the pilot study Resolute's dredging contractor encountered bark material in the EQ Basin that had settled out from wastewater operations over time. This material, which was determined to be present in the basin prior to the pilot study, was encountered in the western end of the EQ basin near the wastewater inlet location. The pilot study belt filter presses had difficulty processing the sludge with bark in it so dredging this specific area in the basin was abandoned in favor of areas in the center and in the eastern end of the basin.

To enable shore-based mechanical excavation equipment to remove the bark solids, Resolute is considering installing a series of finger dikes into the basin as shown on Figure 3.

If installed, the finger dikes will be installed across the basin (see Figures 3 and 4). The finger dikes would be constructed by bridging the sludge with a synthetic biaxial geogrid as a base, then placing wood chips on top the geogrid, and then wood ash as the top of the dike. A sketch showing a dike section is provided on Figure 4.

The material excavated from the EQ Basin by excavator will be placed in the No. 4 Sludge Basin.

2.7 Post-Aeration Submerged Aerator Replacement

As part of the current wastewater treatment system, Resolute operates a PAB to meet the NPDES permit minimum dissolved oxygen limit of 1 milligram per liter. The PAB was originally permitted in the late 1990's. The construction permit package for the PAB included two surface floating aerators; however, it is believed that during testing during startup of the PAB that one of the aerators was replaced with two aspirating aerators due to foaming concerns. Both of the aspirating aerators have become inoperable. Resolute recently replaced those aerators with aerators of similar design, one with a 75-HP motor and one with an 84-HP motor. The

manufacturer's equipment sheets are provided in Appendix B and calculations supporting the aerator selection is provided in Appendix C.

2.8 Impact of Proposed Modifications on Treatment Performance

Pumping the settled sludge stream from the clarifier to the EQ Basin during the pilot study has not impacted the facility's compliance with the site's NPDES permit. The use of the EQ Basin to equalize and thicken the sludge has improved sludge dewatering operations, and Resolute intends to make this a permanent improvement.

Resolute is currently replacing the existing EQ Basin bypass line that had become inoperable and is considering installing finger dikes in the EQ Basin to allow land-based excavators to reach the older bark solids in the western end of the basin.

The flexibility to dewater sludge through mobile presses and geotextile tubes likewise will not impact wastewater treatment operations and compliance with the mill's NPDES permit. Filtrate from the dewatering operations, whether from filter presses or geotextile tubes will still drain to the ASB inlet ditch as has been the practice historically at the mill. The improvements in primary sludge management and dewatering is intended to reduce the concentration of TSS in the ASB influent stream.

The replacement of the two aspirating aerators with aerators of similar design will support the dissolved oxygen addition role of the PAB. The existing, floating aerator in the PAB is sufficient for normal flow rates, and the two aspirating aerators enables Resolute to meet effluent minimum dissolved oxygen requirements at higher discharge flow rates.

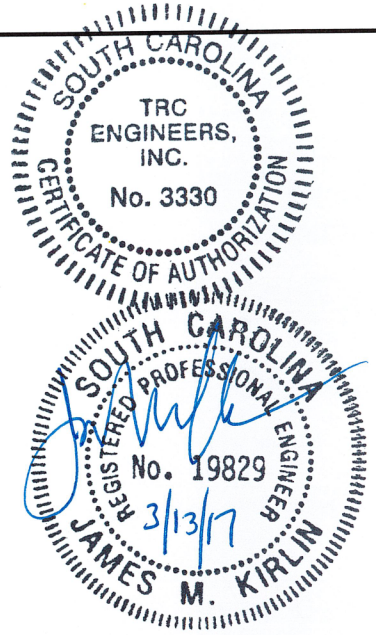
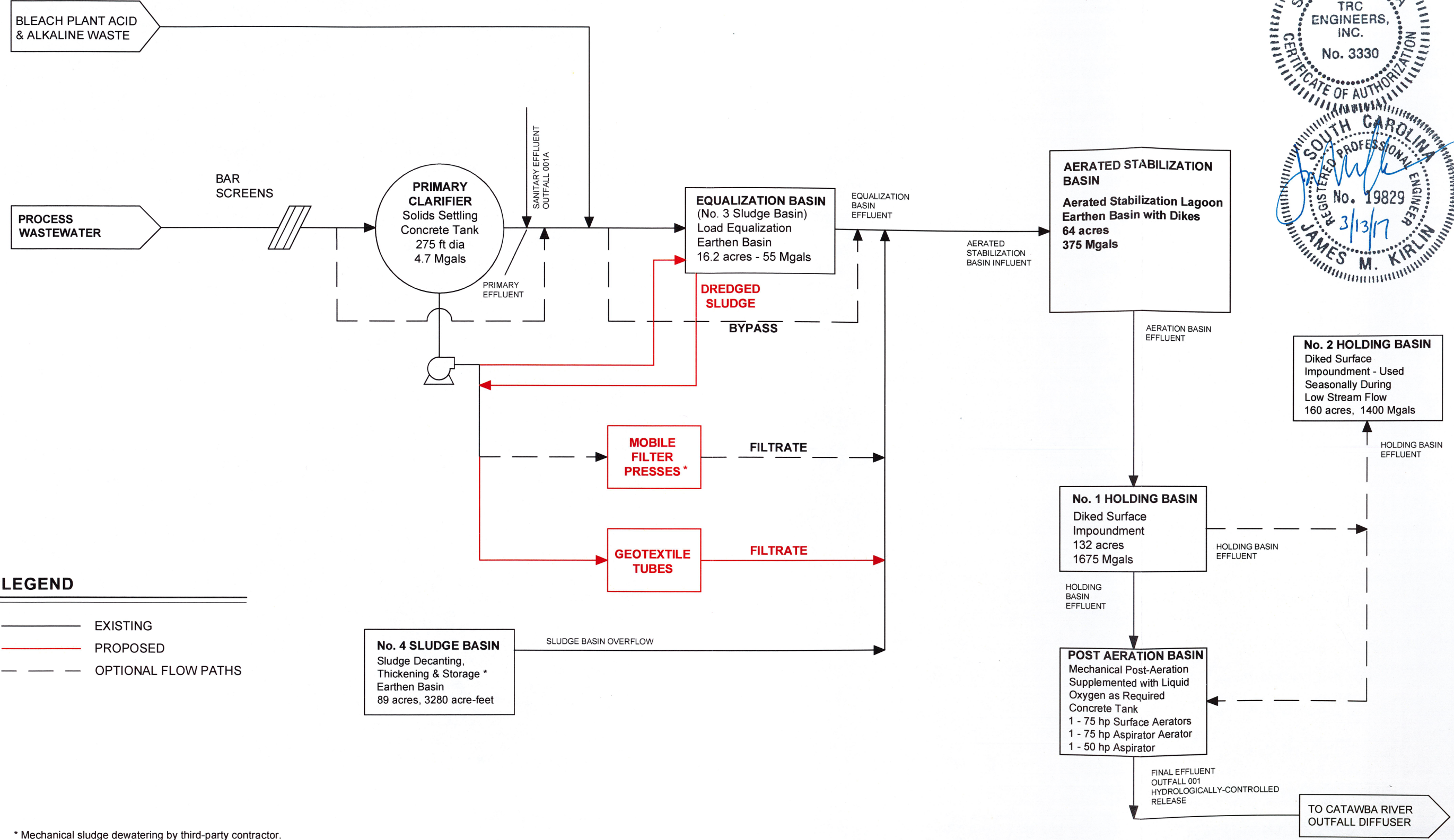
Section 3

Project Summary

Resolute performed a pilot study testing the effectiveness of utilizing the EQ Basin to thicken and homogenize sludge from the primary clarifier on improving sludge dewatering operations. The study was successful in demonstrating that equalizing and thickening the sludge improved the efficiency of sludge dewatering and reduced dewatering aid chemical usage. As a result of that study, and along with other modifications, Resolute requests approval to implement the following improvements at the facility:

1. Leave the HDPE primary sludge conveyance piping from the primary clarifier pumps to the EQ Basin in place permanently,
2. Use the EQ Basin to thicken and equalize primary clarifier sludge,
3. Use a portable dredge as needed to remove solids from the EQ Basin
4. Use mobile filter presses as needed to dewatering sludge from the EQ Basin or directly from the primary clarifier sludge pumps (with the understanding that a letter of approval from SC DHEC will be needed for each mobile filter press mobilization),
5. Use geotextile tubes placed in No. 4 Sludge Basin to dewatering sludge from the EQ Basin, or direct from the primary clarifier sludge pumps with a chemical dewatering aid make-down and injection system,
6. Install finger dikes in the EQ basin as needed to remove aged, bark solids, and
7. Replace two inoperable aspirating aerators in the PAB with two similar aspirating aerators.

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SOURCE:

1. DRAWING REVISED FROM DRAWING BY ARCADIS GERAGHTY & MILLER (3/21/00) AND EARTH TECH (10/06).



PROJECT:

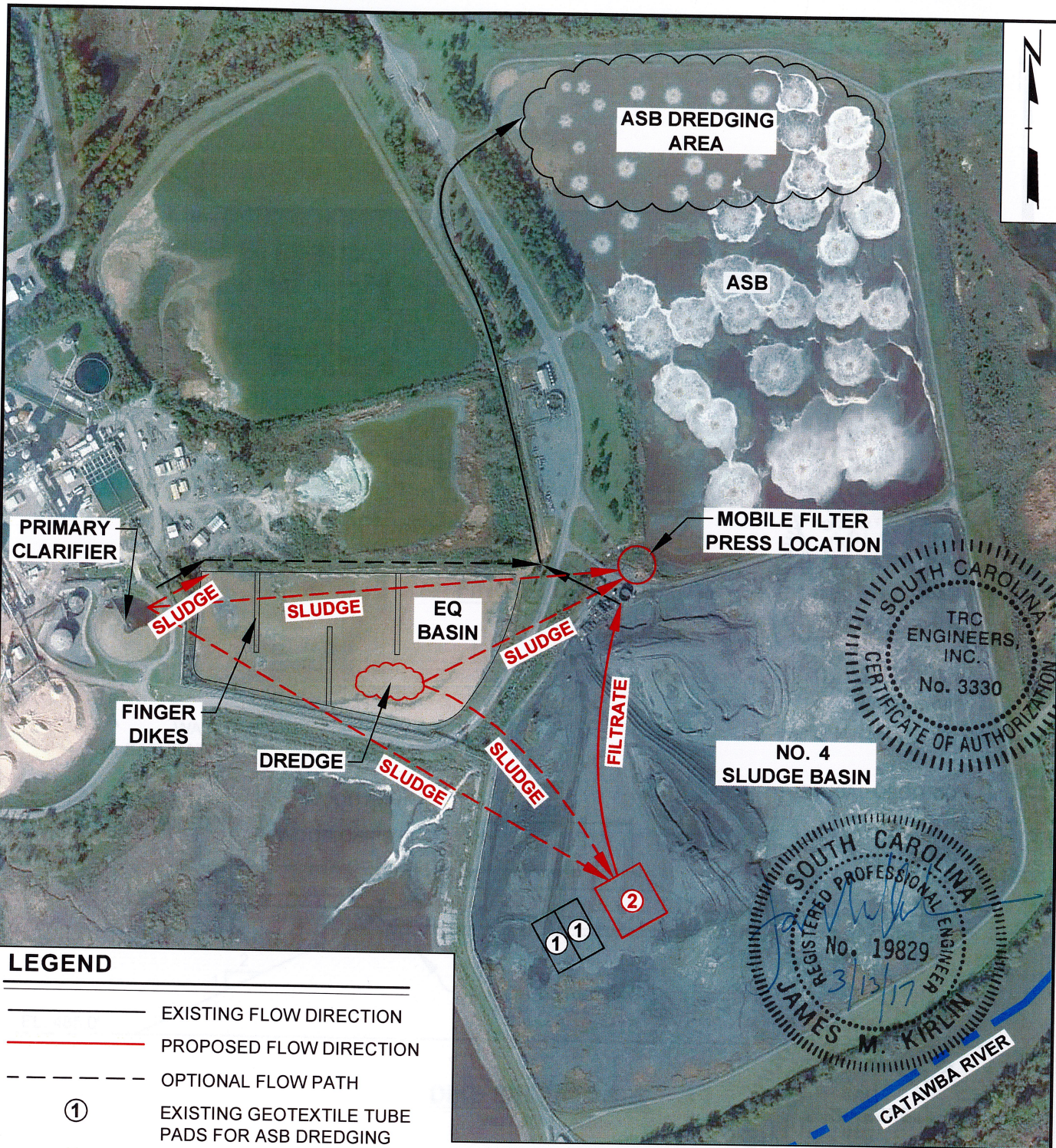
**RESOLUTE FP US INC.
CATAWBA, SOUTH CAROLINA**

TITLE:

**PROPOSED WASTEWATER TREATMENT SYSTEM
IMPROVEMENTS**

DRAWN BY:	C. NEWELL
CHECKED BY:	J. KIRLIN
APPROVED BY:	J. KIRLIN
DATE:	FEBRUARY 2017
PROJ. NO.:	27139.0000.0000
FILE:	271390-PID-FIGURE_2.dwg

FIGURE 2



SOURCE:
OCTOBER 2014 AERIAL OBTAINED FROM GOOGLE MAPS AT <https://www.google.com/maps/>.

0 600 1200
SCALE IN FEET



30 Patewood Drive
Patewood Plaza One, Suite 300
Greenville, SC 29615
Phone: 864.281.0030

PROJECT:

**RESOLUTE FP US INC.
CATAWBA, SOUTH CAROLINA**

TITLE:

PROJECT SITE LAYOUT MAP

DRAWN BY: C. NEWELL

CHECKED BY: J. KIRLIN

APPROVED BY: J. KIRLIN

DATE: FEBRUARY 2017

PROJ. NO.: 271390.0000.0000

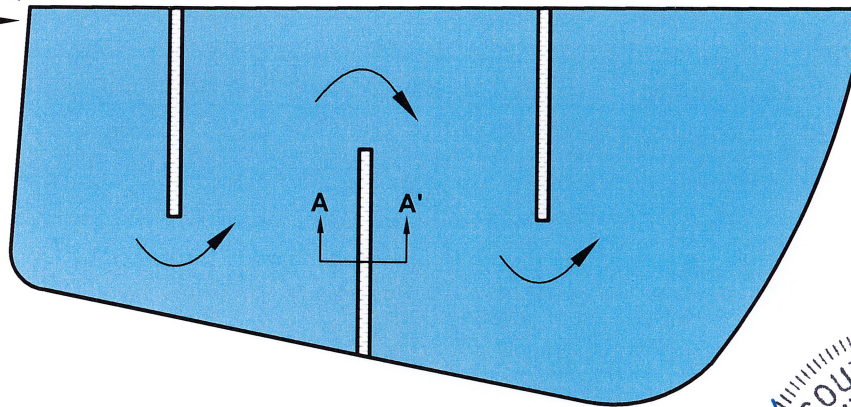
FILE: 271390-SITE.dwg

FIGURE 3

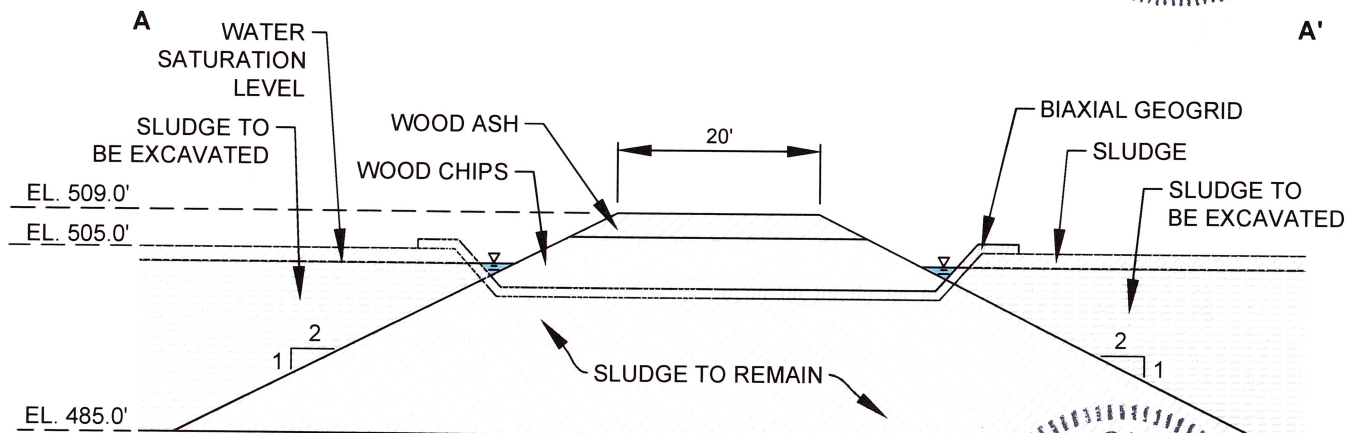
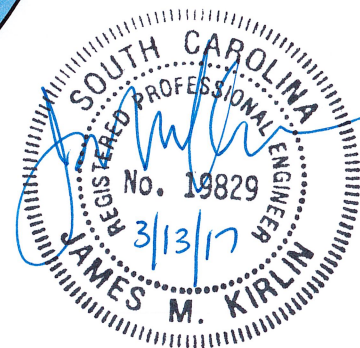
EXISTING
WASTEWATER
INLET

PROPOSED
SLUDGE
INLET

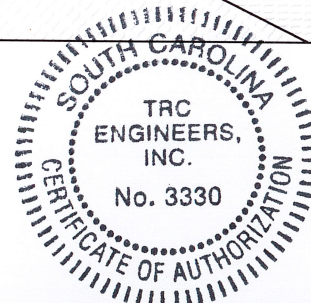
EXISTING
OUTLET



EQ BASIN PLAN VIEW
FINGER DIKES
NOT TO SCALE



DIKE SECTION A-A'
NOT TO SCALE



30 Patewood Drive
Patewood Plaza One, Suite 300
Greenville, SC 29615
Phone: 864.281.0030

PROJECT:

RESOLUTE FP US INC.
CATAWBA, SOUTH CAROLINA

TITLE:

EQ BASIN FINGER DIKE SKETCH

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FIGURE 4