



US Army Corps
Of Engineers
Wilmington District

PUBLIC NOTICE

Issue Date: November 8, 2006
Comment Deadline: December 8, 2006
Corps Action ID #: SAW-2003-1188-065

The Wilmington District, Corps of Engineers (Corps) has received an application from the New Hanover County Engineering Department seeking Department of the Army authorization to permanently impact 3.045 acres of Section 404 jurisdictional Waters of the United States (including 1.937 acres of wetlands) and to temporarily impact 0.55 acres of Section 404 wetlands and 0.064 acres of Section 10/Section 404 coastal wetlands to facilitate the construction of a new Water Treatment Plant, associated well fields and outfall (discharge) pipe. The proposed jurisdictional impacts are to Waters of the United States, including wetlands, that are adjacent to or hydrologically connected to unnamed tributaries to Smith Creek, a tributary to the Northeast Cape Fear River, a Navigable Water of the United States; Pages Creek, a tributary to the Atlantic Intracoastal Waterway (ICW), also a Navigable Water of the United States; and the ICW itself. The proposed project is located throughout the northeastern section of New Hanover County, including the Greenview Ranches area, Ogden Park, Old Oak, Edgewater Club and Porters Neck Roads, and Market Street, northeast of the City of Wilmington in New Hanover County, North Carolina.

Specific plans and location information are described below and shown on the attached plans. This Public Notice and all attached plans are also available on the Wilmington District Web Site at www.saw.usace.army.mil/wetlands

Applicant: New Hanover County Engineering Department
Attn: Mr. Gregory Thompson
230 Market Place Drive, Suite 16
Wilmington, North Carolina 28403

Agent (if applicable): Land Management Group, Inc.
Attn: Ms. Kim Williams
Post Office Box 2522
Wilmington, North Carolina 28402

Authority

The Corps will evaluate this application and decide whether to issue, conditionally issue, or deny the proposed work pursuant to applicable procedures of Section 404 of the Clean Water Act (33 USC 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403).

Location

The project area is located in the northern part of New Hanover County, North Carolina. The 88 square mile service area encompasses the northern half of New Hanover County with the exception of the US Highway 421 corridor between the Cape Fear and Northeast Cape Fear Rivers. The project area is bounded by Pender County to the north, the City of Wilmington to the south, the Northeast Cape Fear River to the west, and the Atlantic Ocean to the east. The project is comprised of multiple components that include a proposed Water Treatment Plant, fifteen well fields, utility line corridor, and outfall.

Water Treatment Plant: The proposed project area for the Water Treatment Plant is an approximately 45 acre tract located at 7601 Old Oak Road at the northern end of the Westbay Estates residential development. Jurisdictional waters on the tract include 6 wetland pockets and linear Waters of the United States. Site coordinates are 34.2876N, -77.8186W.

Well Field Sites: Of the 15 well sites, two are located within the Water Treatment Plant (WTP) tract. Site coordinates are 34.2879N, -77.8166W and 34.2876N, -77.8206W. One is located along the east side of Old Oak Road (7526 Old Oak Road), immediately across from Hixon Place, which contains a linear Waters of the U.S. Site coordinates are 34.2857N, -77.8176W. Eight wells are located within the Greenview Ranches area, north and northeast of the WTP site. All but two of these eight sites consist entirely of jurisdictional wetlands. Site coordinates are 34.3054N, -77.8024W; 34.2997N, -8019W; 34.3022N, -77.8078W; 34.3025N, -77.8131W; 34.2997N, -77.8132W; 34.2962N, -77.8130W; 34.2905N, -77.8181N; 34.2953N, -77-8181W. The remaining four well sites are located within Ogden Park, west of US Highway 17 (Market Street) and also contain jurisdictional wetlands. Site coordinates are 34.2733N, -77.8353W; 34.2692N, -77.8313W; 34.2712N, -77.8269W; 34.2752N, -77.8300W.

Utility Line Corridor: The utility line corridor, also referred to as the Route of Concentrate Main, is would begin at the proposed WTP, extend along the rights-of-way of US Highway 17 (Market Street), Porters Neck Road, Edgewater Club Road, Final Landing Lane, and Bridge Road. This corridor is predominantly upland areas; however, the line would cross three jurisdictional areas (one unnamed tributary to Pages Creek, a tributary to the Atlantic Intracoastal Waterway, a navigable Water of the United States and two wetland areas adjacent to unnamed tributaries to Pages Creek). Site coordinates are 34.2855N, -77.7727W; 34.2941N, -77.7808W, and 34.2977N, -77.7857W respectively.

Outfall Location: The proposed outfall site is located on the south side of the Figure Eight Bridge, off Bridge Road, adjacent to and within the Atlantic Intracoastal Waterway. Site coordinates are 34.2751N, -77.7616W.

Existing Site Conditions

Water Treatment Plant: This site is predominantly undeveloped land. Historically, this property most likely supported a wet pine flat (wetland) community type; however, in the late 1990's, Tulloch ditches, those that could be constructed without Department of Army authorization, were excavated throughout the property and subsequently removed the hydrology of the most of the wetlands. Only a few jurisdictional wetland pockets remain on the tract and the existing ditches

have been classified as Waters of the United States. This area is within the headwaters of Smith Creek, a tributary to the Northeast Cape Fear River, and ultimately the Cape Fear River, all Navigable Waters of the United States.

Vegetation within the site has been mowed recently and consists mainly of fetterbush (*Lyonicia lucida*), sweet pepperbush (*Clethra alnifolia*), and cinnamon fern (*Osmundia cinnamonea*) in the herbaceous layer, with a few scattered loblolly pine (*Pinus taeda*) trees in the canopy.

According to the United States Department of Agriculture Soil Survey of New Hanover County (April 1977), the site is underlain by Johnston loam, Murville fine sand, and Seagate fine sand soil types. These soils have all been classified as hydric soils for New Hanover County.

A dirt path, approximately 20 feet wide, runs east-west across the site. Two water wells have already been installed within the tract.

The property is located within the jurisdiction of New Hanover County and is zoned for single-family residential (R-15) and is classified as a Wetland Resource Protection Area by the New Hanover County Land Use Plan.

Land use to the west, south and east is currently residential and consists of the Westbay Estates, Courtney Pines and Greenview Ranches residential communities. To the north is the undeveloped, forested section of the Greenview Ranches area.

Well Field Sites: Two well sites are located within the Water Treatment Plant site; see above for details. One is located on a 1.06 acre parcel just south of the Water Treatment Plant site, within the Westbay Estates subdivision. Vegetation of this site is routinely mowed. Soils are mapped as Seagate fine sand. The only jurisdictional feature on the site is a Tulloch ditch along the road frontage.

The next eight well sites are located throughout the undeveloped, forested Greenview Ranches area to the north and northeast of the Water Treatment Plant site. These tracts are each approximately five acres in size. Soil roads, most with limited or no maintenance, were constructed many years ago to provide some access to the area. Plantation Road runs from Murrayville Road to the west and terminates approximate 0.3 miles west of US Highway 17 (Market Street). This soil road is approximately 22 feet wide and has parallel drainage ditches on both road shoulders for the majority of the road length. Several smaller soil roads run north-south through the area; however, these are predominantly not maintained and not passable with most vehicular traffic. Ditches also parallel most of these roads. The vegetation of these parcels consists of pond pine (*Pinus serotina*), gallberry (*Ilex glabra*), loblolly bay (*Gordonia lasianthus*), titi (*Cyrilla racemiflora*), and fetterbush (*Lyonia lucida*). Soils in this area are mapped as Murville and Leon fine sands. Most of these parcels consist entirely of palustrine wetlands; however, two of the eight tracts contain some upland areas. The surrounding land use is residential to the south and east, scattered agricultural (horse farms), and undeveloped, forested to the west and north.

The remaining four well sites are located within Ogden Park, a New Hanover County public recreational facility. This total parcel is 160 acres, located west of Market Street and north of Gordon Road. In 1993, the County obtained a Nationwide Permit 26 for impacts to 5.71 acres of wetlands for the purpose of constructing the park facilities and infrastructure. The park facilities consist of baseball and soccer fields, tennis courts, playgrounds, rest rooms, picnic areas, trails, pet exercise area, stormwater ponds, roads, and parking. The tract is bisected by a Carolina Power & Light (CP&L) Company utility line easement, running from the northwest to southeast. The remaining wetlands are forested, except those areas within the powerline easement which are routinely mowed for access and maintenance. Vegetation of the wetlands consists of pond pine (*Pinus serotina*), loblolly pine (*Pinus taeda*), loblolly bay (*Gordonia lasianthus*), gallberry (*Ilex glabra*), and wax myrtle (*Myrica cerifera*). The upland vegetation consists of loblolly pine (*Pinus taeda*), gallberry (*Ilex glabra*), sweet gum (*Liquidambar styraciflua*), and red bay (*Persea borbonia*). These soils of the wetlands are mapped as Murville fine sand, while the uplands are mapped as Leon fine sand. The surrounding land use is residential.

All well sites are located within areas that are classified as a Wetland Resource Protection Area by the New Hanover County Land Use Plan.

Utility Line Corridor/Route of Concentrate Main: This proposed route is within the rights-of-way of Market Street, Porters Neck Road, Edgewater Club Road and Bridge Road, which are periodically mowed, maintained areas. The route would only cross three jurisdictional areas. Mapped soils vary along the corridor as well as portions contain existing road fill. The surrounding land use is predominantly commercial along Market Street and residential from Porters Neck Road to the Figure Eight Bridge.

Outfall Location: The project proposes to discharge the concentrate into the Atlantic Intracoastal Waterway (ICW), at the mainside of the Waterway, immediately south of the Figure Eight Bridge. The ICW in this area is classified as SA, which refers to waters that are suitable for commercial shellfishing and other tidal saltwater uses. This area of the ICW has also received a supplemental classification of Outstanding Resource Waters (ORW), which are unique or special waters of exceptional state or national recreational or ecological significance which require special protection to maintain existing uses. The average tidal range in the ICW near the Figure Eight Bridge is 3.58 feet. The mean depth at the proposed discharge location is approximately 12 at low tide. Freshwater and coastal wetlands exist adjacent to the ICW and an Estuarine Area of Concern (AEC) is located 575 feet landward of mean high water. Wetland vegetation consists of Atlantic white cedar (*Chamaecyparis thyoides*), grounzel (*Baccharis halimifolia*), big-leaf sumpweed (*Iva frutescens*), wax myrtle (*Myrica cerifera*), saltmeadow cordgrass (*Spartina patens*), and saltmarsh cordgrass (*Spartina alterniflora*). According to the New Hanover County Soil Survey, upland soils are mapped as Wakulla sand and wetland soils are identified as Tidal Marsh. The portion of the ICW in the proposed discharge area is presently open for shellfishing. The adjacent land use is residential with a nearby existing boat ramp and pier.

Applicant's Stated Purpose

The purpose of the project is to provide drinking water to residents of northern New Hanover County.

Project Description

The applicant has proposed to construct a new six million gallon per day (MGD) groundwater treatment plant (WTP) and well field system in the northern part of New Hanover County. Fifteen well sites (two wells at each location for total of 30 wells) would be used to draw water from the Pee Dee and Castle Hayne aquifers. They are proposing two parallel raw water transmission mains which would transmit raw water from the wells to the WTP. One main would carry water from the Pee Dee aquifer while the other would transport the Castle Hayne aquifer water. Since the proposed process of treating raw water to drinking water (Membrane Technology) generates a backwash wastewater, the County is also applying for a National Pollutant Discharge Elimination System (NPDES) permit to discharge up to two MGD of treated membrane concentrate (wastewater) into the Atlantic Intracoastal Waterway. The proposed project would permanently impact 1.937 acres of Section 404 wetlands and 1.108 acres of Waters of the United States (Tulloch ditches) associated with the construction of the WTP and development of the well field sites. In addition, the project would temporarily impact 0.55 acres of non-riparian wetlands, 0.064 of coastal wetlands, and 0.18 acres of Section 10/Section 404 open waters for the purpose of installing the concentrate main utility line and the outfall structure.

The applicant has also submitted an Alternatives Analysis. This information has been included with this Public Notice. A State Environmental Policy Act (SEPA) Environmental Assessment (EA) for this project was submitted to the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Environmental Health, which has issued a Finding of No Significant Impact (FONSI). A copy of this EA is available for viewing at the U.S. Army Corps of Engineers Wilmington Regulatory Field Office, 69 Darlington Avenue, Wilmington, North Carolina.

The applicant has also submitted a mitigation proposal with their application that includes the recordation of restrictive covenants on the remaining wetlands at each of the well sites, approximately 25 acres of non-riparian wetlands. They also propose to restore 3.045 acres of non-riparian wetlands within the WTP site.

Other Required Authorizations

This notice and all applicable application materials are being forwarded to the appropriate State agencies for review. The Corps will generally not make a final permit decision until the North Carolina Division of Water Quality (NCDWQ) issues, denies, or waives State certification required by Section 401 of the Clean Water Act (PL 92-500). The receipt of the application and this public notice combined with the appropriate application fee at the North Carolina Division of Water Quality central office in Raleigh will constitute initial receipt of an application for a 401 Water Quality Certification. A waiver will be deemed to occur if the NCDWQ fails to act on this request for certification within sixty days of the date of the receipt of this notice in the NCDWQ Central Office. Additional information regarding the Clean Water Act certification may be reviewed at the NCDWQ Central Office, 401 Oversight and Express Permits Unit, 2321 Crabtree Boulevard, Raleigh, North Carolina 27604-2260. All persons desiring to make comments regarding the application for certification under Section 401 of the Clean Water Act should do so in writing delivered to the North Carolina Division of Water Quality (NCDWQ),

1650 Mail Service Center, Raleigh, North Carolina 27699-1650 Attention: Ms Cyndi Karoly by November 24, 2006.

Coastal Area Management Act

The applicant has certified that the proposed work complies with and will be conducted in a manner that is consistent with the approved North Carolina Coastal Zone Management Program. Pursuant to 33 CFR 325.2 (b)(2) the Corps is, by this notice, forwarding this certification to the North Carolina Division of Coastal Management (NCDCM) and requesting its concurrence or objection. Generally, the Corps will not issue a Department of the Army (DA) permit until the NCDCM notifies the Corps that it concurs with the applicant's consistency certification.

Essential Fish Habitat

This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The Corps' initial determination is that the proposed project will not adversely impact EFH or associated fisheries managed by the South Atlantic or Mid Atlantic Fishery Management Councils or the National Marine Fisheries Service.

Cultural Resources

The Corps has consulted the latest published version of the National Register of Historic Places and is not aware that any registered properties, or properties listed as being eligible for inclusion therein are located within the project area or will be affected by the proposed work. Presently, unknown archeological, scientific, prehistoric, or historical data may be located within the project area and/or could be affected by the proposed work.

Endangered Species

The Corps has reviewed the project area, examined all information provided by the applicant and consulted the latest North Carolina Natural Heritage Database. Based on available information, the Corps has determined pursuant to the Endangered Species Act of 1973 (ESA), that the proposed project may affect federally listed endangered or threatened species or their formally designated critical habitat. This includes the endangered red-cockaded woodpecker (*Picoides borealis*) and rough-leaved loosestrife (*Lysimachia asperulaefolia*). In addition, this project may also affect the Venus flytrap (*Dionaea muscipula*), a Federal Species of Concern. Consultation under Section 7 of the ESA will be initiated and no permit will be issued until the consultation process is complete.

Evaluation

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be

considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values (in accordance with Executive Order 11988), land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving the discharge of dredged or fill materials in waters of the United States, the evaluation of the impact of the activity on the public interest will include application of the Environmental Protection Agency's 404(b)(1) guidelines.

Commenting Information

The Corps of Engineers is soliciting comments from the public; Federal, State and local agencies and officials, including any consolidate State Viewpoint or written position of the Governor; Indian Tribes and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment (EA) and/or an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA). Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Requests for a public hearing shall be granted, unless the District Engineer determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by a hearing.

Written comments pertinent to the proposed work, as outlined above, will be received by the Corps of Engineers, Wilmington District, until 5pm, December 8, 2006. Comments should be submitted to Jennifer S. Frye, Post Office Box 1890, Wilmington, North Carolina, 28402-1890, at (910) 251-4923.

List of Wetland and Waters of the U.S. Impacts

Permanent 404 Wetland Impact Area	Area		Location
	Square Feet	Acres	
1	574	0.013	Well Field
2	1461	0.034	Well Field
3	825	0.019	Well Field
4	109	0.003	Well Field
5	3910	0.090	Well Field
6	11911	0.273	Well Field
7	377	0.009	Well Field
8	264	0.006	Well Field
9	9831	0.226	Well Field
10	207	0.005	Well Field
11	12227	0.281	Well Field
12	10485	0.241	Well Field
13	18952	0.435	Well Field
14	11091	0.255	Well Field
15	1492	0.034	Well Field
16	359	0.008	Well Field
17	245	0.005	WTP
Total	84320	1.937	

Permanent Waters of the U.S. Impact Area	Area		Location
	Square Feet	Acres	
1	1324	0.030	Well Field
2	483	0.011	Well Field
3	621	0.014	Well Field
4	5861	0.135	Well Field
5	562	0.013	Well Field
6	529	0.012	Well Field
7	221	0.005	Well Field
8	188	0.004	Well Field
9	575	0.013	Well Field
10	41	0.001	Well Field
11	3620	0.083	Well Field
12	728	0.017	Well Field
13	692	0.016	Well Field
14	784	0.018	Well Field
15	549	0.013	Well Field
16	1890	0.043	WTP
17	439	0.010	WTP
18	29199	0.67	WTP
Total	48306	1.108	

List of Wetland and Waters of the U.S. Impacts Contd.

Temporary 404 Wetland Impact Area	Area		Location
	Square Feet	Acres	
1	1699	0.039	Concentrate
2	695	0.016	Concentrate
3	24	0.001	Concentrate
4	754	0.017	Ogden Park
5	20761	0.477	Outfall
Total	23933	0.55	

Temporary Coastal Wetland Impact Area	Area		Location
	Square Feet	Acres	
1	2807	0.064	Outfall
Total	2807	0.064	

PROJECT NARRATIVE

July 2006; revised September 2006

New Hanover County Well Field and Water Treatment Plant
New Hanover County, NC

1.0 INTRODUCTION

New Hanover County (County) proposes to improve its existing water supply and treatment for the northeast part of the County. This project includes additional treatment to improve finished water quality and better management of groundwater supplies through better spacing of wells and balancing water supplies from the Pee Dee aquifer and the Castle Hayne aquifer. The County is proposing to construct a new six million-gallon-per-day (mgd) groundwater treatment plant (WTP) and well field system in the northern part of the County. Fifteen well sites (two wells at each location for a total of 30 wells) will be used to tap into the Pee Dee and Castle Hayne aquifers. Two parallel raw water transmission mains will transmit raw water from the well sites to the WTP. One main will transmit water pumped from the Castle Hayne aquifer, while the other main will transmit water pumped from the Castle Hayne aquifer. The County is also applying for a National Pollutant Discharge Elimination System (NPDES) permit to discharge up to two mgd of membrane concentrate into the Atlantic Intracoastal Waterway (AIWW) at the Figure Eight Bridge. Please note that an Environmental Assessment for this project was prepared by Arcadis G&M of North Carolina, Inc. and submitted to NCDENR; Division of Environmental Health. A Finding of No Significant Impact (FONSI) was issued. Much of the information provided in this narrative was taken from the EA.

2.0 EXISTING CONDITIONS

The project area is located in the northern part of New Hanover County, NC (Sheet 1). The 88 square-mile service area encompasses the northern half of New Hanover County with the exception of the US 421 corridor between the Cape Fear and Northeast Cape Fear Rivers (Sheet 2). The project area is bounded by Pender County to the north, the City of Wilmington to the south, the Northeast Cape Fear River to the east, and the Atlantic Ocean to the west. Below is a description of each project area (WTP, well field, corridor, and outfall location). Please see Section 4 of the Environmental Assessment for additional details.

Water Treatment Plant

The proposed Water Treatment Plant (WTP) is 44 acres in size and is located off of Old Oak Road in the Ogden area of New Hanover County (Sheet 3). According to the New Hanover County Generalized Soil Survey, the site consists of Johnston loam, Murville fine sand, and Seagate fine sand soil types (Sheet 4). Historically, this site most likely supported a wet pine flatwood community type. However, the area has been significantly altered through time. Several ditches were placed within and around the tract many years ago to drain the site. Only a few wetland pockets now exist within the tract and the ditches have been classified as Waters of the U.S. Ms. Jennifer Frye of the U.S. Army Corps of Engineers signed the wetland survey for this site on March 10, 2006 (Sheet 5). Vegetation within the site has been mowed and consists mostly of fetterbush (*Lyonia lucida*), sweet pepperbush (*Clethra alnifolia*), and cinnamon fern (*Osmunda cinnamomea*) in the herbaceous layer, with a few scattered loblolly pine (*Pinus taeda*) trees in the canopy. A dirt path approximately 20'-wide runs east-west across the site. Two wells have already been installed within the tract; one located in the southeast corner near Old Oak Road (Well A) and one located in the northwest corner (Well B) of the site. Surrounding land use is residential or undeveloped. The property is located within the New Hanover County jurisdiction. The property is currently zoned for single-family residential (R-15) and is classified as a Wetland Resource Protection Area by the New Hanover County Land Use Plan. All properties adjacent to the site are currently zoned for single-family residential (R-15). A threatened and endangered species evaluation was performed for this site in December of 2004. No federally-protected species were observed. Please see Appendix E of the EA for the complete report.

Well Field Sites

Fifteen well sites are proposed for the well field (Sheet 6). Two of these are existing well sites at the WTP tract. One well site is located across the road from the WTP. Ten well sites are proposed within Greenview Ranches and four well sites are proposed within the Ogden Park tract. Eight lots within the Greenview Ranches area have been purchased by the County. These undeveloped, forested lots are each approximately five acres in size. Dirt roads were installed many years ago to provide limited access to the area. Plantation Road runs east west between Murrayville Road and terminates just before reaching Market Street. This road is approximately 22' wide and has ditches running parallel to it for a majority of its length. Several smaller dirt roads run north-south through the area. These roads have not been maintained as well as Plantation Road and large potholes (some of which have naturalized back to wetlands) exist throughout them. Ditches (Waters of the U.S.) run parallel to

most of these roads. According to the New Hanover County Generalized Soil Survey, these lots consist of Leon fine sand (Sheet 4). Most all of these lots consist entirely of 404 wetlands, however upland areas were found on lots K and L. Furthermore, old ditches that were dug parallel to the existing dirt roads have a minor drainage effect on the lot located furthest north (J). Surrounding land use is residential, agricultural (horse farms), or undeveloped. Vegetation within these lots consists of pond pine (*Pinus serotina*), gallberry (*Ilex glabra*), loblolly bay (*Gordonia lasianthus*), titi (*Cyrilla racemiflora*), and fetterbush (*Lyonia lucida*). These sites are classified as a Wetland Resource Protection Area by the New Hanover County Land Use Plan.

Four additional well sites are proposed within the Ogden Park tract. This tract is 160 acres in size and is located off of Market Street (Sheet 7). The County received a Nationwide Permit 26 in 1993 to fill 5.71 acres of wetlands for park facilities. This acreage plus the natural uplands have been developed into a park that contains baseball fields, soccer fields, tennis courts, playgrounds, rest rooms, a picnic area, a trail, a pet exercise area, and parking (Sheet 8). The wetlands are forested and support Murville fine sand soils (Sheet 9). The uplands support Leon fine sand soils. The wetland survey for these areas is included in this permit application for final Corps approval. This site is classified as a Wetland Resource Protection Area by the New Hanover County Land Use Plan.

Route of Concentrate Main

The proposed route of the concentrate main will lead from the WTP, along the right of way of Market Street and then turn right onto the right of way of Porter's Neck Road (Sheet 1). The line will then turn right onto Edgewater Club Road and follow this road to the Atlantic Intracoastal Waterway at the Figure Eight Bridge.

Outfall Location

The project proposes to discharge up to two mgd of membrane concentrate into the Atlantic Intracoastal Waterway (AIWW), on the south side of the Figure Eight Bridge (Sheet 10). The AIWW in this area is classified as SA and Outstanding Resource Water. The SA classification indicates salt waters used for market shellfishing. The ORW classification is for unique and special surface waters that are of exceptional state or national recreational or ecological significance and have exceptional water quality. The average tide range in the AIWW near the Figure Eight Island Bridge is 3.58 feet. The mean water depth at the proposed discharge location is approximately 12 feet at low tide.

Freshwater and coastal wetlands have been delineated adjacent to the AIWW and an estuarine Area of Environmental Concern is located 575' landward of mean high water. The portion of the AIWW in which the discharge is proposed is an area that is presently open for shellfishing. The adjacent land use is residential and a boat ramp and pier exist in this vicinity for water access. According to the New Hanover County Soil Survey, upland soils consist of Wakulla and wetland soils are Tidal Marsh muck (Sheet 11). Please see the attached NPDES permit application for additional tide data from this area and a mixing zone analysis (Appendix B).

3.0 PROJECT NEED

Please see Section 2 of the Environmental Assessment for a detailed description of the need for the project.

4.0 ALTERNATIVES ANALYSIS

Section 3 of the Environmental Assessment describes a no-action alternative, the purchase of raw water from several other sources, and a County-owned surface water treatment plant. At the time that the EA was prepared, the exact location of the well fields had not yet been determined and an alternatives analysis for the specific placement of the wells could not be given. This section of the project narrative describes the factors that dictated the proposed placement of the well fields within New Hanover County.

Selection of Well Field Sites

The mid-section of New Hanover County was selected as a potential water supply because of aquifer recharge characteristics determined in groundwater evaluations performed by BPA Environmental and Engineering, Inc. in 1995 and by Edwin Andrews & Associates, P.C. in 1996. It is preferable that the wells be placed in an undeveloped area to prevent groundwater contamination. The Greenview Ranches area is located in the target area and is largely undeveloped. However, the majority of the Greenview Ranches area consists of wetlands except for existing dirt roads. To minimize potential impacts, the area was examined to identify lots that contained uplands. The County attempted to purchase lots with uplands, but acquisition was largely dictated by those owners who were willing to sell. Mr. Phil Triece, a local real estate consultant, contacted many landowners to determine who was willing to sell their property.

The proposed location of the wells has been centralized as much as possible to reduce necessary roadway improvements between well sites. Only those lots located directly off of three existing roads were purchased. However, the 2001 Concept Design Report indicated that the wells should be spaced between 800 and 1600 feet apart to ensure an even withdrawal of the aquifers.

5.0 PROPOSED PROJECT

Please see Section 1 of the Environmental Assessment (Proposed Project Description) for a detailed description of the proposed project.

Water Treatment Plant

The proposed WTP will be located in the northwestern portion of the property off of Old Oak Road (Sheet 12). The northern portion of the WTP site is reserved for wetlands mitigation to offset impacts from the WTP site, well sites, and other offsite construction activities. The southern portion of the parcel as well as the remaining northern portion of the property is reserved for future County uses.

The proposed access road will connect with Old Oak Road opposite of Rochelle Road. The main plant entrance and exit will be located along the southern property boundary. It will be equipped with an electric slide gate. All roadways will be asphalt pavement roads. Most roads will be 24-foot wide with the exception of the chemical unloading area, which will have a 12-ft wide road. The visitors parking area will be located adjacent to the Administration Building and will include handicapped spaces for staff and visitors. Parking for WTP staff will be located behind the WTP building. Parking is also proposed for plant operators and maintenance staff near the Chemical Storage Area.

The primary treatment process for the WTP will be nanofiltration for softening total organic carbon (TOC) removal and color removal. Separate membrane filtration units will be provided for the two source waters to alleviate the potential for membrane fouling from biological growth or saturated salts. Treatment processes will include cartridge filtration and nanofiltration in series. Following nanofiltration, permeate from both the Pee Dee and Castle Hayne treatment trains will be blended and conveyed to packed tower aerators for removal of carbon dioxide, hydrogen sulfide, and oxidation of any remaining iron in the permeate. Sodium hypochlorite, sodium hydroxide, and corrosion inhibitor

will be added and then the finished water will be stored in two 1.0-million gallon clearwells prior to pumping to the distribution system.

Two 1-million gallon (MG) circular, pre-stressed concrete tanks will be provided for finished water storage. The proposed tanks will be 100-feet diameter with 17-ft side water depth. Each tank will include curtain-type baffle constructed of Hypalon and stainless steel hardware. Influent connection will be 24-inch diameter and effluent connection will be 30-inch diameter. A tank overflow and drain will be piped to an onsite stormwater detention pond. Level will be recorded and reported to SCADA by an ultrasonic level indicator and transmitter.

Well Field Sites

Fifteen well sites are proposed within the northern part of New Hanover County (Sheet 6). Both the Castle Hayne and Pee Dee aquifers will be tapped at each well site. Therefore, the 6-mgd WTP will have a total of 30 wells. Two of the well sites (Wells A & B) will be located within the WTP tract. One well site (Well Q) will be located across the road from the WTP. Four well sites (Wells M, N, O, & P) will be located within the Ogden Park Tract. The remaining eight well sites (Wells C, F, G, H, I, J, K, & L) will be located along Plantation Road and two roads located perpendicular to Plantation Road. Wells must be placed at least 100 feet from any property line, but will be installed as close to the roads as possible to reduce wetland impacts from the proposed driveway. The width of roadway improvements will be minimal; only a 12' wide gravel road is proposed with 2' shoulders (Appendix C; C10). This will minimize wetland impacts from the road and reduce access by trespassers.

Route of Water Main

Two parallel raw water transmission mains will be constructed to convey raw water from the well sites to the WTP. One main will convey water pumped from the Castle Hayne aquifer, and the other main will transmit water pumped from the Pee Dee aquifer. Raw water from each aquifer is conveyed to the WTP separately to avoid potential biological fouling. Each raw water transmission main will consist of approximately 17,000 feet (3.2 miles) of line ranging in size from 6-inch to 30-inch, for a total of 34,000 feet (6.6 miles) of main. Both raw water transmission lines will be located mainly within the right-of-way of existing unimproved roads in the well field.

Outfall Location

The project includes installation of approximately 27,000 feet (5.1 miles) of 16-inch membrane concentrate discharge line. This discharge line will be routed from the WTP site south to US 17, run northeast along US 17, east on Porters Neck Road, and southeast along Edgewater Club Road toward the bridge to Figure Eight Island.

The proposed discharge location is at the Figure Eight Island Bridge at Bridge Road (Sheets 13 & 14). The County is proposing to discharge up to 2 mgd of membrane concentrate to the AIWW. The proposed discharge would include a multi-port diffuser outfall located along the bottom of the AIWW. The diffuser would be within the bridge easement of the USACE's AIWW right-of-way. During the NCSEPA process, the planned design for the effluent outfall structure was to suspend the pipeline under the bridge structure and have the pipeline run vertically down the last set of pilings west of the bridge fender system. Consultation with the bridge designers resulted in several logistical problems with attaching the effluent pipeline to the bridge. The issues were as follows:

1. Penetration of the concrete bridge abutment with the pipeline.
2. Uncertainties with attaching suspension elements to an aging concrete girder structure.
3. Foreseeable future maintenance of the bridge that might cause disruption in the use of the outflow pipeline within the next decade.

For these reasons it was determined that the best course of action was to make the pipeline a stand-alone structure. The pipeline will be placed underground, utilizing trench and fill construction methods, out to approximately the -10.0 ft mean low water contour, then extend 55' along the seabed to the diffuser structure. The pipeline will be secured by a series of pre-cast 4'x4'x1' concrete collars. The end of the structure will be approximately 60' west of the western bridge fender.

During initial construction, it will be necessary to temporarily excavate 225-ft long, by 4-ft deep, by 4-ft wide trench with 3:1 side slopes. The trenching operations will result in the excavation of 550 cubic yards of sandy material and the temporary disturbance of a marine area 35-ft wide by 225 long. The area of temporary disturbance includes the area to be utilized for temporary stockpiling of material. The trench will be dug utilizing a small barge and excavator/dragline. Material will be excavated and temporarily placed on the seabed next to the trench. After the pipeline is installed, material excavated from the trench will be returned to the trench, burying the effluent line. Final grades will be within +/- 1 ft of pre-construction conditions. The mean water depth at the proposed discharge location is approximately 12 feet at low tide.

6.0 POTENTIAL ENVIRONMENTAL IMPACTS

Direct Impacts

The proposed project would permanently impact 1.937 acres of 404 wetlands and 1.108 acres of Waters of the U.S. (Appendix C). In addition, 0.55 acre of 404 wetlands, 0.064 acre of coastal wetlands, and 0.18 acre of open water will be temporarily impacted through the open cut installation of the pipe along two places at Porters Neck Road and at the outfall location adjacent to the Figure Eight Bridge. Excavated material along the concentrate line corridor will be placed in adjacent uplands and the area will be returned to grade and seeded once the pipe has been installed. Excavated material below MHW will be temporarily placed on the seabed next to the trench. After the pipeline is installed, material excavated from the trench will be returned to the trench, burying the effluent line. Final grades will be within +/- 1 ft of pre-construction conditions.

This discharge location would be directly adjacent to an open shellfish area, but the effluent is not expected to affect the shellfish. Additionally, this discharge location is not expected to have any navigation issues since the mean water depth at the proposed discharge location is approximately 12 feet at low tide at the diffuser will be located adjacent to a bridge fender.

Secondary/Cumulative Impacts to Region

Secondary impacts to wetlands and water quality could occur during and after construction of the project through erosion and stormwater runoff. These potential impacts will be minimized by the development and implementation of a Stormwater Plan and a Sedimentation and Erosion Control Plan. These plans will reduce the potential for erosion or runoff into wetlands and other water bodies located off site.

The report that accompanies the NPDES permit application evaluates the potential effect that the proposed discharge from the WTP could have on the salinity of the AIWW and the surrounding salt marsh in the vicinity of the outfall location. This report found that because of the rapid dilution and persistent tidal flows in the outfall area, the diffuser will have minimal influence upon the surrounding salinity regime. Therefore, no negative impacts to water quality from the concentrate are anticipated.

It is important to note that the project does not intend to stimulate growth in Greenview Ranches, which could create secondary wetland impacts in the region. In fact, it is to the benefit of this project if development in the Greenview Ranches area is managed in order to protect water quality. The County is currently preparing an ordinance that would manage growth in the well site area.

Furthermore, this project will not provide utilities to the Greenview Ranches area. The water being withdrawn from these proposed wells will be raw. The project will not supply potable water to the area. In addition, most of the lots in this area will not perk and sewer is not available to this part of the County. Therefore, additional growth within the area will not be stimulated by this project.

7.0 MITIGATION

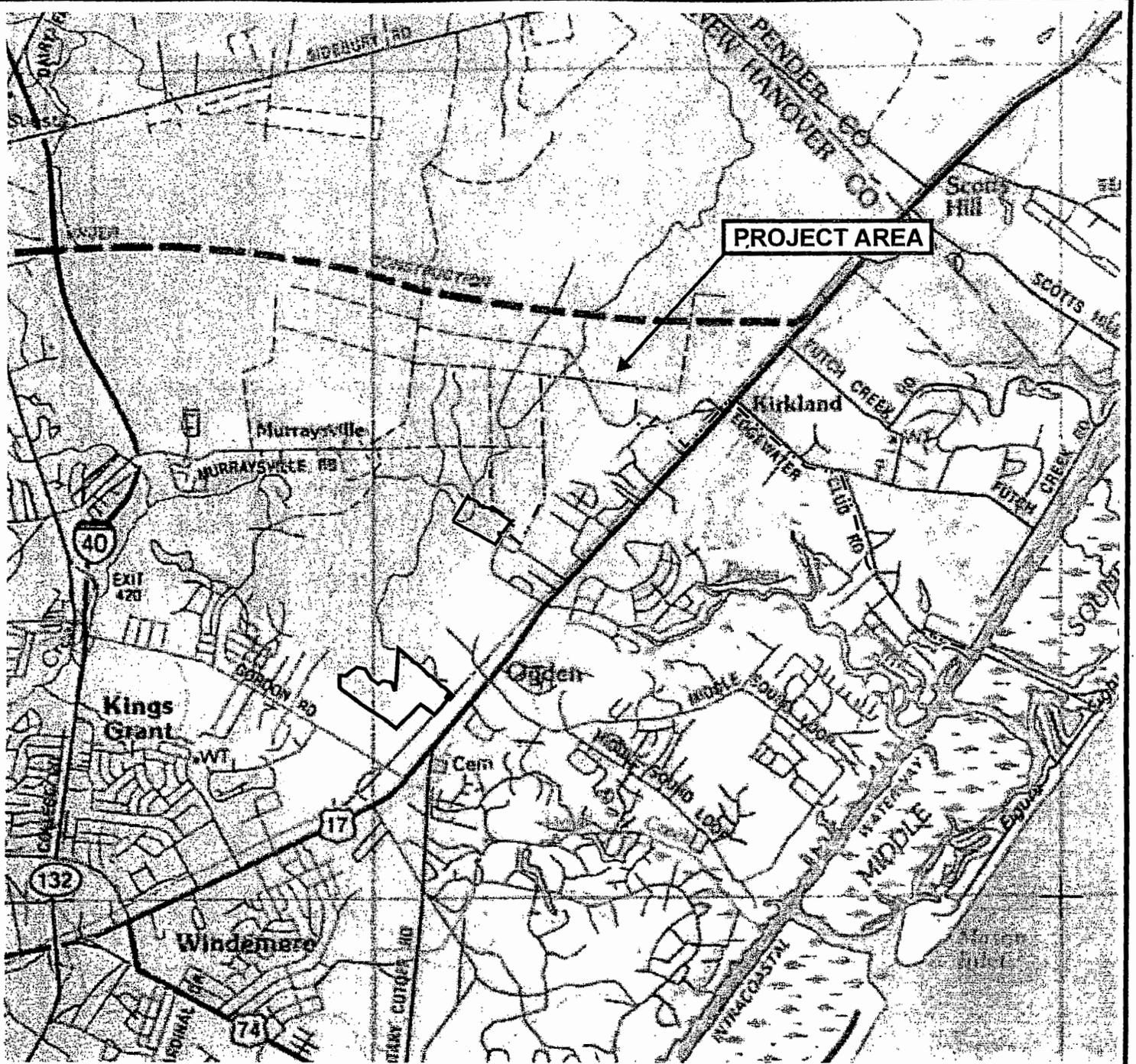
The applicant has attempted to avoid and minimize environmental impacts as much as possible. Wells will be placed in uplands when possible and will be located as close to the roads as permissible (at least 100' from any property line) to reduce wetland impacts associated with the driveways. The width of access roads will be minimal (12') to further reduce impacts (Appendix C; Sheet C10).

No permanent wetland impacts will occur from the installation of the water main. The County will cross wetlands by open cut or by directional drill along Porters Neck Road and Edgewater Club Road (Appendix C; Sheets C5, C6, & C10). After the pipeline is installed, material excavated from the trench will be returned to the trench, burying the effluent line. Final grades will be within +/- 1 ft of pre-construction conditions.

To mitigate for the 3.045 acres of proposed permanent impacts to 404 wetlands and Waters of the U.S., restrictive covenants will be recorded on all remaining wetlands within the well field lots to prohibit any wetland fill beyond what is being requested here. This will protect approximately 25 acres of wetlands. Finally, the applicant plans to restore at least 3.045 acres of freshwater wetlands within the WTP tract off of Old Oak Road (Sheet 12). The applicant is in the process of developing a complete mitigation plan for the proposed restoration.

LIST OF SHEETS

Sheet 1	Vicinity map of project area
Sheet 2	Service area for project
Sheet 3	Topographic map of WTP and Well Fields
Sheet 4	SCS Soils Map for WTP and Well Fields
Sheet 5	Wetland Survey for WTP
Sheet 6	Aerial photograph of Well Fields
Sheet 7	Topographic map of Ogden Park
Sheet 8	Aerial Photograph of Ogden Park
Sheet 9	SCS Soils Map of Ogden Park
Sheet 10	Topographic Map of Outfall Location
Sheet 11	SCS Soils Map of Outfall Location
Sheet 12	WTP Site Design
Sheet 13	Diffuser Plan View with Elevations
Sheet 14	Cross Section of Diffuser
Appendix A.	Environmental Assessment
Appendix B.	NPDES Permit Application
Appendix C.	Wetland/Waters of the U.S. Impact Maps (C1-9)
	Cross Section of Access Road and Directional Drill (C10)
	Cross Section of Typical Well Field Site (C11)



*Boundaries are approximate and are not meant to be absolute.

SCALE 1" = 1 Mile

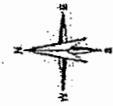
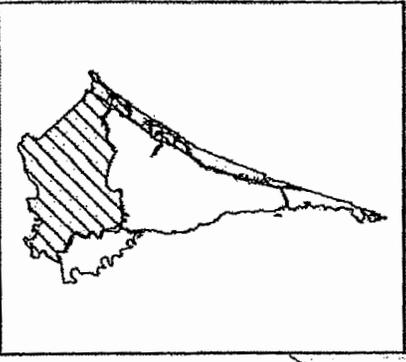
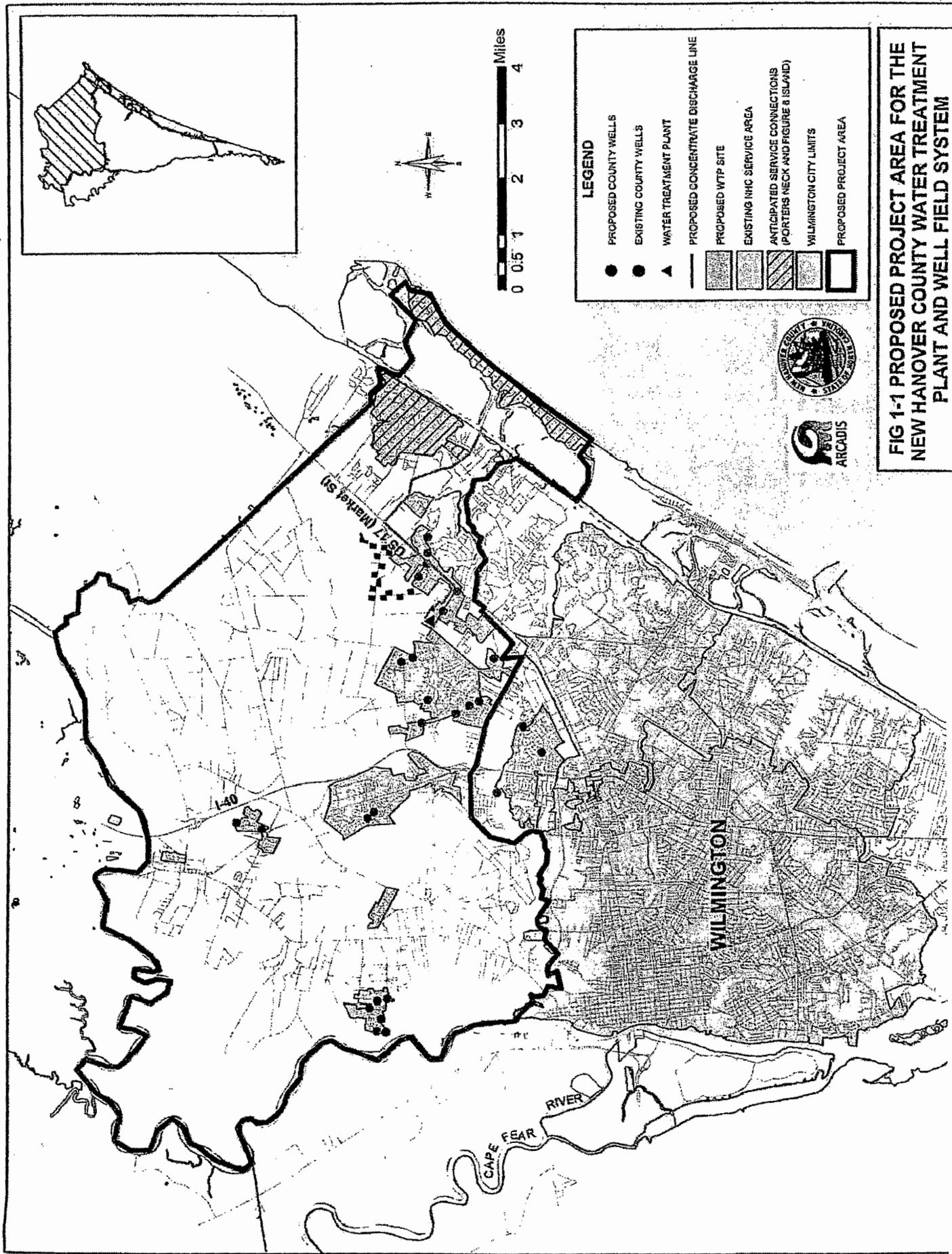
Map Source: North Carolina Atlas & Gazetteer. Pg 84 .2003

NHC Well Field and WTP
New Hanover County, NC
01-05-371

Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
July 2006

SHEET 1 of 14
Vicinity Map

CAMA Major Permit Application



LEGEND

- PROPOSED COUNTY WELLS
- EXISTING COUNTY WELLS
- ▲ WATER TREATMENT PLANT
- PROPOSED CONCENTRATE DISCHARGE LINE
- ▨ PROPOSED WTP SITE
- ▩ EXISTING NHC SERVICE AREA
- ▧ ANTICIPATED SERVICE CONNECTIONS (PORTERS NECK AND FIGURE 8 ISLAND)
- ▤ WILMINGTON CITY LIMITS
- ▭ PROPOSED PROJECT AREA

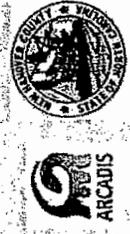
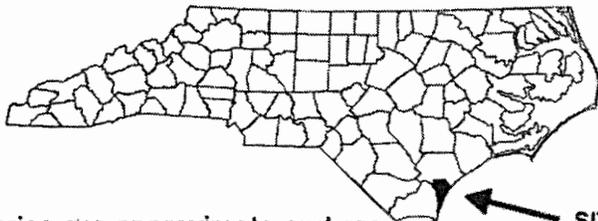
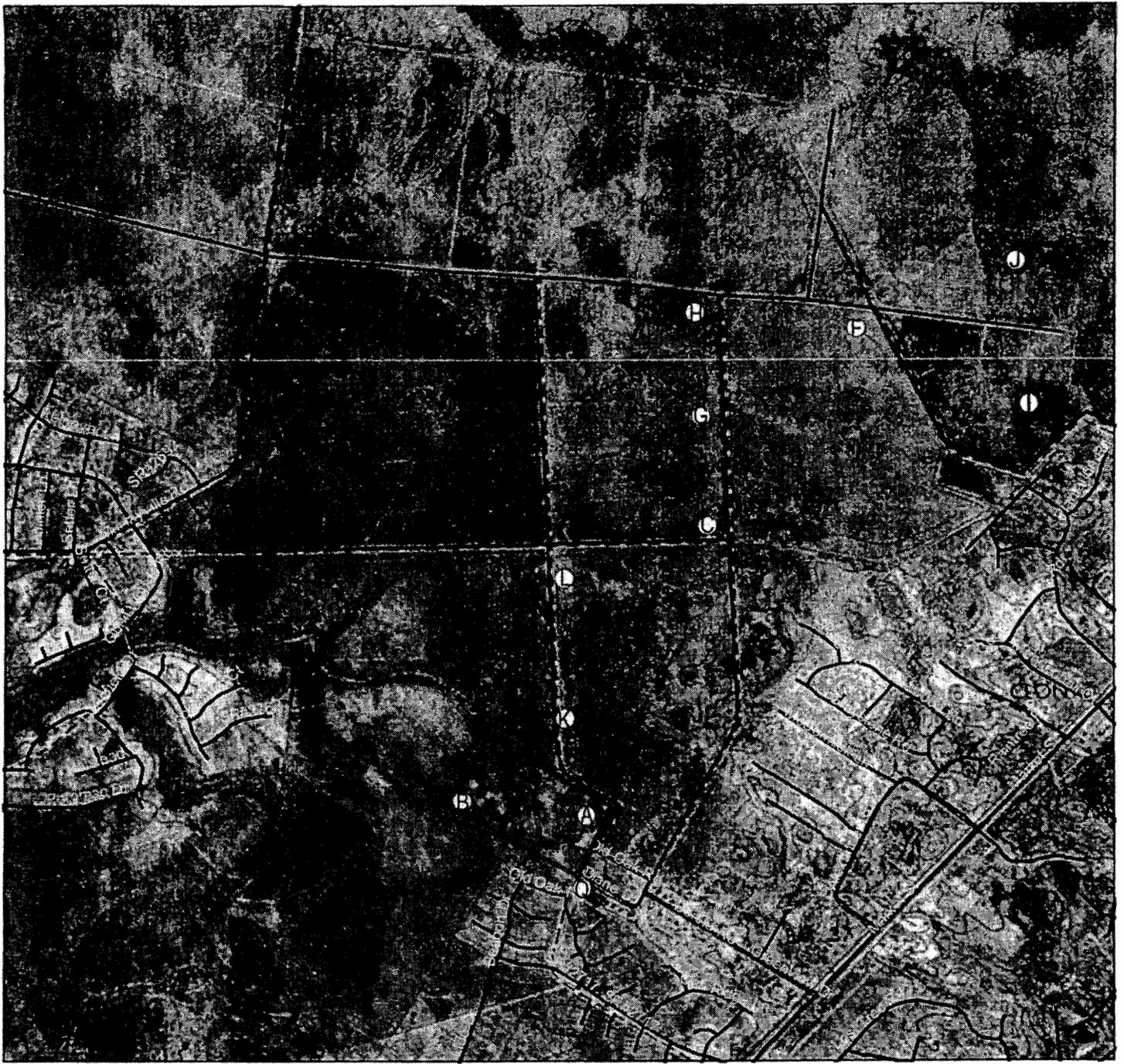


FIG 1-1 PROPOSED PROJECT AREA FOR THE NEW HANOVER COUNTY WATER TREATMENT PLANT AND WELL FIELD SYSTEM



○ Proposed Well Locations



*Boundaries are approximate and are not meant to be absolute.

SCALE 1" = 1500'

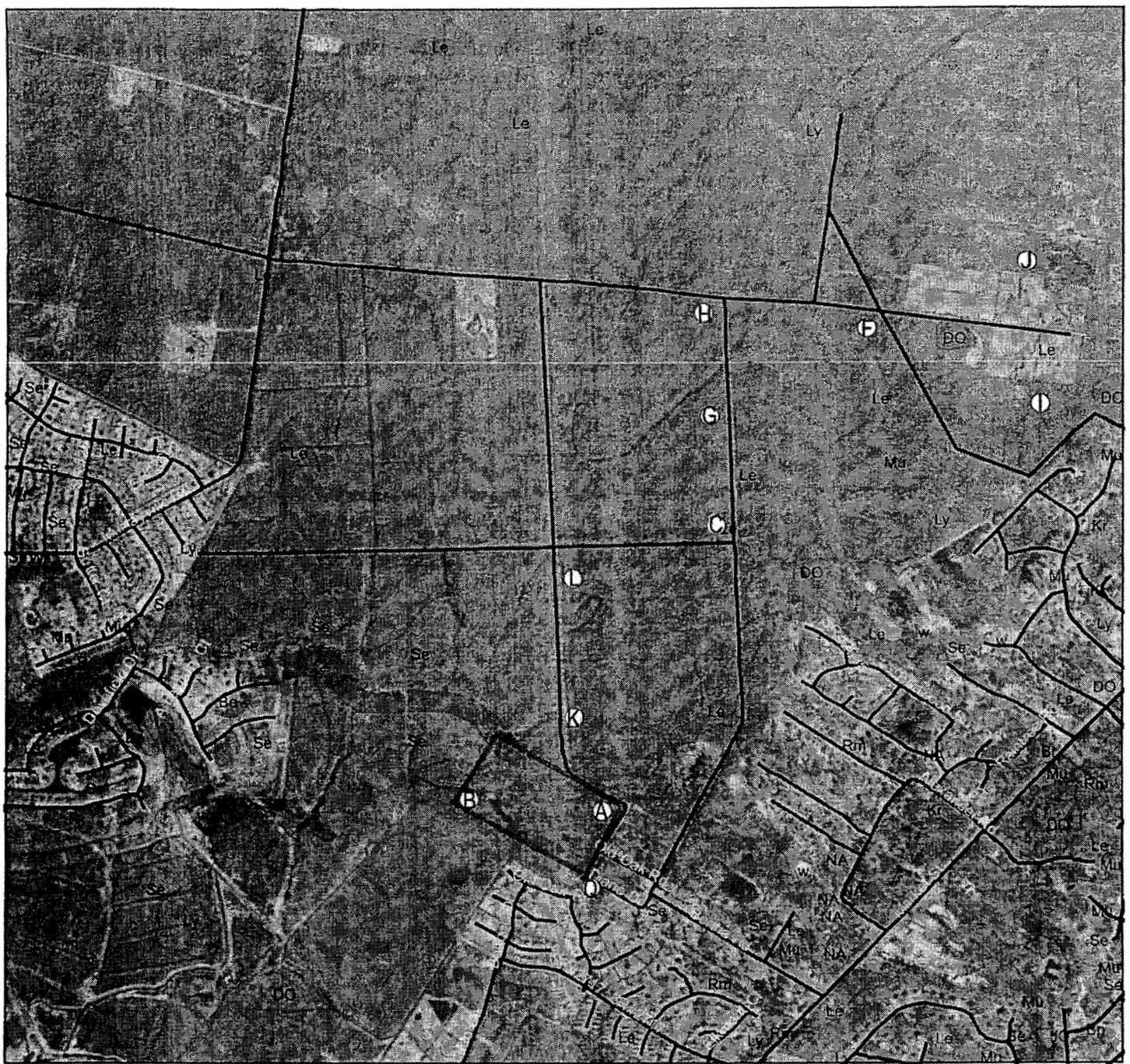
Map Source: Scotts Hill Quadrangle 7.5 minute (topographic) 1990.

NHC Well Field and WTP
New Hanover County, NC
01-05-371

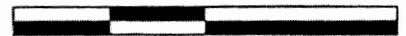
Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
July 2006

SHEET 3 of 14
USGS Topographic Map
of Well Sites and WTP

CAMA Major Permit Application



○ Proposed Well Locations



SCALE 1" = 1500'

*Boundaries are approximate and are not meant to be absolute.

Map Source: NRCS Soils Map.

SITE

NHC Well Field and WTP
New Hanover County, NC
01-05-371

CAMA Major Permit Application

Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
July 2006

SHEET 4 of 14
Soils Map for
Well Field and WTP

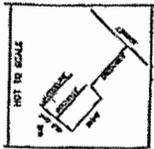
NEW HANOVER COUNTY

MARKETT TOWNSHIP, NEW HANOVER COUNTY, NORTH CAROLINA
 DATE: AUGUST 2000
 UPDATED: NOVEMBER 2003

WETLANDS LINE TABLE

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TOTAL AREA
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 46,700 AC

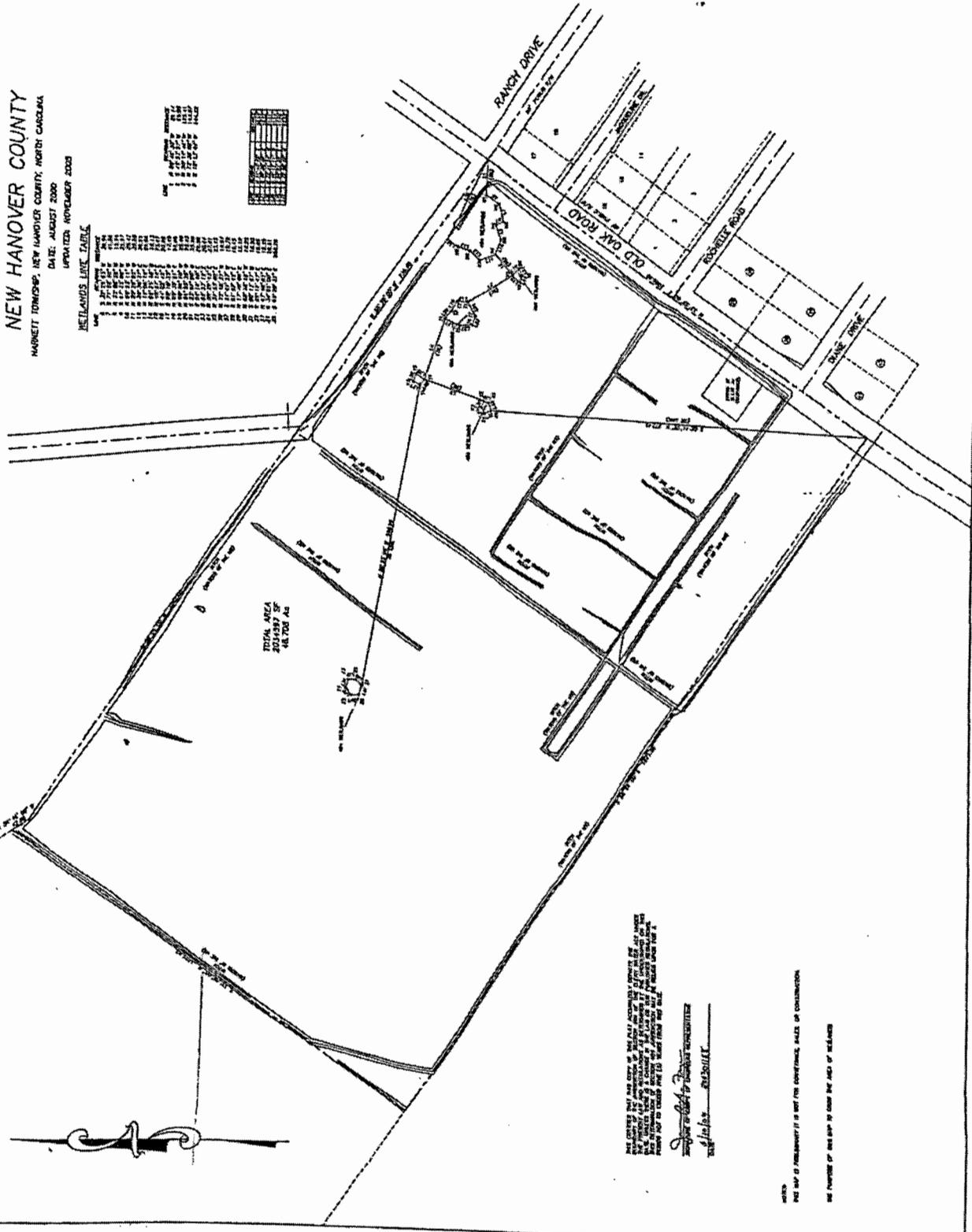


OWNER: NEW HANOVER COUNTY DEPARTMENT 060
 230 MARKET PLACE
 WILMINGTON, NC 28403

REGISTERED PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA
 NO. 10000
 EXPIRES 12/31/06

SCALE: 1" = 100'

HANDOVER DESIGN SERVICES, P.A.
 10000 MARKET PLACE
 WILMINGTON, NC 28403
 910-762-1111



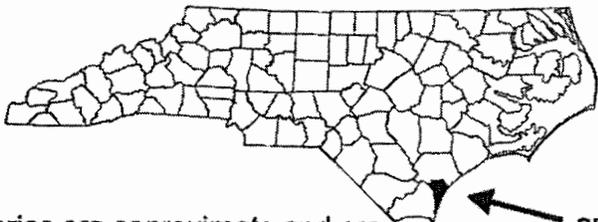
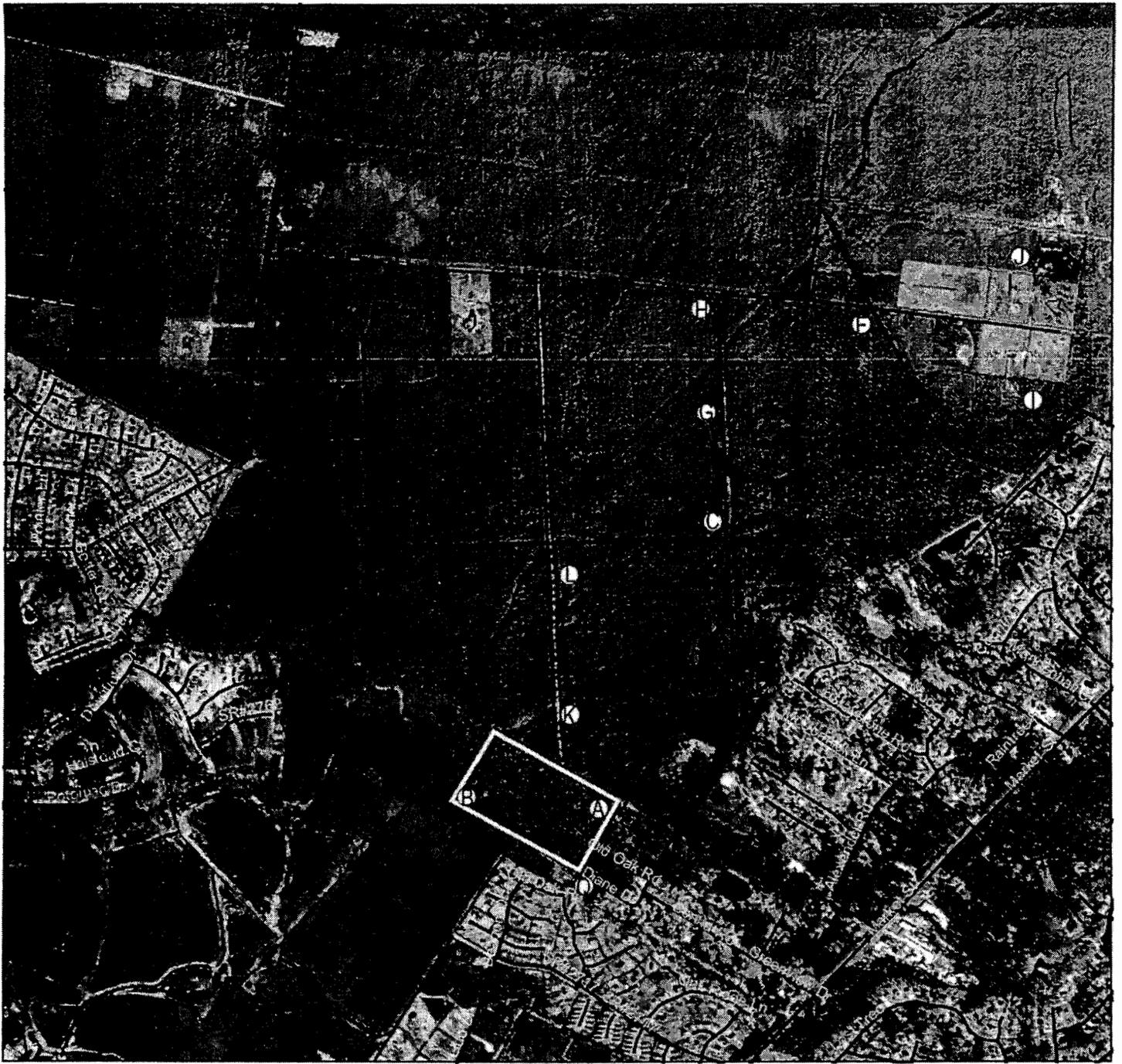
ALL CONTOURS THAT ARE SHOWN ON THIS PLAN ARE BASED ON THE DATA PROVIDED BY THE CLIENT AND THE SURVEYOR. THE SURVEYOR HAS CONDUCTED VISUAL INSPECTIONS OF THE SITE AND HAS FOUND NO EVIDENCE OF WETLANDS. THE SURVEYOR HAS CONDUCTED VISUAL INSPECTIONS OF THE SITE AND HAS FOUND NO EVIDENCE OF WETLANDS.

DATE: 11/10/03

BY: [Signature]

SHEET 5 OF 14
 WETLAND SURVEY

CAMA MAJOR PERMIT APPLICATION
 JULY 2006



SITE

*Boundaries are approximate and are not meant to be absolute.

Map Source: 1998 NAPP aerial photography



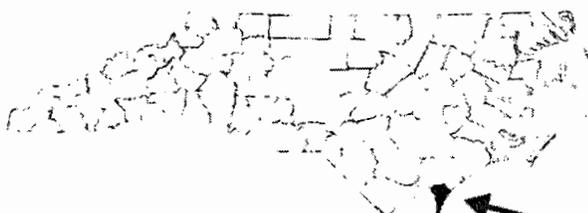
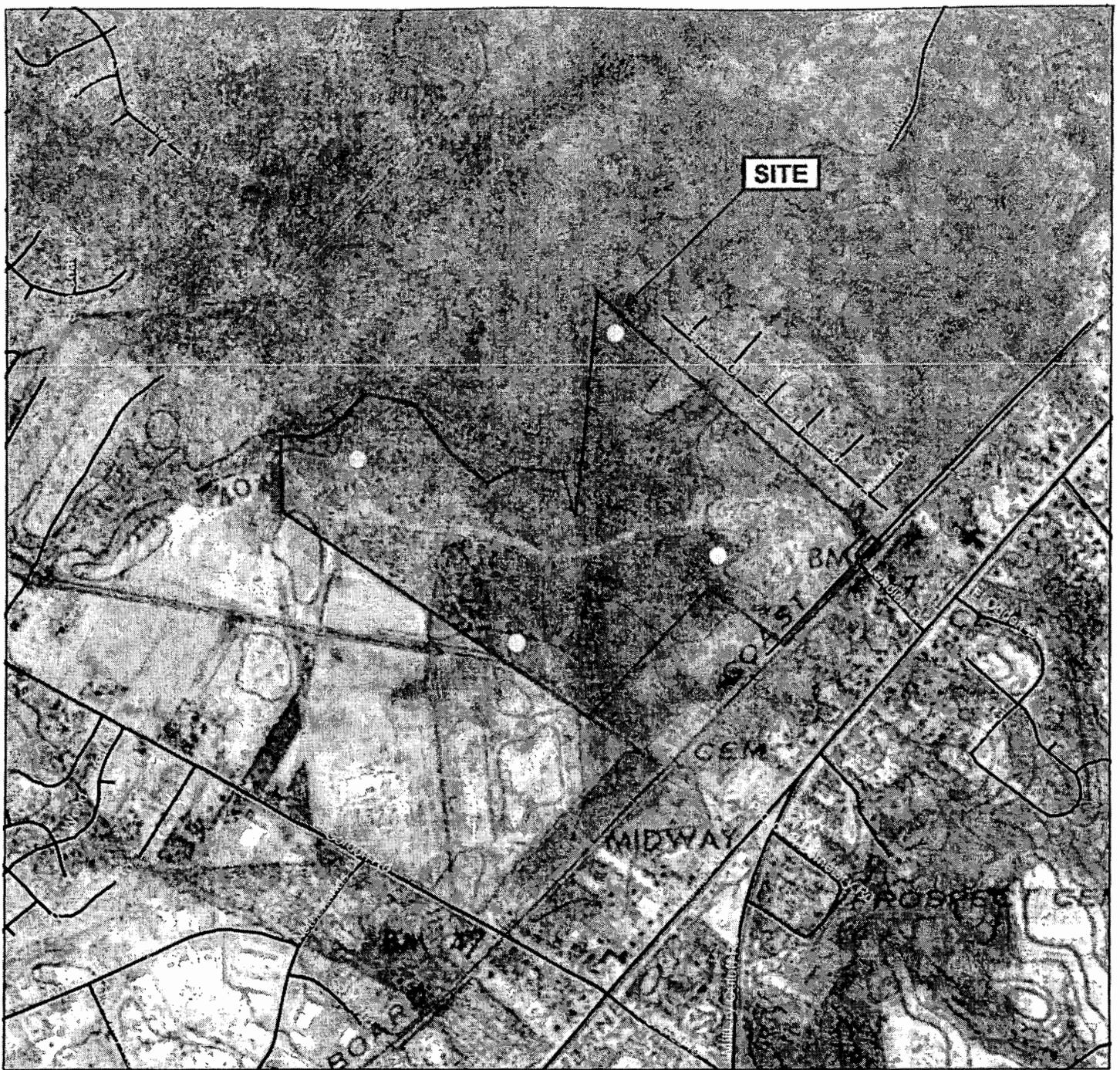
SCALE 1" = 1500'

NHC Well Field and WTP
New Hanover County, NC
01-05-371

CAMA Major Permit Application

Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
July 2006

SHEET 6 of 14
Aerial Photograph of
Well Field and WTP



*Boundaries are approximate and are not meant to be absolute.

Map Source: Scotts Hill Quadrangle 7.5 minute (topographic) 1990.

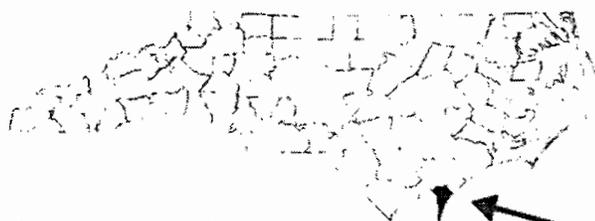
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NHC Well Field and WTP
New Hanover County, NC
01-05-371

CAMA Major Permit Application

Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
December 2005

SHEET 7 of 14
USGS Topographic Map
of Ogden Park Tract



*Boundaries are approximate and are not meant to be absolute.

Map Source: 1998 NAPP aerial photography

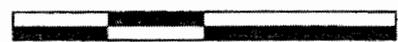
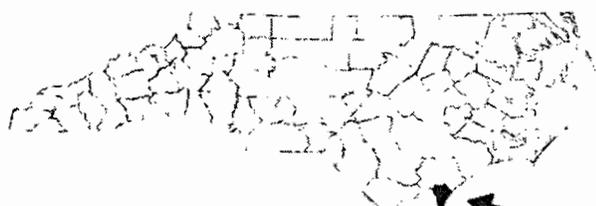
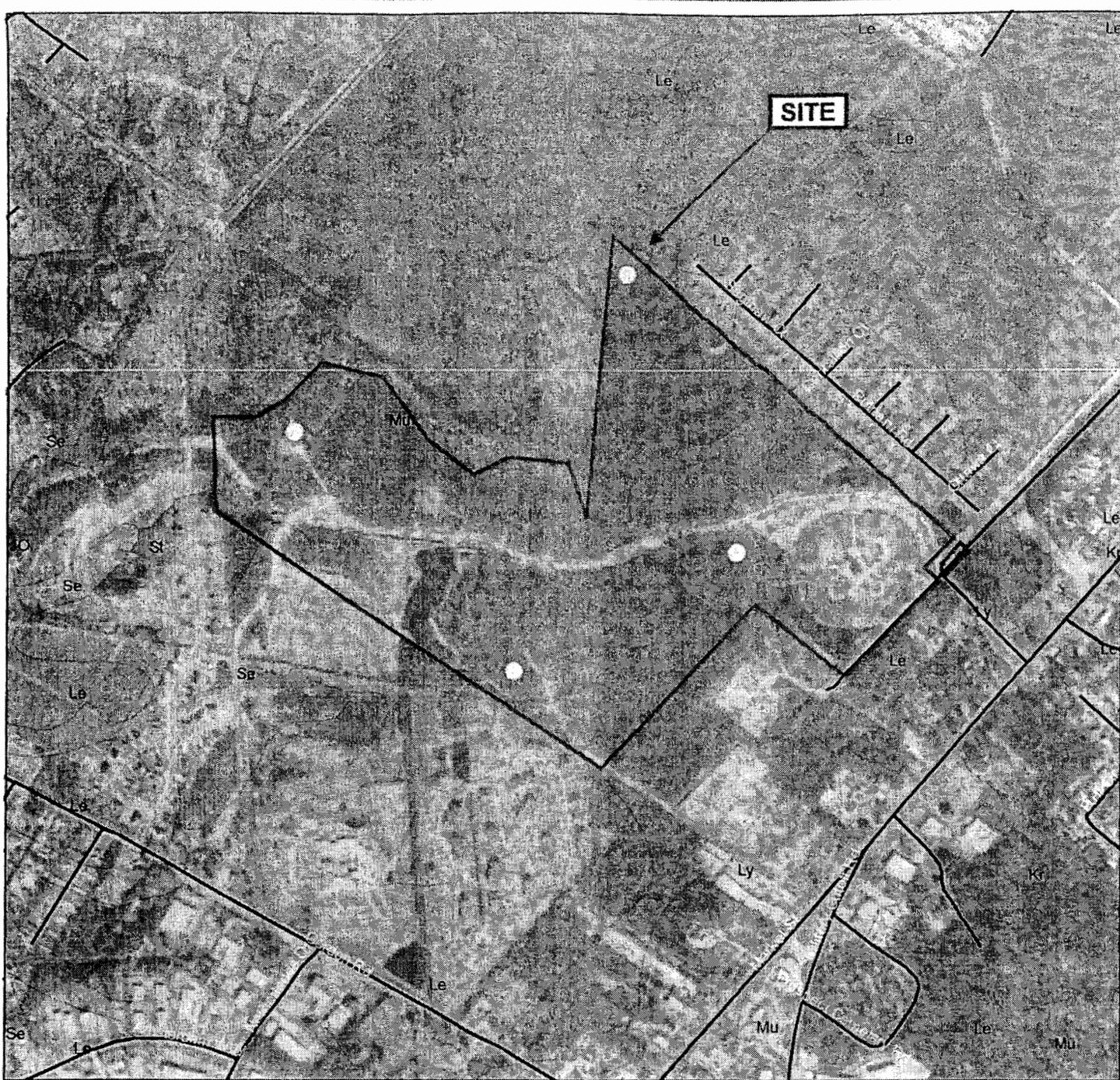
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NHC Well Field and WTP
New Hanover County, NC
01-05-371

CAMA Major Permit Application

Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
July 2006

SHEET 8 of 14
Aerial Photograph of
Ogden Park Tract



*Boundaries are approximate and are not meant to be absolute.

Map Source: NRCS Soils Map.

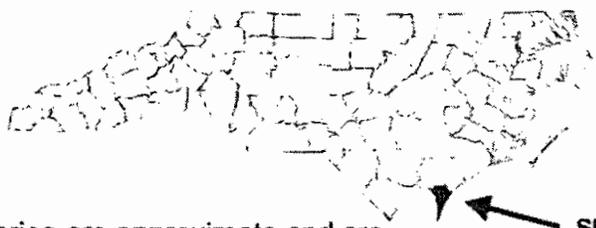
SCALE 1" = 800'

NHC Well Field and WTP
New Hanover County, NC
01-05-371

Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
July 2006

SHEET 9 of 14
Soils Map of
Ogden Park Tract

CAMA Major Permit Application



*Boundaries are approximate and are not meant to be absolute.



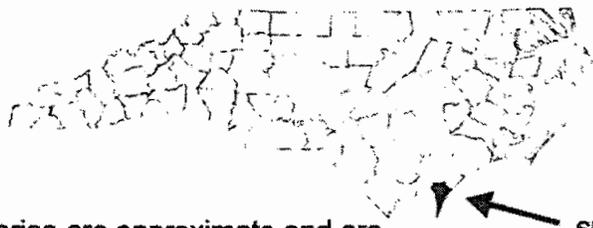
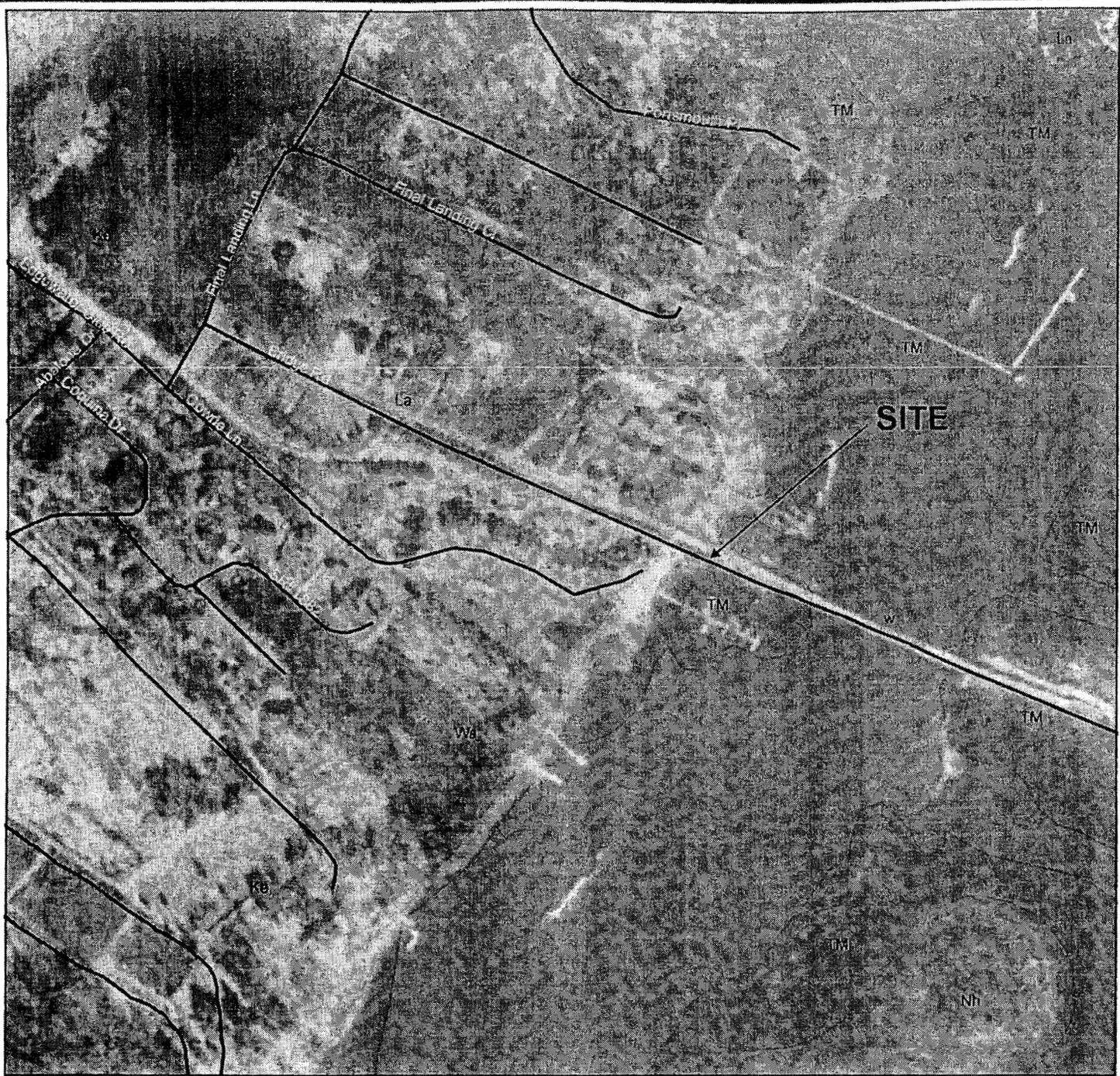
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Map Source: Scotts Hill Quadrangle 7.5 minute (topographic) 1990.

NHC Well Field and WTP
 New Hanover County, NC
 01-05-371
 CAMA Major Permit Application

Land Management Group, Inc.
 Environmental Consultants
 Wilmington, N.C.
 July 2006

SHEET 10 of 14
 USGS Topographic Map
 of Outfall Location



*Boundaries are approximate and are not meant to be absolute.

Map Source: NRCS Soils Map.

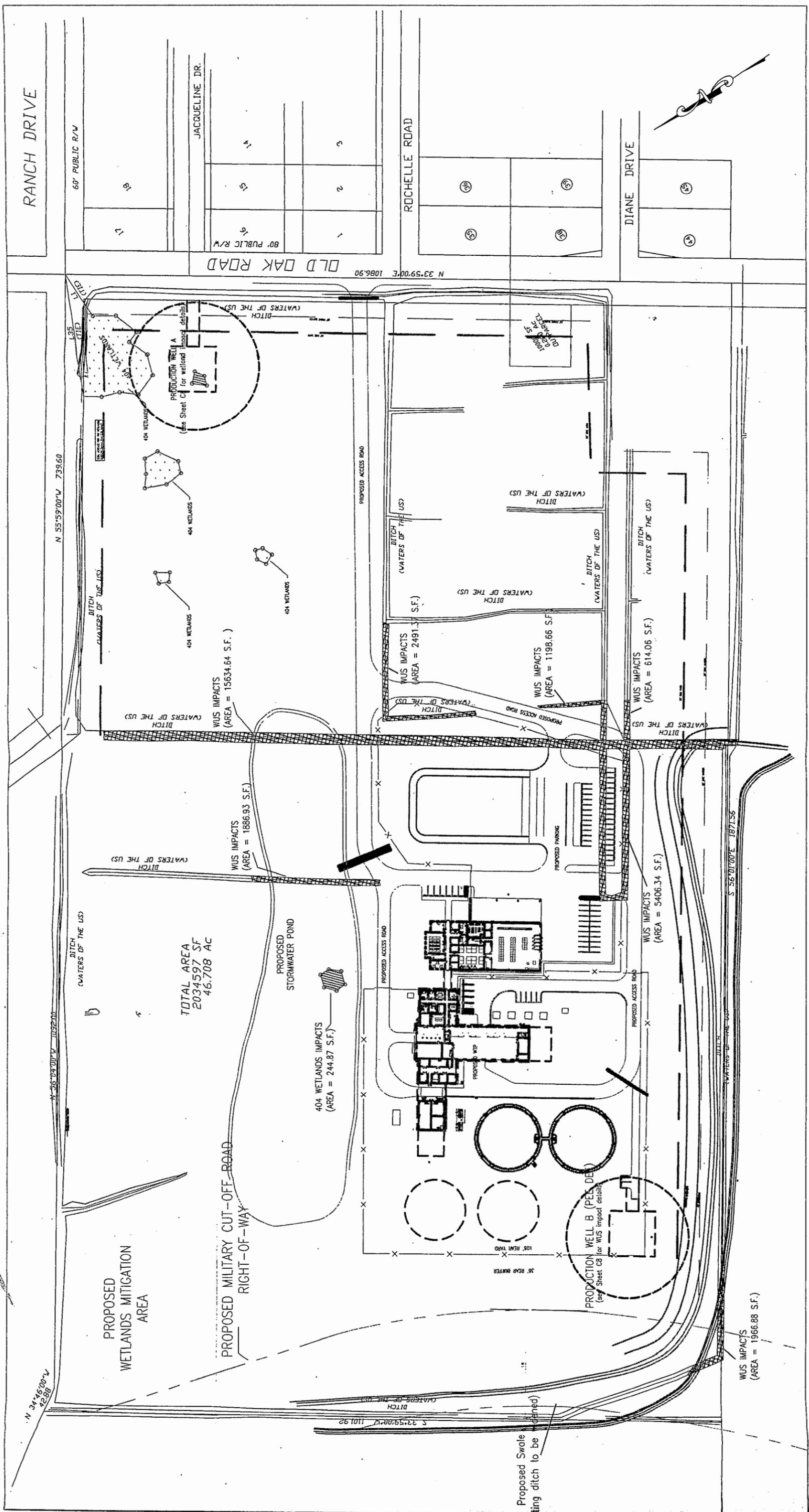
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NHC Well Field and WTP
New Hanover County, NC
01-05-371

CAMA Major Permit Application

Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
July 2006

SHEET 11 of 14
Soils Map of
Outfall Location



SHEET 12 of 14
 Water Treatment Plant Site Plan
 July 2006

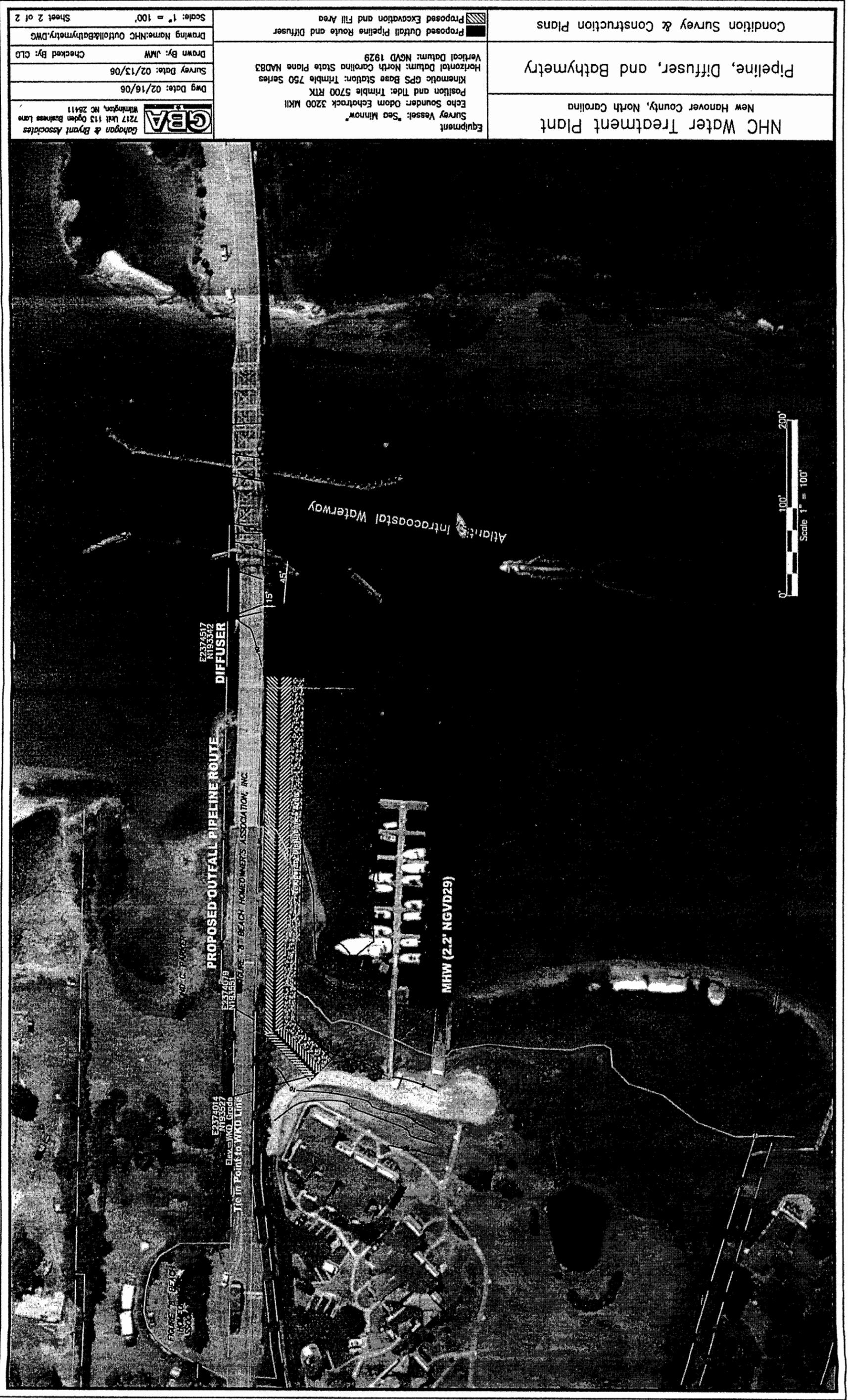
DRAWING BY:
 ARCADIS G&M of North Carolina
 801 Corporate Center Drive, Suite 300
 Raleigh, NC 27607

Proposed Impacts to Waters of the U.S. (29,198.88 sf; 0.67 ac)
 Proposed Impacts to 404 Wetlands (244.87 sf; 0.005 ac)
 Please note these numbers do not include impacts from Wells A & B (see Sheet CB)

PRELIMINARY: NOT FOR CONSTRUCTION

Wetland survey information provided by Hanover Design
 Modified by Land Management Group, Inc. to show proposed wetlands and Waters of the U.S. impacts.

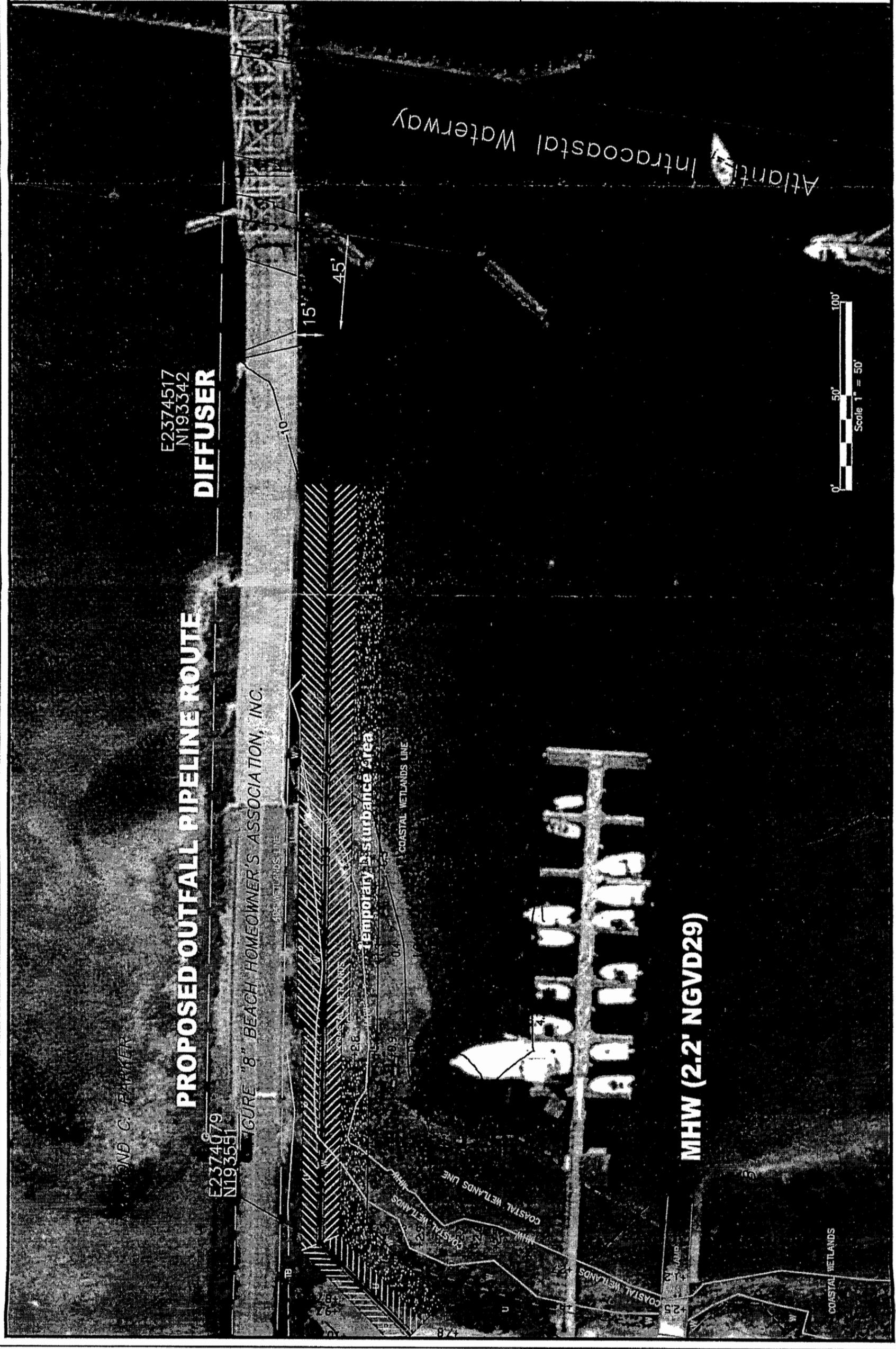




<p>NHC Water Treatment Plant New Hanover County, North Carolina</p>		<p>Condition Survey & Construction Plans</p>	
<p>Equipment Survey Vessel: "Sea Minnow" Echo Sounder: Odom Echotrack 3200 MKII Position and Tide: Trimble 5700 RTK Kinematic GPS Base Station: Trimble 750 Series Horizontal Datum: North Carolina State Plane NAD83 Vertical Datum: NGVD 1929</p>		<p>Pipeline, Diffuser, and Bathymetry</p>	
<p>Dwg Date: 02/16/06</p>		<p>Proposed Outfall Pipeline Route and Diffuser</p>	
<p>Survey Date: 02/13/06</p>		<p>Proposed Excavation and Fill Area</p>	
<p>Drawn By: JMW Checked By: CLG</p>		<p>Drawing Name: NHC Outfall&Bathymetry.DWG</p>	
<p>Scale: 1" = 100'</p>		<p>Sheet 2 of 2</p>	

GBA
Gahagan & Bryant Associates
7217 Unit 113 Ogden Business Lane
Wilmington, NC 28411

Condition Survey & Construction Plans Pipeline, Diffuser, and Bathymetry	
Equipment Survey Vessel: "Sea Minnow" Echo Sounder: Odom Echotrack 3200 MKII Position and Tide: Trimble 5700 RTK Kinematic GPS Base Station: Trimble 750 Series Horizontal Datum: North Carolina State Plane NAD83 Vertical Datum: NGVD 1929	
Proposed Outfall Pipeline Route and Diffuser Proposed Excavation and Fill Area	
Drawing Name: NHC Outfall&Bathymetry.DWG Drawn By: JMW Checked By: CLG	Dwg Date: 02/18/08 Survey Date: 02/13/08
Scale: 1" = 50' Sheet 1 of 2	



E2374517
 N193342
DIFFUSER

PROPOSED OUTFALL PIPELINE ROUTE

E2374079
 N193351

FIGURE "8" BEACH HOMEOWNER'S ASSOCIATION, INC.

Temporary Disturbance Area

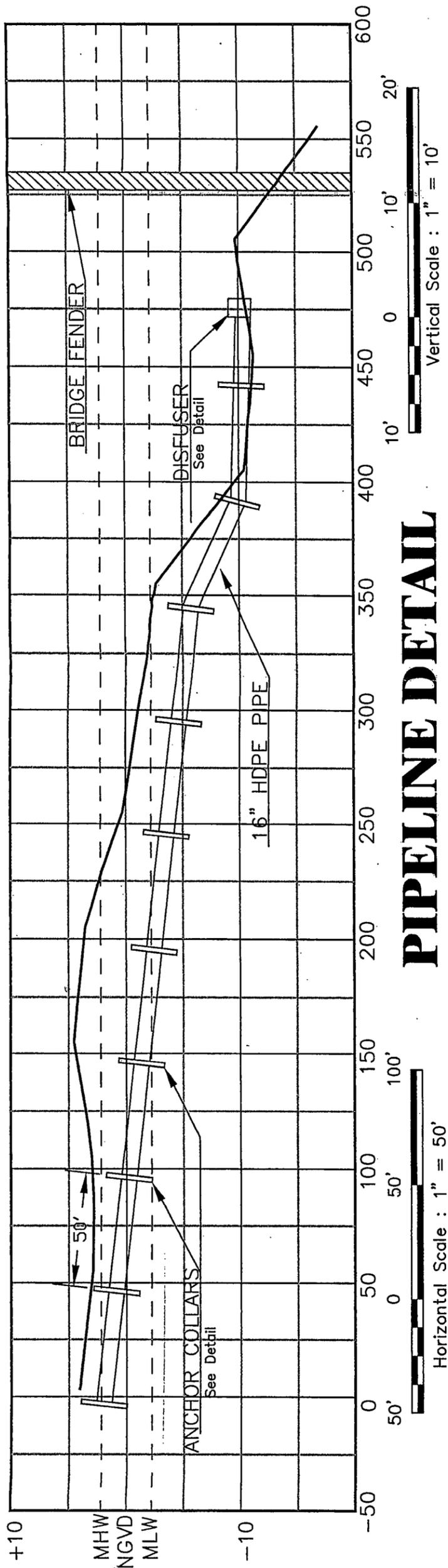
MHW (2.2' NGVD29)



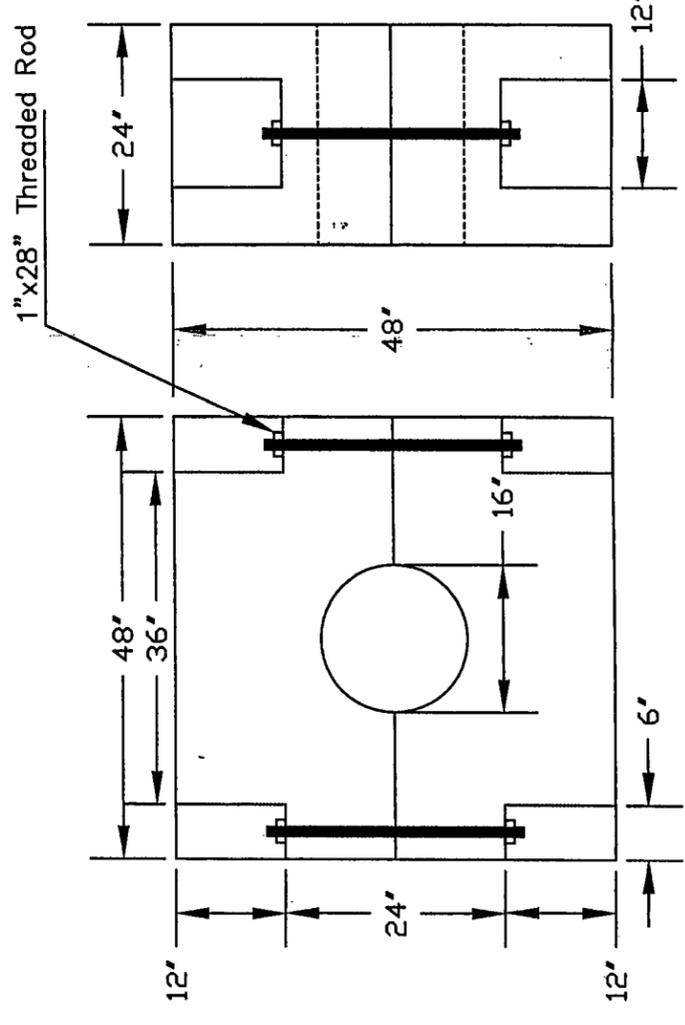
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Drawing Name: NHC Outfall & Bathymetry.DWG	
Drawn By: JMW	Checked By: CLG
Survey Date: 02/13/06	
Dwg Date: 02/16/06	

Equipment: "Sea Minnow"
 Survey Vessel: Odom EchoTrack 3200 MKII
 Echo Sounder: Trimble 5700 RTK
 Position and Tide: Trimble 750 Series
 Kinematic GPS Base Station: Trimble 750 Series
 Horizontal Datum: North Carolina State Plane NAD83
 Vertical Datum: NGVD 1929

Construction Plans
Pipeline, Diffuser, and Collar Details
NHC Water Treatment Plant New Hanover County, North Carolina

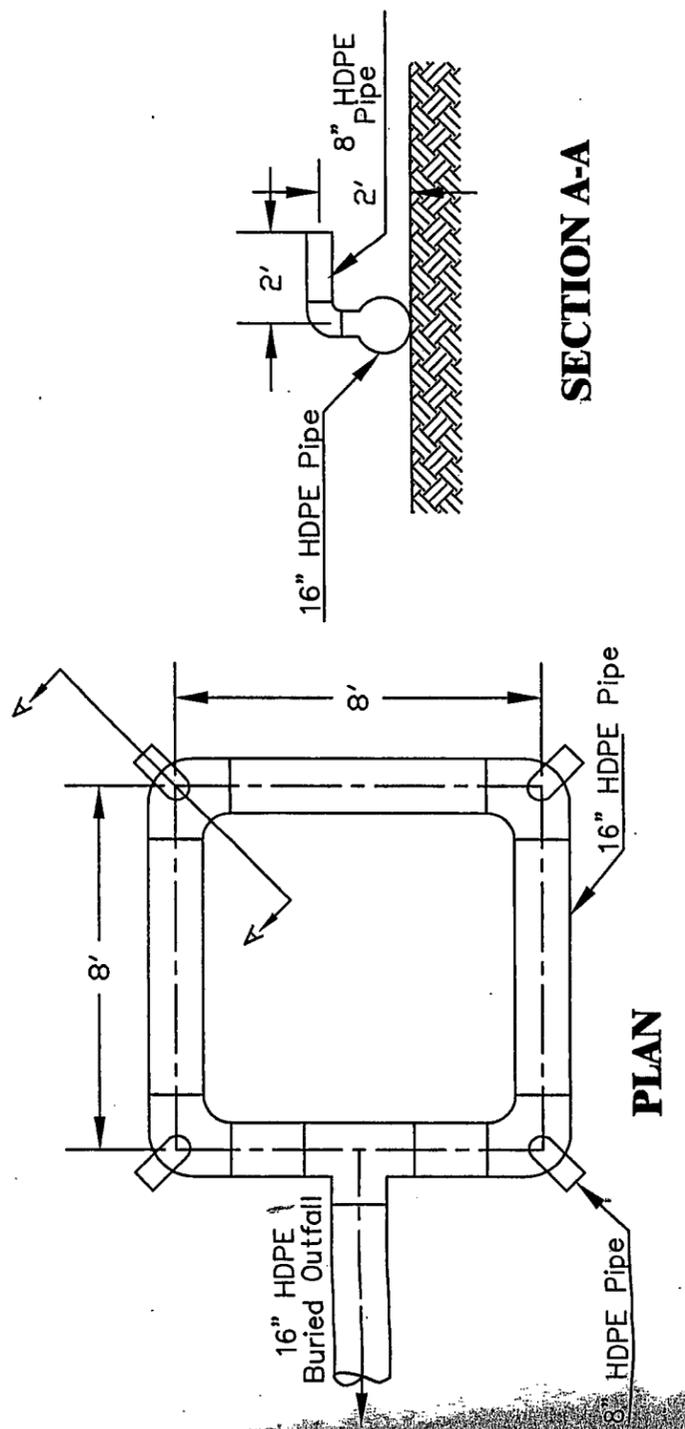


PIPELINE DETAIL



COLLAR DETAIL

NOT TO SCALE



DIFUSER DETAIL

NOT TO SCALE

Gahagan & Bryant Associates
 7217 Unit 113 Ogden Business Lane
 Wilmington, NC 28411
GBA

APPENDIX B. NPDES Permit Application

NPDES PERMIT APPLICATION - SHORT FORM C - WTP

For discharges associated with water treatment plants

Mail the complete application to:
N. C. Department of Environment and Natural Resources
Division of Water Quality / NPDES Unit
1617 Mail Service Center, Raleigh, NC 27699-1617

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REGULATORY
W.M. FLD. CFC.

NPDES Permit Number NC00

If you are completing this form in computer use the TAB key or the up - down arrows to move from one field to the next. To check the boxes, click your mouse on top of the box. Otherwise, please print or type.

1. Contact Information:

Owner Name	New Hanover County Water and Sewer District
Facility Name	New Hanover County Water Treatment Plant and Well Field System
Mailing Address	230 Market Place Drive
City	Wilmington
State / Zip Code	NC/28403
Telephone Number	(910)798-7139
Fax Number	(910)798-7051
e-mail Address	

2. Location of facility producing discharge:

Check here if same as above

Street Address or State Road	Proposed WTP site is located on a 44-acre parcel northwest of US 17 (Market St). The property is bounded by Old Oak Road to the southeast and the proposed Military Cutoff Extension Corridor to the northwest.
City	Wilmington
State / Zip Code	NC/28411
County	New Hanover County

3. Operator Information:

Name of the firm, consultant or other entity that operates the facility. (Note that this is not referring to the Operator in Responsible Charge or ORC)

Name	W.K. Dickson & Co, Inc.
Mailing Address	909 Market St
City	Wilmington
State / Zip Code	NC/28401
Telephone Number	(910)762-4200
Fax Number	(910)762-4201

4. Ownership Status:

NPDES PERMIT APPLICATION - SHORT FORM C - WTP

For discharges associated with water treatment plants

Federal State Private Public

5. Type of treatment plant:

- Conventional** (Includes coagulation, flocculation, and sedimentation, usually followed by filtration and disinfection)
- Ion Exchange** (Sodium Cycle Cationic ion exchange)
- Green Sand Filter** (No sodium recharge)
- Membrane Technology** (RO, nanofiltration)

Check here if the treatment process also uses a water softener

6. Description of source water(s) (i.e. groundwater, surface water)

Groundwater: 50% acquired from the Pee Dee aquifer and 50% from the Castle Hayne aquifer

7. Describe the treatment process(es) for the raw water:

The proposed New Hanover County WTP is a 6-mgd groundwater treatment facility that will treat water from the Pee Dee and Castle Hayne aquifers. The primary treatment process will be nanofiltration for softening total organic carbon (TOC) removal and color removal. Separate membrane filtration units will be provided for the two source waters to alleviate the potential for membrane fouling from biological growth or saturated salts. In addition, raw water from the Castle Hayne has high iron levels and requires pre-treatment prior to membrane filtration.

The total capacity of the Pee Dee treatment train will be 3.0 mgd, which equates to a raw water feed rate of approximately 3.6 mgd. Treatment processes will include cartridge filtration and nanofiltration in series. Three vertical cartridge filter vessels with 5-micrometer filters will be provided for particulate removal. Two nanofiltration units will be provided with a permeate capacity of 2.4 mgd. Source water will be blended with permeate at a rate up to 20 percent (or 0.6 mgd). Design recovery for the nanofiltration units is 80 percent. Three 1,050-gpm feed pumps will be provided for boosting water to a feed pressure of about 110 pounds per square inch (psi).

The total capacity of the Castle Hayne treatment train will be 3.0 mgd, which equates to a raw water feed rate of approximately 3.7 mgd. Treatment processes (in series) will include oxidation with potassium permanganate, tray aeration, raw water detention, greensand filtration, cartridge filtration, and nanofiltration. A 300,000-gallon raw water detention tank will provide 2 hours of contact time for potassium permanganate oxidation. Three greensand filters will be provided for iron and manganese removal. The filters are sized based on a filter loading rate of 3.0 gpm/square feet. Three vertical cartridge filter vessels with 5-micrometer filters will be provided for particulate removal. Two nanofiltration units will be provided with a permeate capacity of 2.7 mgd. Source water will be blended with permeate at a rate up to 10 percent (or 0.3 mgd). Design recovery for the nanofiltration units is 80 percent. Three 1,050-gpm feed pumps will be provided for boosting water to a feed pressure of about 110 psi.

Following nanofiltration, permeate from both the Pee Dee and Castle Hayne treatment trains will be blended and the following chemicals will be added: sodium hypochlorite, sodium hydroxide, and corrosion inhibitor. Finished water will then be conveyed to a 2.0-million gallon pre-stressed concrete tank for storage. Three vertical-turbine pumps will be provided to pump finished water into the distribution system.

NPDES PERMIT APPLICATION - SHORT FORM C - WTP

For discharges associated with water treatment plants

> **Solids Handling Plan**

16. NEW Applicants

Information needed in addition to items 1-15:

> **New applicants must contact the NCDENR Customer Service Center.**

Was the Customer Service Center contacted? **Yes** ; **No**

> **Analyses of source water collected**

> **Engineering Alternative Analysis**

> **Discharges from Ion Exchange and Reverse Osmosis plants shall be evaluated using a water quality model.**

17. Applicant Certification

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate.

Printed name of Person Signing

Title

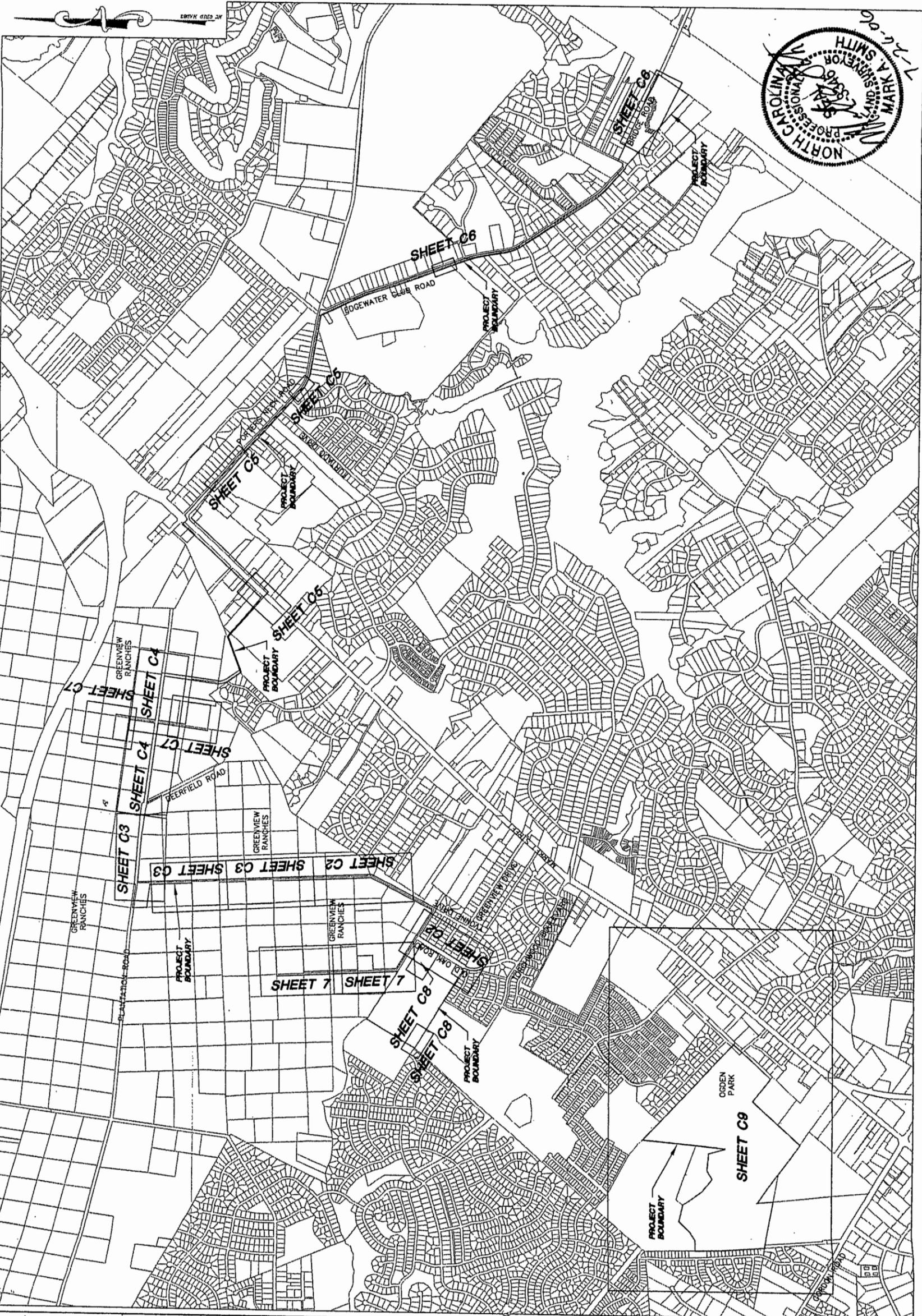
Signature of Applicant

Date

North Carolina General Statute 143-215.6 (b)(2) provides that: Any person who knowingly makes any false statement representation, or certification in any application, record, report, plan, or other document files or required to be maintained under Article 21 or regulations of the Environmental Management Commission implementing that Article, or who falsifies, tampers with, or knowingly renders inaccurate any recording or monitoring device or method required to be operated or maintained under Article 21 or regulations of the Environmental Management Commission implementing that Article, shall be guilty of a misdemeanor punishable by a fine not to exceed \$25,000, or by imprisonment not to exceed six months, or by both. (18 U.S.C. Section 1001 provides a punishment by a fine of not more than \$25,000 or imprisonment not more than 5 years, or both, for a similar offense.)

APPENDIX C. Wetland / Waters of the U.S. Impact Maps

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2	695	0.016	C5
3	24	0.001	C5
4	754	0.017	C6
5	20761	0.477	C9

404 WETLAND IMPACT AREA	AREA		LOCATION SHEET
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3	825	0.019	C2
4	109	0.003	C2
5	3910	0.090	C3
6	11911	0.273	C3
7	377	0.009	C3
8	264	0.006	C3
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10	207	0.005	C3
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12	10485	0.241	C3
13	18952	0.435	C7
14	11091	0.255	C4
15	1492	0.034	C7
16	359	0.008	C8

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TEMPORARY COASTAL WETLANDS IMPACT AREA	AREA		LOCATION SHEET
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WATERS OF THE U.S. IMPACT AREA	AREA		LOCATION SHEET
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WETLAND IMPACT AREA
 WUS IMPACT AREA
 WUS = WATERS OF THE UNITED STATES

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 community infrastructure consultants

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 DRAWN BY: [Signature]

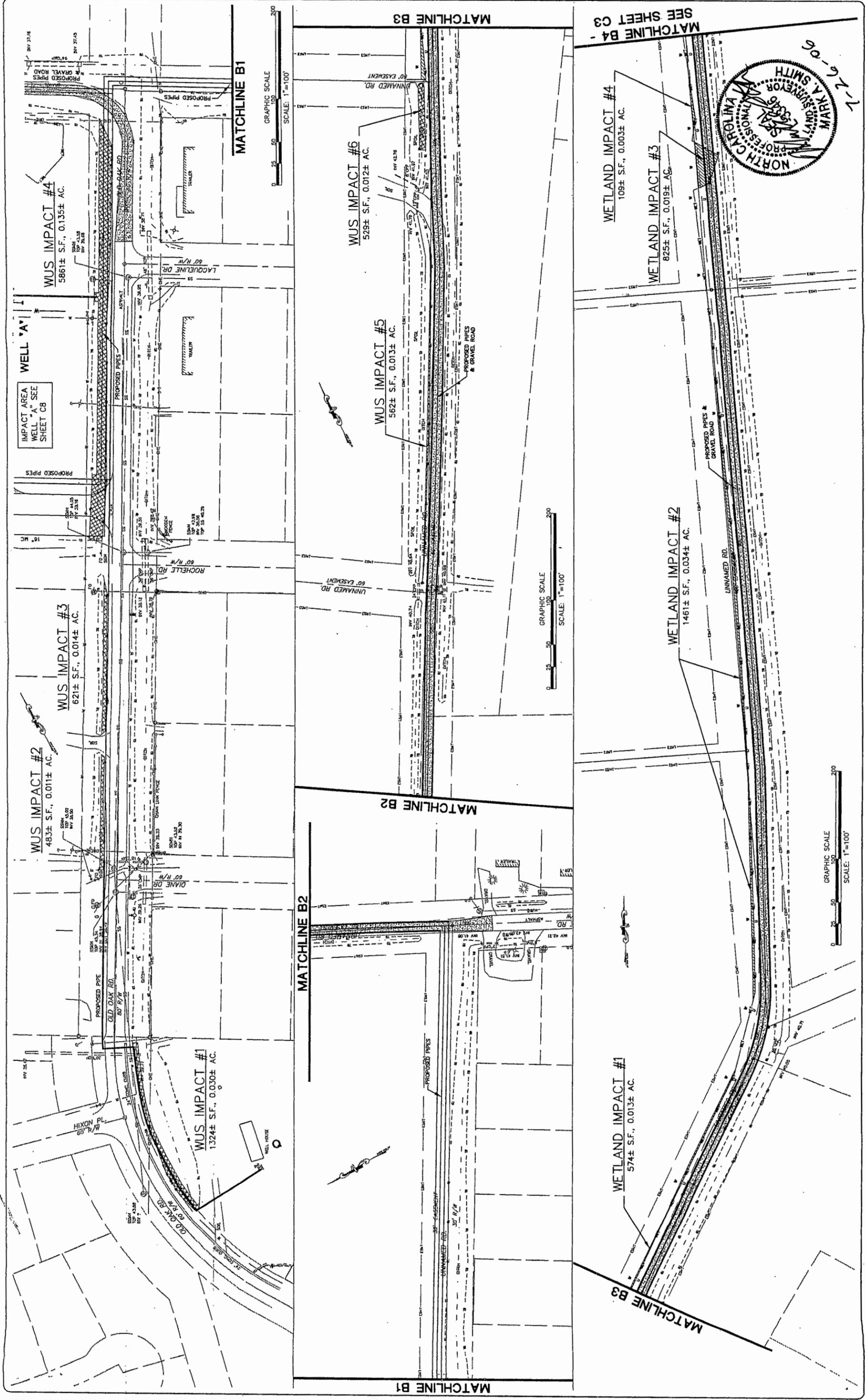
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 (910) 762-4200

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INDEX



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 CHECKED BY: [Name]
 PROJECT NUMBER: 909118000
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RELEASED FOR: [Name]
 APPROVALS: [Name]
 BOOKING: [Name]
 CONSTRUCTION: [Name]
 SURVEYOR: [Name]

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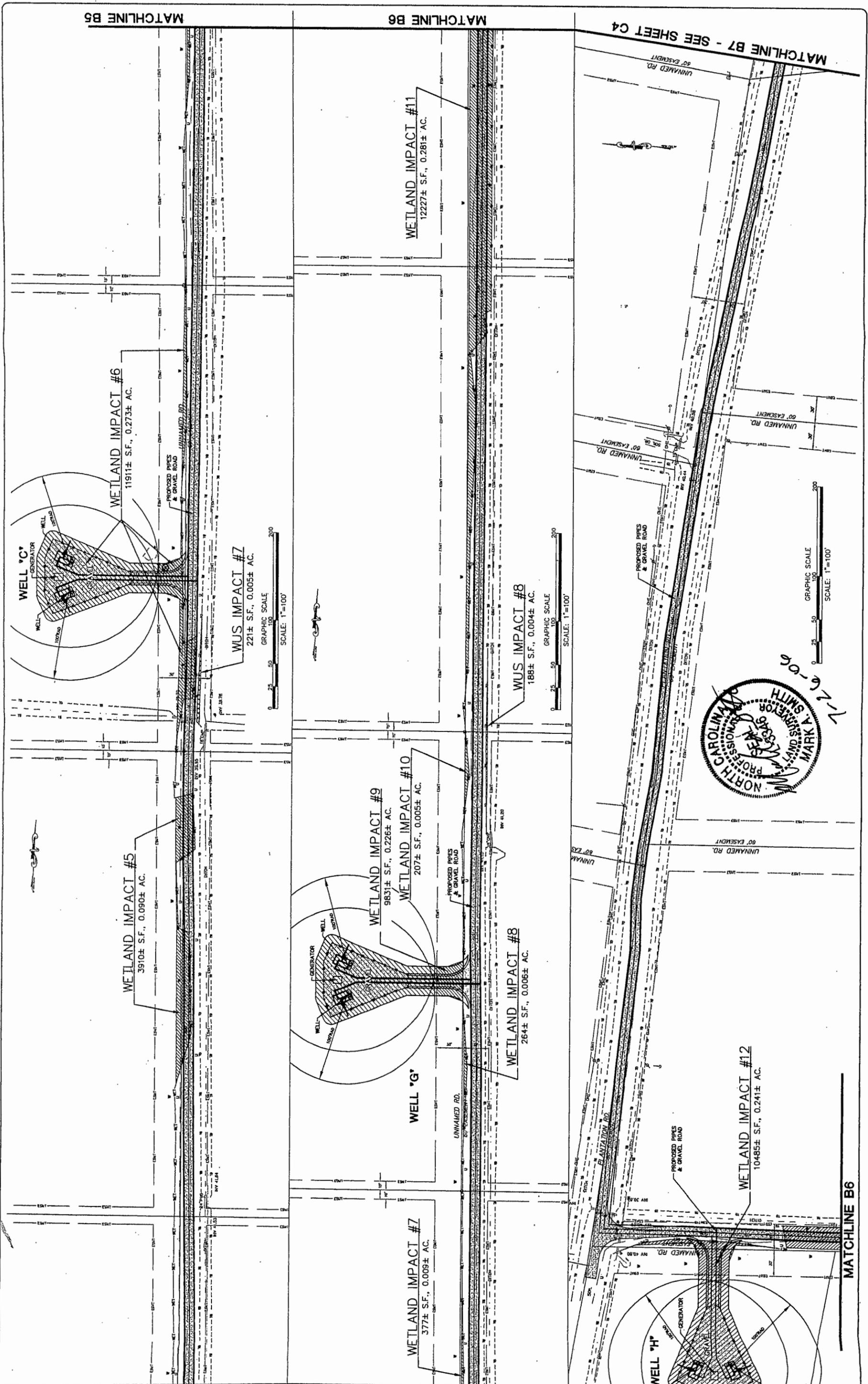
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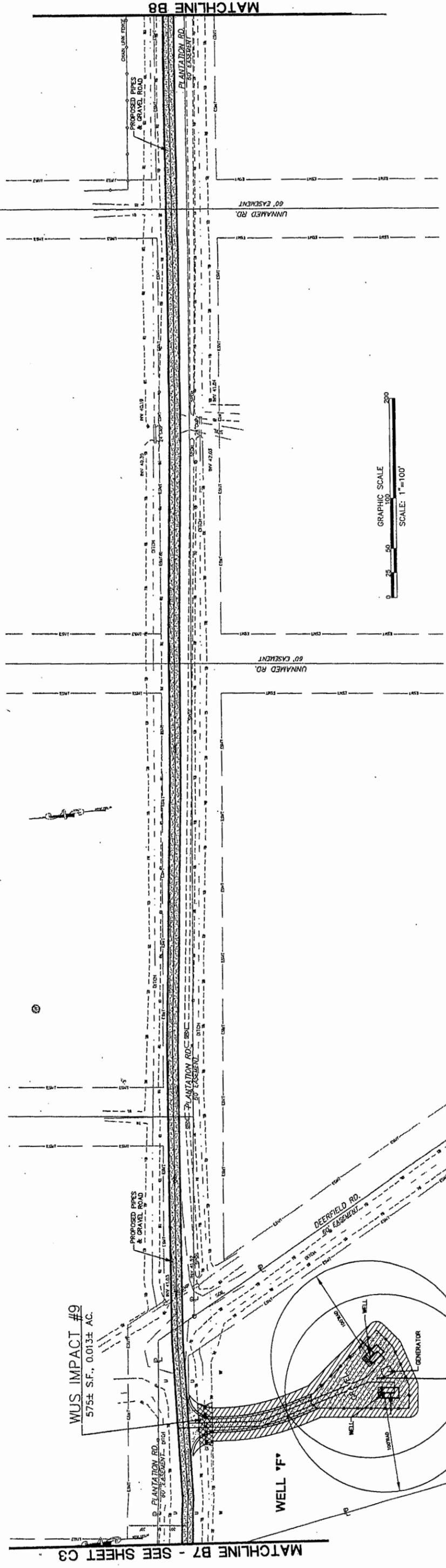
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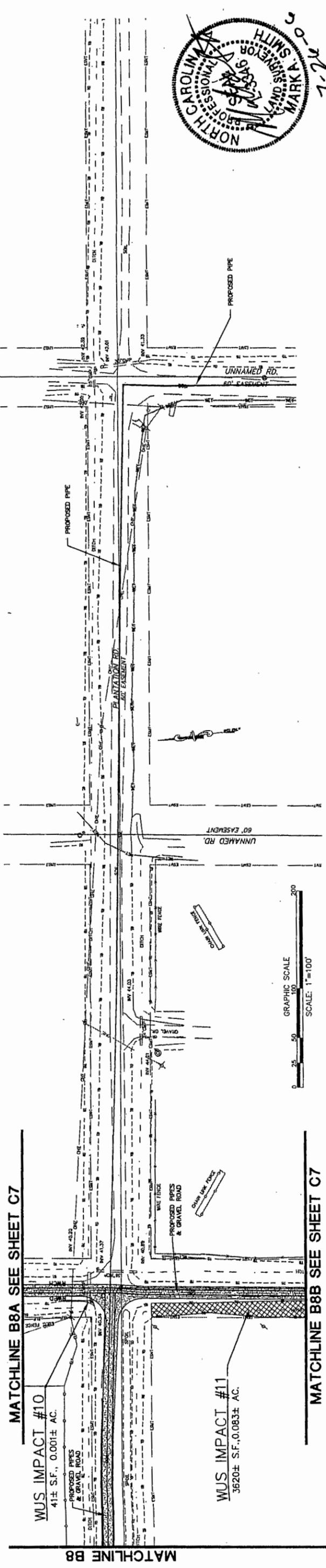
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WELL #7

WETLAND IMPACT #14
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GRAPHIC SCALE
SCALE: 1"=100'

MATCHLINE B8



MATCHLINE B8A SEE SHEET C7

WUS IMPACT #10
41± S.F., 0.001± AC.

WUS IMPACT #11
3620± S.F., 0.083± AC.

GRAPHIC SCALE
SCALE: 1"=100'

MATCHLINE B8

MATCHLINE B8B SEE SHEET C7



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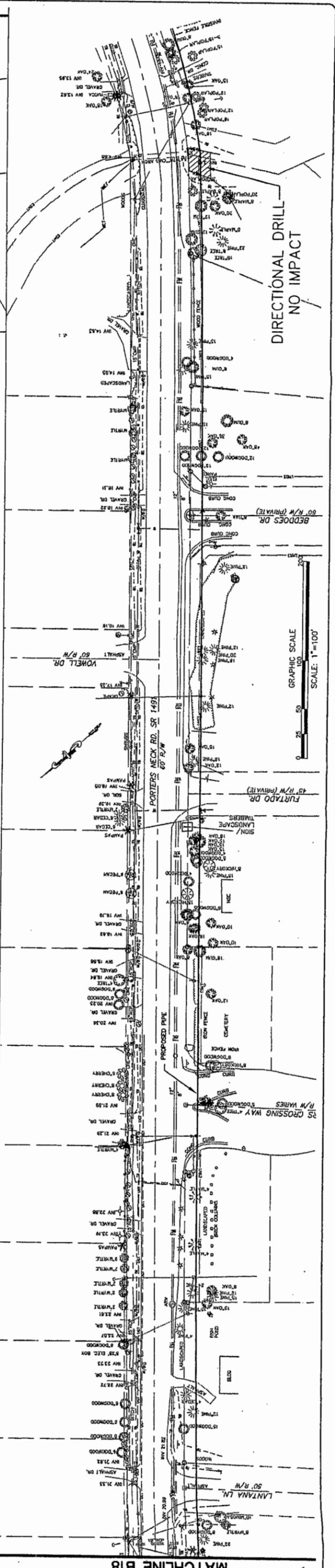
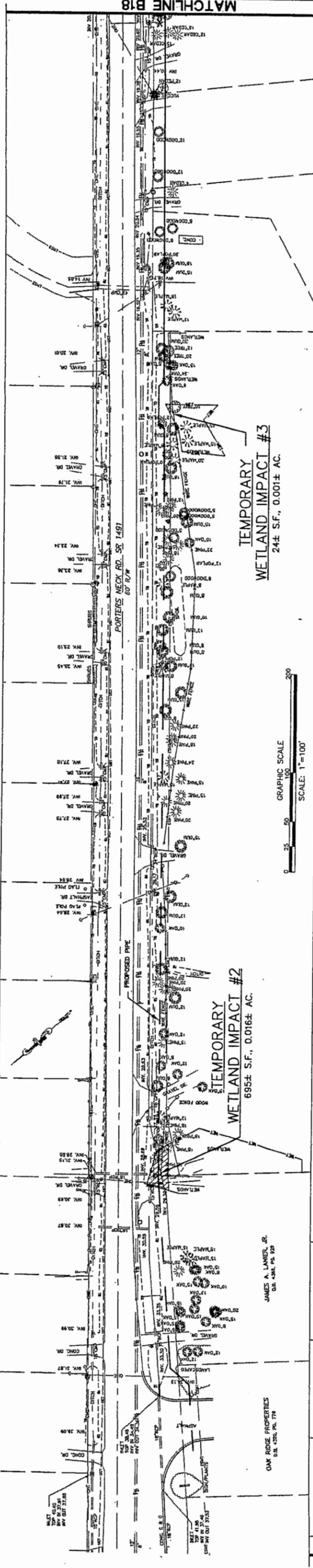
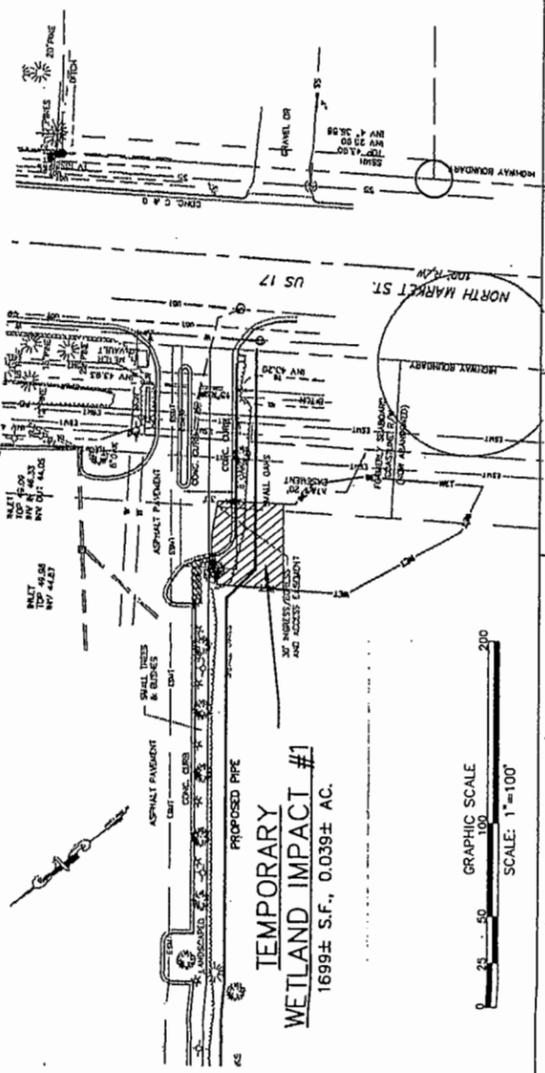
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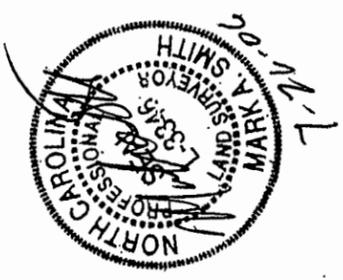
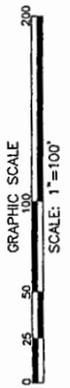
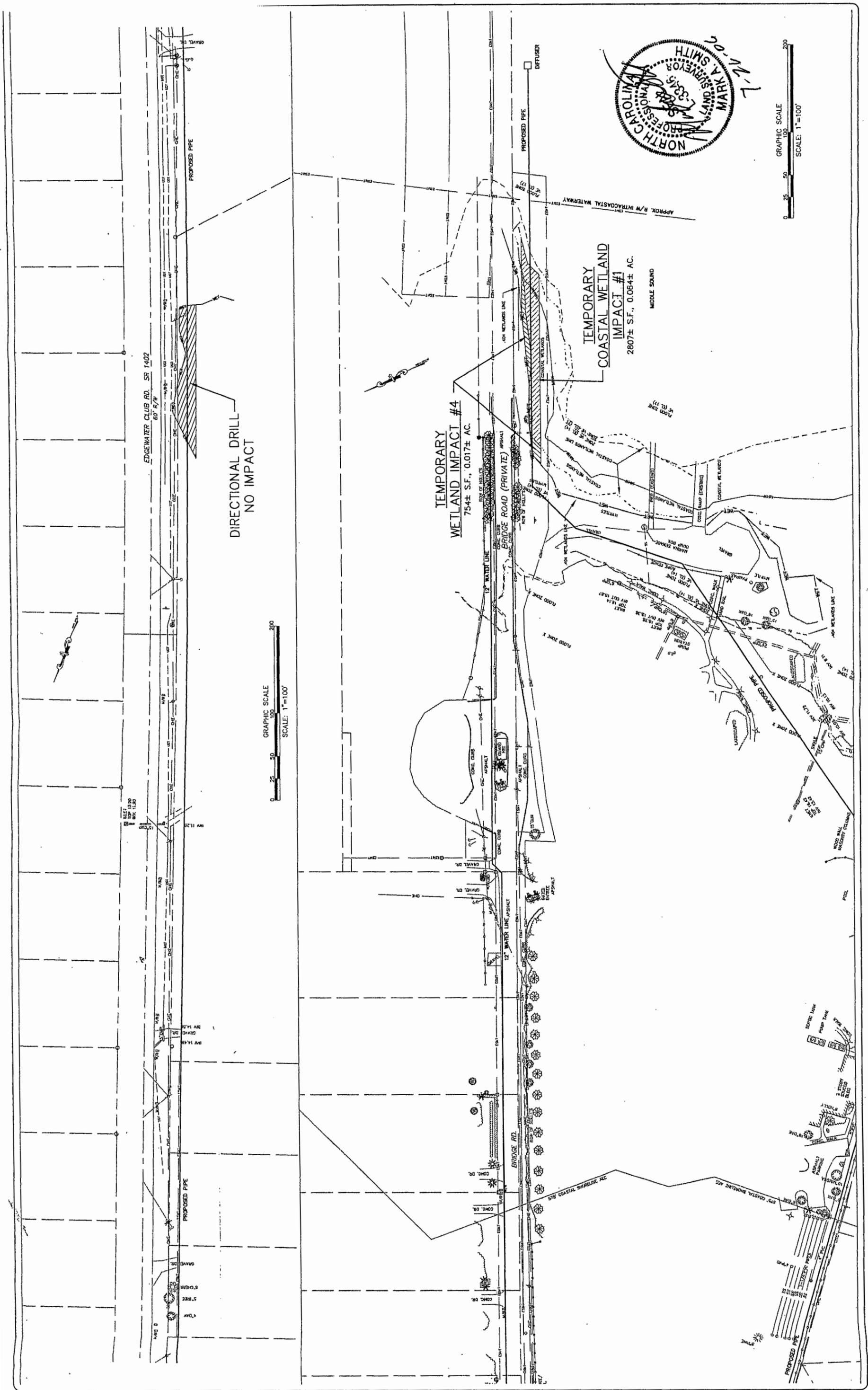
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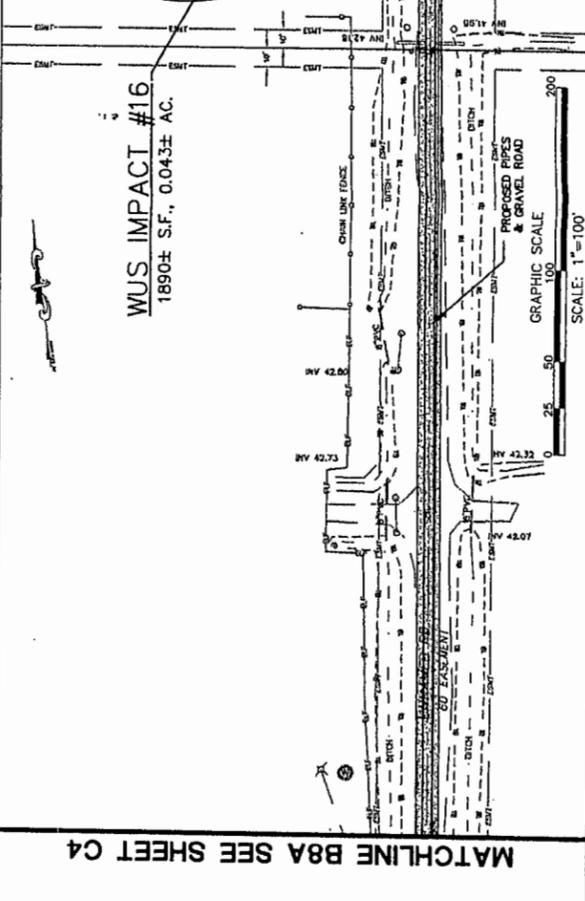
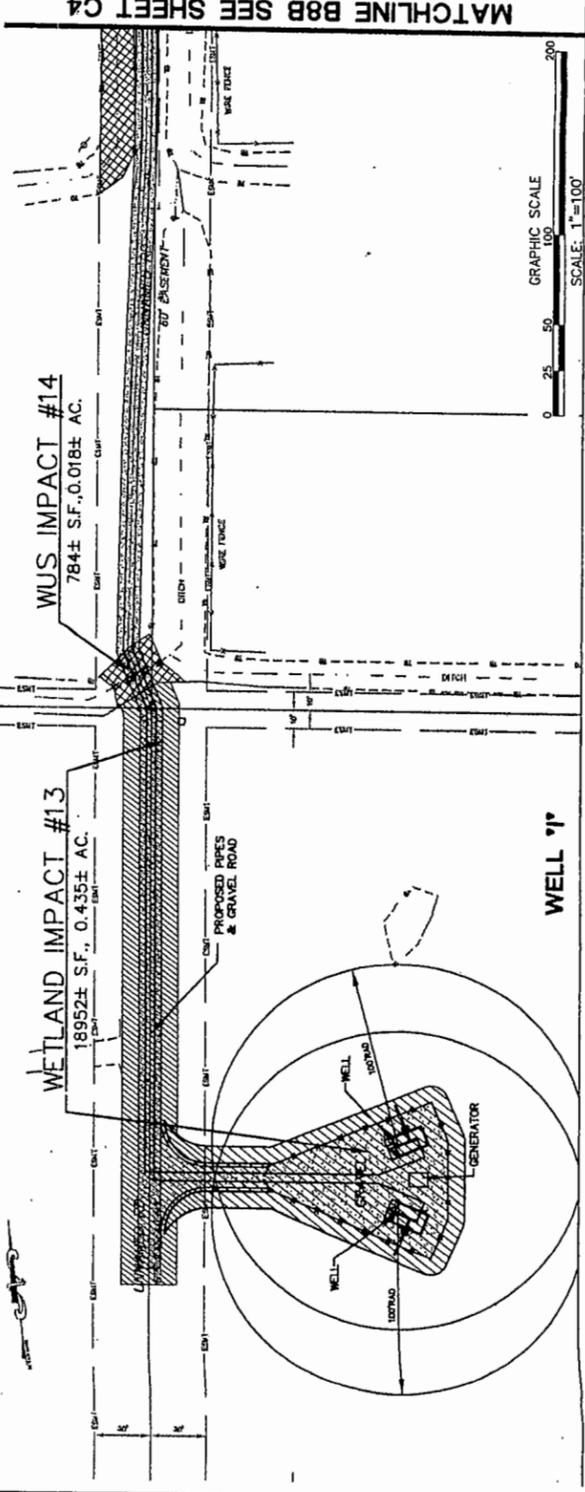
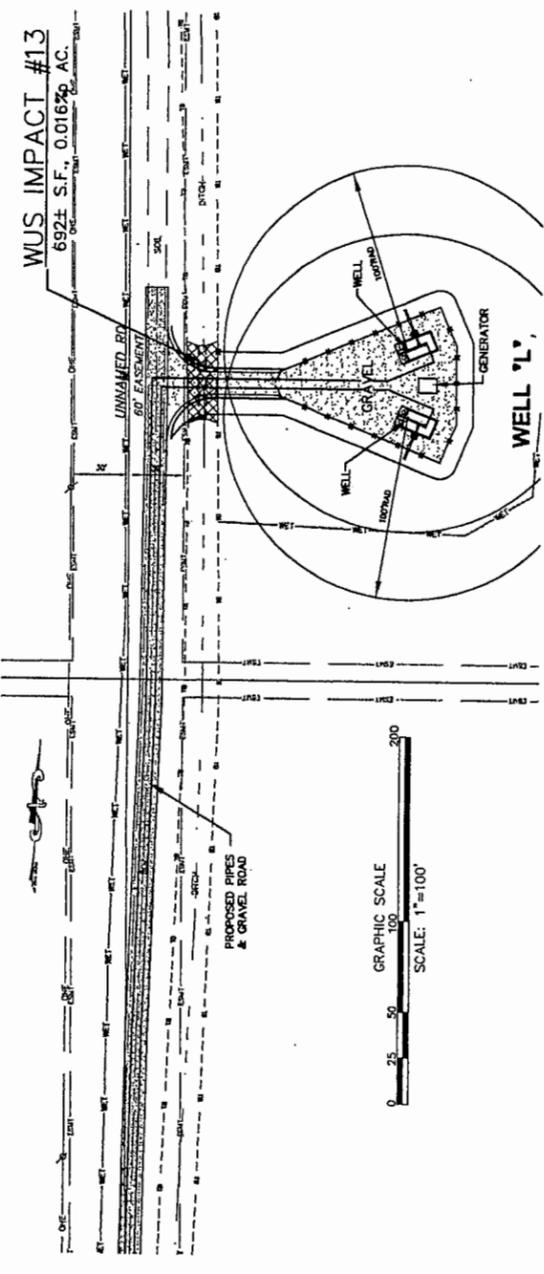
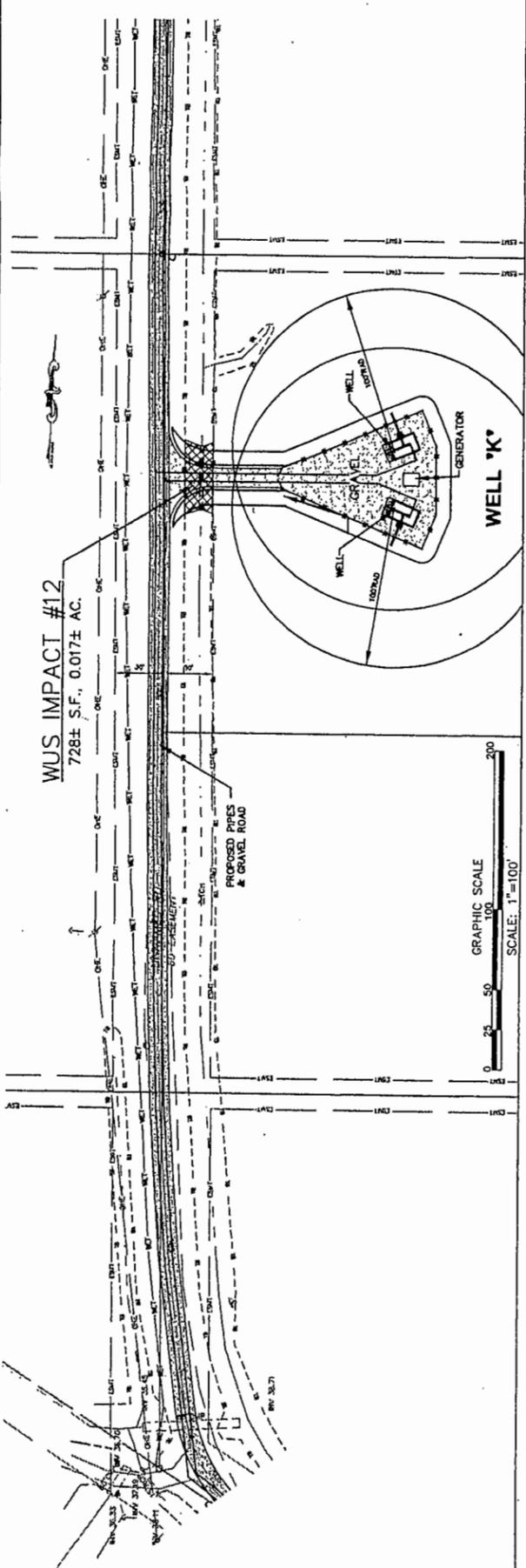
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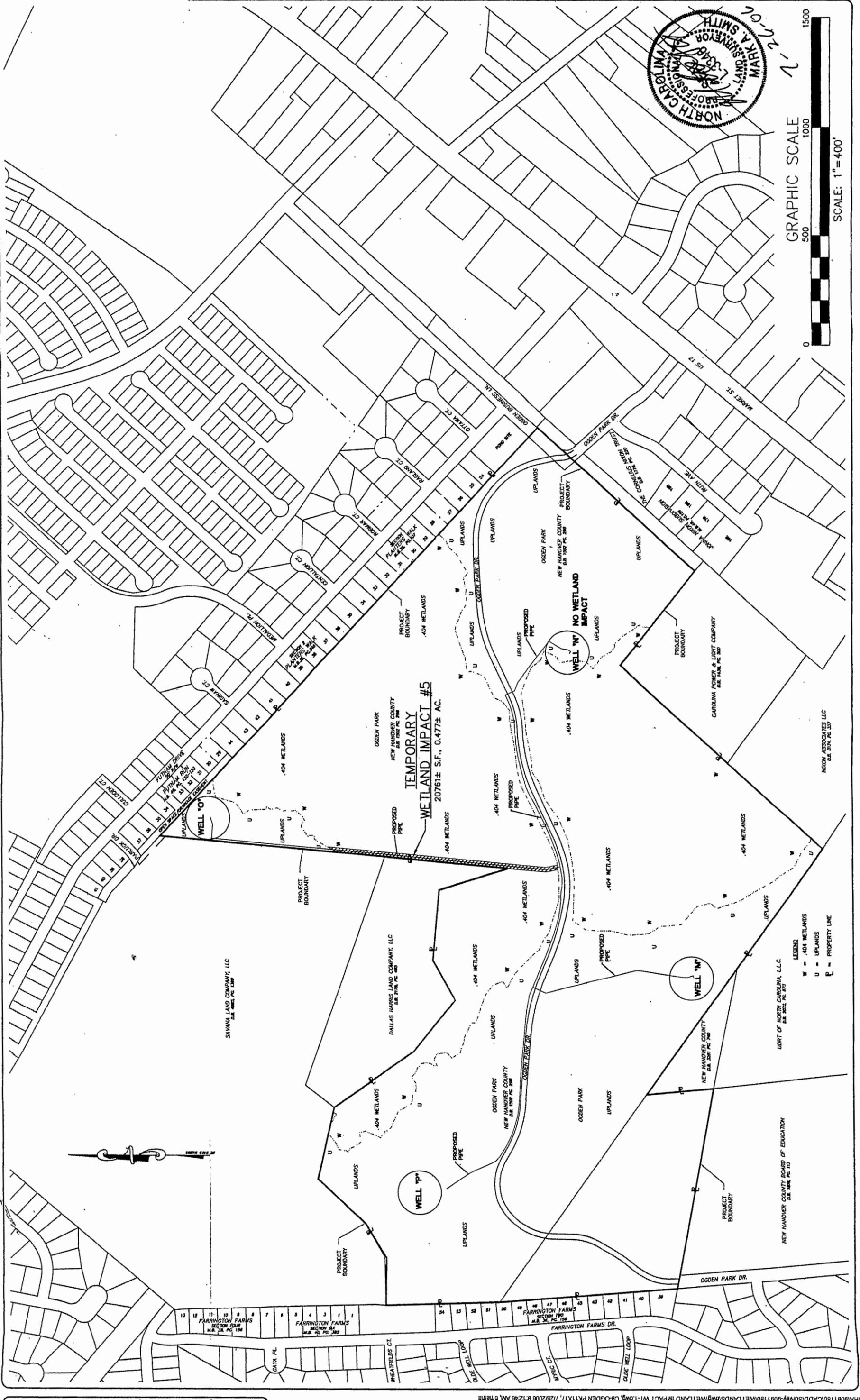
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C9 10

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NEW HANOVER COUNTY
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WELL LOCATIONS
AT
OGDEN PARK
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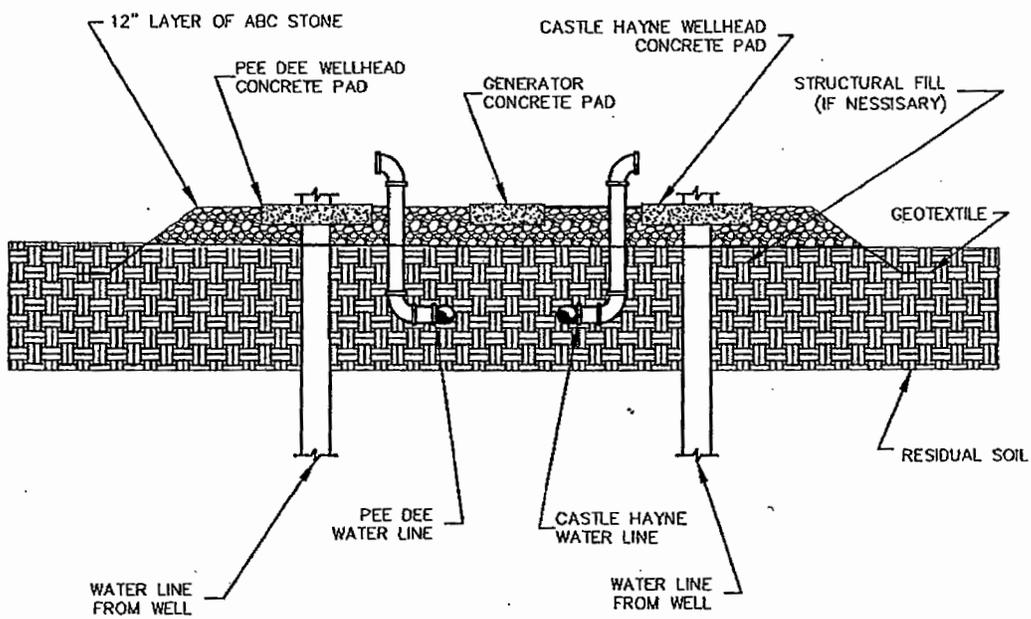
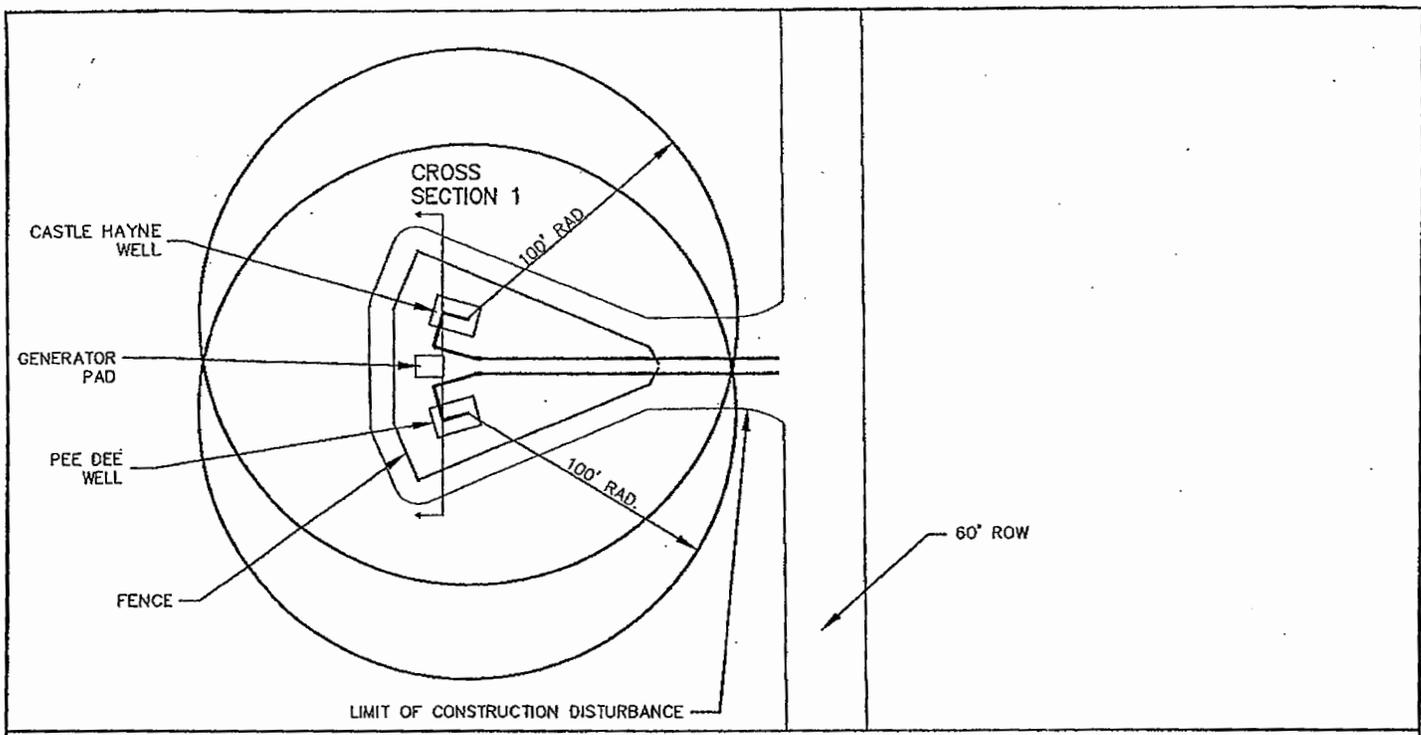
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Chk: PLG
Proj. No: 90911.80

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NEW HANOVER COUNTY W&S DISTRICT
WILMINGTON, NORTH CAROLINA

SHEET 1 OF 1