

MUNICIPAL SOLID WASTE LANDFILL FACILITY SITE STUDY

EXPANSION OF EXISTING FACILITY

Permit No.: 4903-MSWLF-1993

Site Location: 354 Twin Oaks Road
Statesville, NC 28625

Applicant: County of Iredell

Applicant's Address: 354 Twin Oaks Road
Statesville, NC 28625

MESCO Project Number
G08002



September 2010

Submitted by the Garner Office of:

LICENSE NUMBER: C-0281

Municipal Services  **Engineering Company, P.A.**

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SECTION 1.0 INTRODUCTION

1.1 Purpose

The purpose of this MSWLF Site Study is to demonstrate that the area proposed for development by Iredell County is suitable for lateral expansion of the existing Municipal Solid Waste Landfill Facility (MSWLF) according to The North Carolina Administrative Code, Title 15A, Department of Environment and Natural Resources, Chapter 13, Solid Waste Management, Subchapter 13B, Solid Waste Management Section .1600, Rule .1618.

1.2 Background

Iredell County, North Carolina currently owns two (2) Municipal Solid Waste Landfills. One MSWLF has been closed since 1993 and the other MSWLF is currently being operated by the County. The existing Subtitle D Landfill Facility will be expanded laterally to the south of the existing MSWLF Facility (see Location Map). Waste currently being disposed in the existing MSWLF will be disposed of in the expanded Subtitle D Facility.

1.3 General

In accordance with Rule .1618 (c)(5), local government approval of the proposed Subtitle D Landfill Facility has been obtained and is presented in Appendix A. The site of the proposed expansion is on a tract of land owned by the County adjacent to the existing MSWLF Facility. The proposed site will have two (2) new Phases of Municipal Solid Waste (MSW). The Facility will only accept Municipal Solid Waste which includes but is not limited to Household, Industrial, Construction/Demolition, and Animal Waste. The Facility will not accept any Hazardous or PCB wastes. It is the intent of Iredell County that the next Phase to be completed and ready to receive MSW generated within Iredell County will be Phase 5.

LOCATION MAP

SECTION 2.0 CHARACTERIZATION STUDIES

The proposed expansion to the existing MSWLF Facility, gives the County approximately 83.27 acres of land for the facility, which is located approximately one mile from the Statesville city limits. There will be a total of nine (9) phases, four phases already exist, leaving five (5) Phases to be built in the future.

The current site consists of phases 1 through 5. The current Phase 5 will become Phases 7 and 8 combined and the expansion will consist of Phases 5 and 6 combined. Existing Phase 1 is approximately 17 acres in size. Phase 2 is approximately 12 acres. Phase 3 is approximately 17 acres in size, and Phase 4 is approximately 12 acres. Phases 5 and 6 combined (new area) will be approximately 32 acres and Phases 7 and 8 (old Phase 5) will be approximately 24 acres.

Phase 5 will fill a portion of the Phases 5 and 6 combined footprint, and phase 6 will tie horizontally to Phase 5 to complete the footprint. Phase 7 will fill a portion of the Phases 7 and 8 combined footprint, and tie horizontally to Phase 6. Phase 8 will tie horizontally to Phase 1 and Phase 7 to complete the Phase 7 and 8 combined footprint. Phase 8 will also be a vertical expansion on top of Phases 6 and 7. Phase 9 will be a vertical expansion on Phase 1, Phase 2 and Phase 8.

The 2000 Census information, available from the NC Office of State Budget and Management, showed the population of Iredell County at 122,660. The breakdown by municipality is Harmony 526, Love Valley 30, Mooresville 18,823, Statesville 23,320 and Troutman 1,592. The remaining 78,369 people live in the unincorporated areas of the County or approximately 64% of the population of Iredell County lives outside of the City Limits. Iredell County is projected to have an increase in population in the years 2000 through 2008 of 25.7%. The municipalities have a projected growth between 2000 and 2008 of 40.2% with the majority of the growth in Mooresville and Statesville. The 2000 Census information (Census Tract 606) has the distribution of population by race within approximately a two mile radius of the landfill site is: White = 69.74%, Black = 20.33%, American Indian/Alaska Native = 0.17%, Asian = 3.0%, Some Other Race = 1.81%, Two or More Races = 0.86% and Hispanic/Latino (of any race) = 4.09%.

There was a public meeting held on October 12th, 2010 to discuss the use of this property with the residents and adjoining landowners. The purpose of this meeting was to inform the public of the intention of Iredell County to expand the existing landfill facility. The minutes of the meeting, attendees and newspaper advertisements are in Appendix B (Related Correspondences).

2.1 Regional Characterization Study

The Regional Characterization Study describes the area within two (2) miles of the proposed MSWLF Facility. There are ten (10) public water supply wells located in the two (2) mile perimeter.

There are twenty (20) residential subdivisions, and one (1) mobile home park, they are shown on the Regional Characterization Map included in this section.

There are no public use airports or runways. Waste transportation routes consist of U.S. Highway 70, S.R. 2320, and S.R. 2319. The amount of waste being disposed of at the Facility will remain at virtually the same rates since the landfill will be accepting waste from the same area. Consequently, the amount of traffic will not increase due to the construction of the proposed landfill facility.

2.1.1 Landfill Facility Location

Access to the MSWLF Facility is located off S.R. 2319 in Iredell County, North Carolina. All phases will have access through the existing landfill access, off of S.R. 2319.

2.1.2 Public Water Supply Wells, Surface Water Intakes, and Service Areas

There are ten (10) public water supply wells located in the two (2) mile perimeter, they are as follows and as shown on the Regional Characterization Map:

- 5 - wells named as Murdock Road Water System well numbers 2,3,5,6, and 7
- 2 - wells named as Suburban Acres well numbers 1 and 2
- 2 - wells named as Statesville Mobile Home Park well numbers 1 and 2
- 1 - well named Twin Oaks Golf Club well number 1

2.1.3 Residential Subdivisions

There are twenty (20) residential subdivisions, and one (1) mobile home park, they are as follows:

Bellwood	Eastfield Estates
Del-Wan Heights	Carters Farm
Beaver Farms	Horne Estates
Forest Acres	Maywood
Oak Creek	Skyland
Statesville Country Club	Third Creek Place
Suburban Acres	Homestead Estates
Statesville Mobile Home Park	Keller Acres
Glen Echo	Highland Acres
Green Acres	Miller Estates
Mitchell College, Mitchell-Aire and Brookview	

2.1.4 Waste Transportation Routes

There are several Waste Transportation Routes. All Waste Transportation Routes are listed below and are shown on the Regional Characterization Map.

- U. S. Highway 70
- S.R. 2319
- S.R. 2320

2.1.5 Public Use Airports

There are no public use airports or runways located within the two (2) mile perimeter. There are no airports or runways within six (6) miles of the site as shown on the Regional Characterization Airport Safety Map included in this section.

2.2 Local Characterization Study

The Local Characterization Study describes the area within 2000 feet of the proposed MSWLF Facility. The Facility will total 304.53 acres, of which 58 acres is currently used as MSW landfill, 27.02 acres is currently used as a Construction and Demolition Landfill, 0.48 acres is a sewer easement, and 3.19 acres is a railroad right-of-way. There is 56 acres of proposed MSW landfill units, the remaining acreage will be used for buffers. The current land use of the property is woodlands and cropland. There are no schools located within the 2000 foot perimeter. There are no known private residential wells located within the perimeter.

2.2.1 Disposal Site Property and On-Site Easements

The property lines are indicated on the Local Characterization Map. The Facility property consists of approximately 304.53 acres of land. There is a sewer easement located on the property.

2.2.2 Existing Land Use and Zoning

The property is currently cropland, existing Construction and Demolition Landfill and woodlands. This property is zoned Residential/Agricultural. A zoning letter explaining this and special conditions is included in Local Government Approvals (Appendix A).

2.2.3 Private Residences and Schools

There are ninety five (95) private residences located within the perimeter. There are no schools located within the perimeter.

2.2.4 Potential Sources of Contamination

The existing Iredell County MSWLF and Baler Facility are potential sources of contamination. There are several businesses within the 2000 foot perimeter that could be potential sources of contamination. These are shown on the Local Characterization Map.

2.2.5 Potable Wells

There are no well documentation records available.

2.2.6 Historic Sites

A site investigation was conducted and no historic sites were found within the perimeter. The Cultural Resources Report was forwarded to the North Carolina Department of Cultural Resources. The report by Environmental Services, Inc., (ESI) and a letter from the State Historic Preserve is located in Appendix D.

2.2.7 Surface Water Drainage Patterns, Watersheds, and Floodplains

Surface Water Drainage Patterns:

All water flowing on site will eventually either reach groundwater or flow into Fourth Creek and/or its tributaries.

Watersheds:

The site is not located in a watershed. There are no surface water intakes within the two mile perimeter.

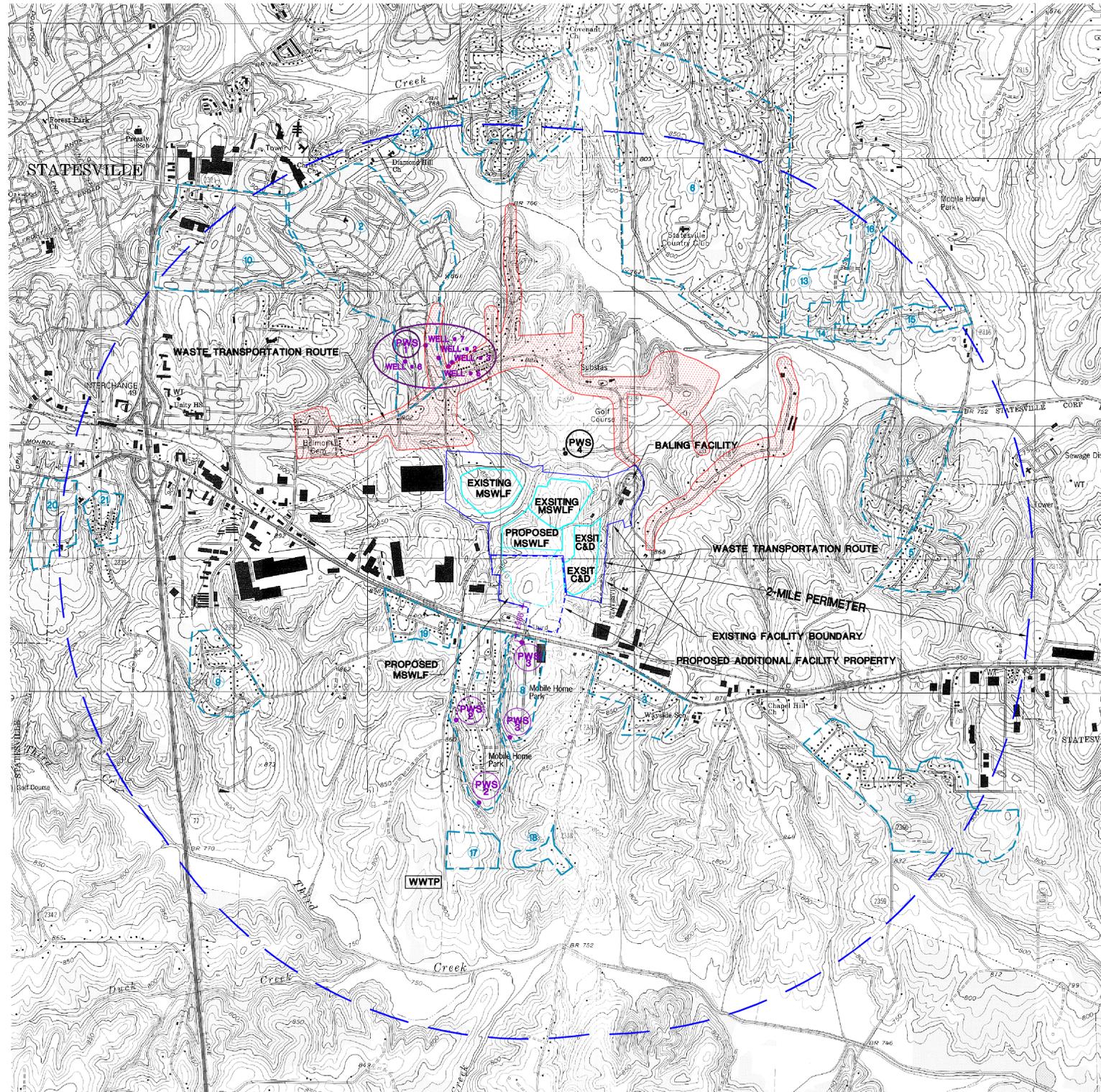
Floodplains:

There is no 100-year flood hazard. The site is not located within a 100-year floodplain.

2.2.8 Available Well Records

There are no well records available.

Regional Characterization Map



NOTES:

- General topography and features are shown on this map. USGS maps Statesville East(2002) and Sheperds were used for this map.
- The proposed landfill is shown on this map.
- There are 10 Public Water Supply wells located within the 2-mile perimeter, they are as follows:
 PWS 1: 5-wells all named as Murdock Road water system Well No.'s 2,3
 PWS 2: 2-wells all named as Suburban Acres Well No.'s 1 and 2
 PWS 3: 2-wells all named as Statesville MHP Well No.'s 1 and 2
 PWS 4: 1 well named Twin Oaks Golf Club Well No. 1
- There are 20 residential subdivisions, and 1 mobile home park within the 2-mile perimeter, they are as follows:
 1) Bellwood
 2) Del-Wan Heights
 3) Beaver Farms
 4) Forest Acres
 5) Oak Creek
 6) Statesville Country Club
 7) Suburban Acres
 8) Statesville MHP
 9) Glen Echo
 10) Green Acres
 11) Mitchell College, Mitchell-Aire, and Broadview
 12) Eastfield Estates
 13) Carters Farm
 14) Home Estates
 15) Maywood
 16) Skyland
 17) Third Creek Place
 18) Homestead Estates
 19) Keller Acres
 20) Highland Acres
 21) Miller Estates
- Waste Transportation routes are shown on this map. They are US Highway 70, SR 2320, and SR 2319.
- There are no public use airports or runways located within the 2-mile perimeter.
- The red hatched areas indicated areas not served by the City of Statesville Water System. All other areas within the 2-mile perimeter are served by the City of Statesville.

LEGEND:

- EXISTING FACILITY BOUNDARY LINE
- PROPOSED ADDITIONAL FACILITY BOUNDARY LINE
- EXISTING FACILITY MSWLF AND C&DLF UNITS
- PROPOSED MSWLF LIMIT
- 2-MILE PERIMETER LINE
- INDICATES PUBLIC WATER SUPPLY WELL
- INDICATES SUBDIVISION/RESIDENTIAL AREA
- INDICATES AREAS NOT SERVED BY THE CITY OF STATESVILLE WATER SYSTEM

DATE	REV.	DESCRIPTION
5/20/2011	1	REVISED PROP. MSWLF LIMIT AND DIMENSION
	LHC	BY

REGIONAL CHARACTERIZATION
2-MILE PERIMETER MAP

SCALE:	1" = 1500'
DATE:	7/2/08
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER	G08002

Local Characterization Map

SECTION 3.0 SITE HYDROGEOLOGIC SUMMARY

3.1 Geologic and Hydrologic Setting

The site lies in the Piedmont geologic, physiographic, and hydrologic provinces. Groundwater flow first occurs in the saprolitic soils throughout the property. The site lies in an seismic impact zone.

3.2 Site Investigation and Laboratory Tests

Thirteen borings were completed on the property (approximately one per seven acres) with two of these penetrating at least 20 feet into the gneiss rock. Standard penetration tests were undertaken in each of the soil borings. Four shelly tubes were obtained for laboratory testing. The testing consisted of: determination of specific gravity, dry density, moisture content, particle size through sieve and hydrometer analysis, and Atterberg limits.

3.3 Synthesis of Site Geology

The property is underlain by 40 to 60 feet of saprolitic silty sands and sandy silts underlain by medium to coarse grained gneiss. The saprolitic soils were produced by in-situ chemically weathering of the underlying gneiss. The fracturing in the gneiss is generally parallel to the mineralogical layering of the quartz in the gneiss.

3.4 Synthesis of Hydrogeology

The water table is first intersected in the saprolitic soils throughout the property. The groundwater flows generally North from the recharge area, located centrally on the site, to the discharge feature, a tributary of Fourth Creek.

3.5 Summary and Conclusions

There is nothing geologically and hydrogeologically to prevent use of this site for a MSWLF. Potential off and on site contamination can be monitored and distinguished from any potential contamination that might originate from the landfill.

SECTION 4.0 LOCATION RESTRICTIONS

4.1 Airport Safety

There are no Public Use Airports within six (6) miles of the site. The closest airport is approximately 12.5 mile east of the site. See map included in this section.

4.2 Floodplains

The site is not located in a 100-year floodplain. The Iredell County Flood Insurance Rate Map, Panel Number 4753J, shows the existing MSWLF Facility and the Proposed MSWLF expansion, and is included in this section.

4.3 Protected Species and Wetland Delineation

Environmental Services, Inc., (ESI) has conducted a jurisdictional determination effort and a preliminary Threatened and Endangered species habitat evaluation on April 23 2008. ESI reports that there are jurisdictional stream channels and wetland areas present onsite and off site as noted in their report. These areas are located in an area that is being used as buffer, therefore these areas will not be disturbed. ESI also reports that there is an area of "potentially suitable habitat" for the Threatened Bog Turtle. There is no documentation of any known occurrences of this species within the project study area. ESI also reports that there is an area of "potentially suitable habitat" for the Threatened Dwarf-flowered heartleaf (*Hexastylis naniflora*). There is no documentation of any known occurrences of this species within the project study area and no members of the *Hexastylis* or *Asarum* noted in the field effort. The report is included in Appendix D.

4.4 Fault Areas

There are no reported fault areas on site and none were found during the field investigation.

4.5 Seismic Impact Zones

The site is located in a seismic impact zone, based on the maps published by Department of the Interior, U.S. Geological Survey, entitled "Probabilistic Earthquake Acceleration and Velocity Maps for the United States and Puerto Rico, by Algermissen and others. Landfill design will include evaluation and demonstration that the integrity of landfill structural components will not be compromised. Evaluation will include seismic considerations. See map included in this section.

4.6 Unstable Areas

No unstable areas were observed or located on or adjacent to the site during the field investigation.

4.7 Cultural Resources

The Cultural Resource Assessment conducted in April 2008, by Environmental Services, Inc. (ESI), indicates that there were no cultural materials, prehistoric or historic artifacts, or architectural remains found on site. See the report and letter located in Appendix D.

4.8 State Nature and Historic Preserve

There will be no adverse impact to a State Nature and Historic Preserve since there are none located within the proposed MSWLF Facility site. See the North Carolina Department of Cultural Resources Letter located in Appendix D.

4.9 Water Supply Watersheds

The site is not located in a watershed. There are no surface water intakes within the two mile perimeter.

**REGIONAL CHARACTERIZATION
AIRPORT SAFETY MAP**

LEGEND

Airports having Control Towers are shown in Blue, all others in Magenta. Consult Airport/Facility Directory (A/FD) for details involving airport lighting, navigation aids, and services. For additional symbol information refer to the Chart User's Guide.

AIRPORTS

- Other than hard-surfaced runways
- Hard-surfaced runways 1500 ft. to 8069 ft. in length.
- Hard-surfaced runways greater than 8069 ft. or some multiple runways less than 8069 ft.
- Open dot within hard-surfaced runway configuration indicates approximate VOR, VOR-DME, or VORTAC location.

All recognizable hard-surfaced runways, including those closed, are shown for visual identification. Airports may be public or private.

ADDITIONAL AIRPORT INFORMATION

- Private (Pvt) - Non-public use having emergency or landmark value.
- Military - Other than hard-surfaced. All military airports are identified by abbreviations AFB, NAS, AAF, etc. For complete airport information consult DOD FLIP.
- Heliport Selected
- Unverified
- Abandoned-paved having landmark value, 3000 ft. or greater
- Ultralight Flight Park Selected

Services-fuel available and field tended during normal working hours depicted by use of ticks around basic airport symbol. (Normal working hours are Mon thru Fri 10:00 A.M. to 4:00 P.M. local time.) Consult A/FD for service availability at airports with hard-surfaced runways greater than 8069 ft.

★ Rotating airport beacon in operation Sunset to Sunrise.

AIRPORT DATA

Box indicates F.A.R. 93 Special Air Traffic Rules & Airport Traffic Patterns

Runways with Right Traffic Patterns (public use)

RP* (See Airport/Facility Directory)

FSS - Flight Service Station

NO SVFR - Fixed-wing special VFR flight is prohibited.

CT-118.3 - Control Tower (CT) - primary frequency

★ - Star indicates operation part-time. See tower frequencies tabulation for hours of operation.

⊕ - Indicates Common Traffic Advisory Frequencies (CTAF)

ATIS 123.8 - Automatic Terminal Information Service

ASOS/AWOS 135.42 - Automated Surface Weather Observing Systems. Some ASOS/AWOS facilities may not be located at airports.

UNICOM - Aeronautical Advisory Station

VFR Advy - VFR Advisory Service shown where ATIS not available and frequency is other than primary CT frequency.

285 - Elevation in feet

L - Lighting in operation Sunset to Sunrise

*L - Lighting limitations exist, refer to Airport/Facility Directory.

72 - Length of longest runway in hundreds of feet; usable length may be less.

When facility or information is lacking, the respective character is replaced by a dash. All lighting codes refer to runway lights. Lighted runway may not be the longest or lighted full length. All times are local.

RADIO AIDS TO NAVIGATION AND COMMUNICATION BOXES

VHF OMNI RANGE (VOR)

VORTAC

VOR-DME

Non-Directional Radio Beacon (NDB)

NDB-DME

Other facilities, i.e., Commercial Broadcast Stations, FSS Outlets-RCO, etc.

122.1R 122.6 123.6 OAKDALE

362 *116.8 OAK

122.1R CHICAGO CHI

Heavy line box indicates Flight Service Station (FSS). Frequencies 121.5, 122.2, 243.0, and 255.4 (Canada-121.5, 126.7 and 243.0) are normally available at all FSSs and are not shown above boxes. All other frequencies are shown.

Underline indicates no voice on this frequency.

★ - Operates less than continuous or On-Request.

TW - TWENTY

HI - HIWAS

A - ASOS/AWOS

122.1R MIAMI

FSS providing voice communication

For Local Airport Advisory use FSS frequency 123.6.

R - Receive only

Frequencies above thin line box are removed to NAVDAG site. Other frequencies at FSS providing voice communication may be available as determined by altitude and terrain. Consult Airport/Facility Directory for complete information.

AIRPORT TRAFFIC SERVICE AND AIRSPACE INFORMATION

Only the controlled and reserved airspace effective below 18,000 ft. MSL are shown on this chart. All times are local.

- Class B Airspace
- Class C Airspace (Mode C See F.A.R. 91.215/AIM)
- Class D Airspace
- Ceiling of Class D Airspace in hundreds of feet. (A minus ceiling value indicates surface up to but not including that value.)
- Class E Airspace
- Class E Airspace with floor 700 ft. above surface.
- Class E Airspace with floor 1200 ft. or greater above surface that abuts Class G Airspace.
- 2400 MSL Differentiates floors of Class E Airspace greater than 700 ft. above surface.
- 4500 MSL

Class E Airspace exists at 1200' AGL unless otherwise designated as shown above.

Class E Airspace low altitude Federal Airways are indicated by center line. Intersection-Arrows are directed towards facilities which establish intersection.

132° V 169

169

Total mileage between NAVAIDs on Direct Airways.

Prohibited, Restricted, Warning and Alert Areas, Canadian Advisory and Restricted Areas

MCO - Military Operations Area (See Airport/Facility Directory)

Special Airport Traffic Areas (See F.A.R. Part 93 for details)

TOPOGRAPHIC INFORMATION

Roads

Road Markers

Railroad

Bridges and Viaducts

Power Transmission Lines

Aerial Cable

Landmark Feature - stadium, factory, school, golf course, etc.

Outdoor Theatre

Lookout Tower P-17 (Site Number) 618 (Elevation Base of Tower)

CG Coast Guard Station

Race Track

Tank - water, oil or gas

Oil Well

Water Well

Mines and Quarries

Mountain Pass

11823 (Elevation of Pass)

OBSTRUCTIONS

1000 ft. and higher AGL

Below 1000 ft. AGL

Group Obstruction

Obstruction with high-intensity lights may operate part-time

Elevation of the top above mean sea level

2049 (1149) UC

Under construction or reported; position and elevation unverified

NOTICE: Guy wires may extend outward from structures.

MISCELLANEOUS

Isogonic Line (2005 VALUE)

Ultralight Activity

FI Flashing Light

Hang Glider Activity

Marine Light

Glider Operations

Parachute Jumping Area (See Airport/Facility Directory)

VPXYZ VFR Waypoints (See Airport/Facility Directory for latitude/longitude)

NAME (VPXYZ)

(Pass symbol does not indicate a recommended route or direction of flight and pass elevation does not indicate a recommended clearance altitude. Hazardous flight conditions may exist within and near mountain passes.)

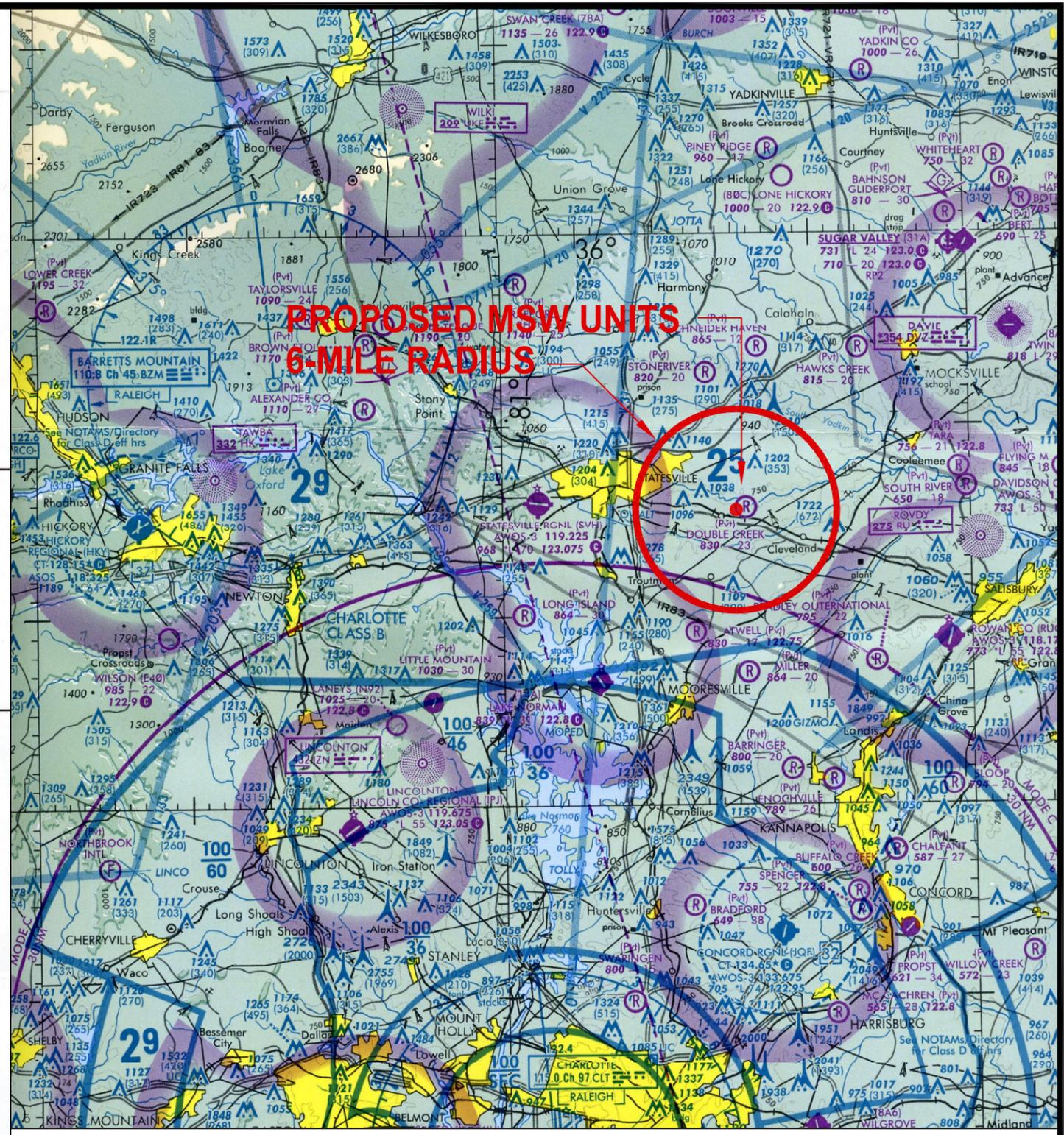
Non-Perennial Lake

Rocks

Dams

Pier

Perennial Lake

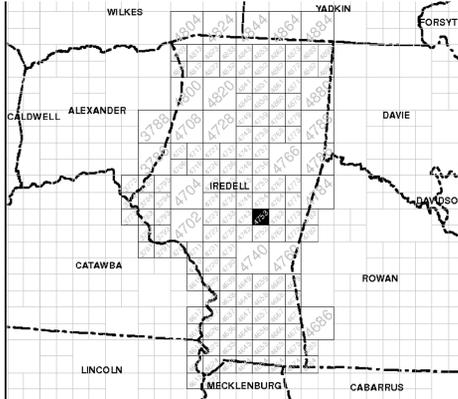


Map is Portion of 2008 North Carolina Aeronautical Map

There are no public use airports or runways located within a 6-mile radius of the proposed site.

MUNICIPAL SOLID WASTE LANDFILL FACILITY SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA
REGIONAL CHARACTERIZATION AIRPORT SAFETY MAP
PROJECT NO. : G08002

**LOCAL CHARACTERIZATION
FLOODPLAINS MAP**



DATUM INFORMATION

The projection used in the preparation of this map was the North Carolina State Plane (NAD83). The horizontal datum is the North American Datum of 1983 (NAD 83). Differences in datum, ellipsoid, projection, or Universal Transverse Mercator zones used in the production of FIRM's for adjacent jurisdictions may result in slight positional differences in map features across jurisdictional boundaries. These differences do not affect the accuracy of this FIRM. All coordinates on this map are in U.S. Survey Feet, where 1 U.S. Survey Foot = 1200/3937 Meters.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. An average offset between NAVD 88 and the National Geodetic Vertical Datum of 1929 (NGVD 29) has been computed for each North Carolina county. This offset was then applied to the NGVD 29 flood elevations that were not revised during the creation of this statewide format FIRM. The offsets for each county shown on this FIRM panel are shown in the vertical datum offset table below. Where a county boundary and a flooding source with unrevised NGVD 29 flood elevations are coincident, an individual offset has been calculated and applied during the creation of this statewide format FIRM. See Section 6.1 of the accompanying Flood Insurance Study report to obtain further information on the conversion of elevations between NAVD 88 and NGVD 29. To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the North Carolina Geodetic Survey at the address shown below. You may also contact the Information Services Branch of the National Geodetic Survey at (801) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

North Carolina Geodetic Survey
121 West Jones Street
Raleigh, NC 27601
(919) 733-3636
<http://www.ncgs.state.nc.us>

County	Average Vertical Datum Offset (ft)
Iredell	-0.67

Example: NAVD 88 - NGVD 29 = (-0.67)

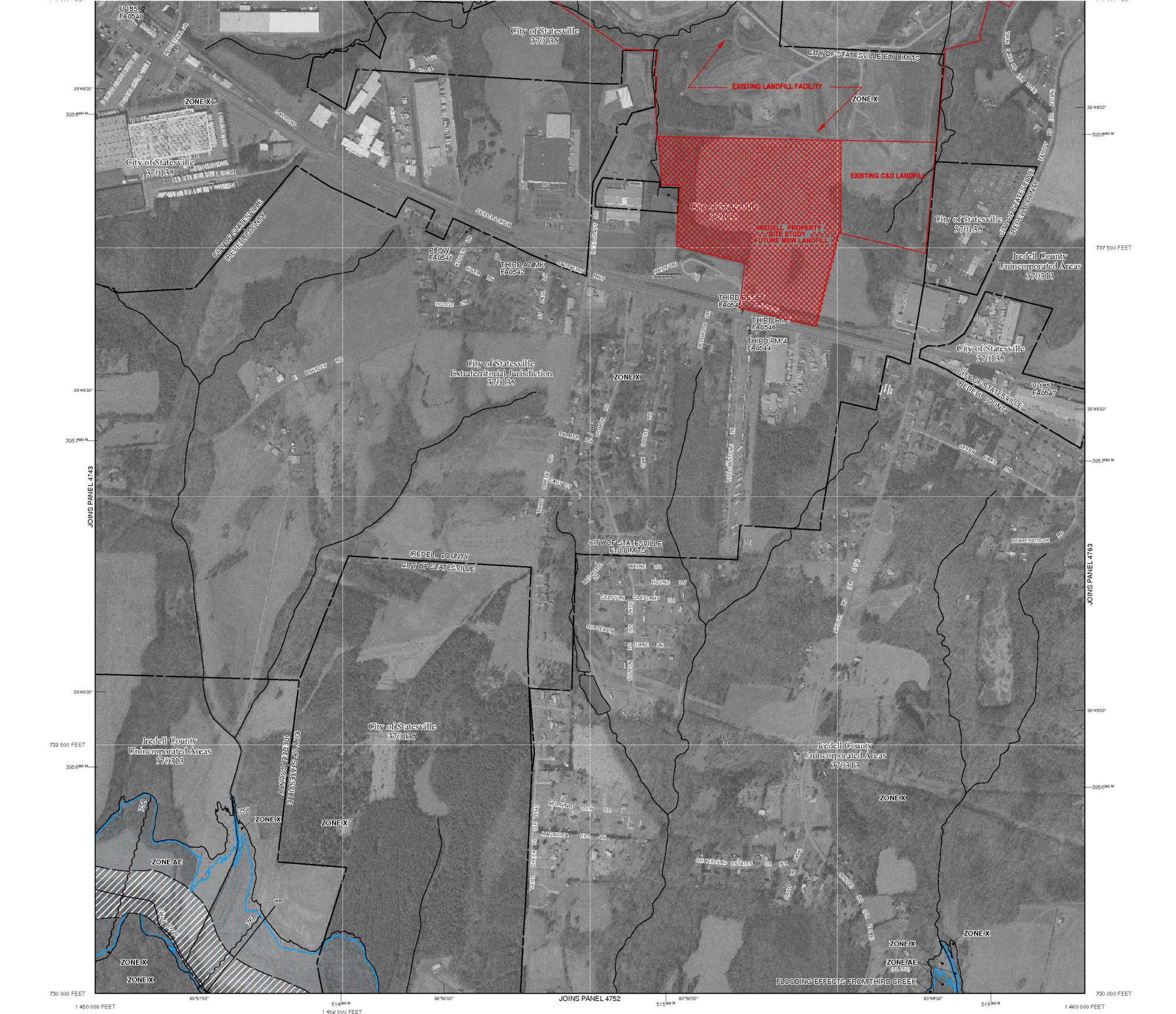
All streams listed in the Flood Hazard Data Table below were studied by detailed methods using field survey. Other flood hazard data shown on this map may have been derived using either a coastal analysis or limited detailed riverine analysis. More information on the flooding sources studied by these analyses is contained in the Flood Insurance Study report.

FLOOD HAZARD DATA TABLE				
Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance (100-year) Water Surface Elevation (feet NAVD 88)	Floodway Width (feet) Left/Right Distance From the Center of Stream to Enrichment Boundary (Looking Downstream) or Total Floodway Width
THIRD CREEK				
1033	103.300	NA	757.6	450

* Feet above mouth



This digital Flood Insurance Rate Map (FIRM) was produced through a unique cooperative partnership between the State of North Carolina and the Federal Emergency Management Agency (FEMA). The State of North Carolina has implemented a long term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the State's commitment to map floodplain areas at the local level. As a part of this effort, the state of North Carolina has joined in a Cooperating Technical State agreement with FEMA to produce and maintain this digital FIRM.



INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevation determined.
ZONE AE Base Flood Elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently deauthorized. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 Areas to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS
ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.
OTHER AREAS
ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
OTHERWISE PROTECTED AREAS (OPAs)
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

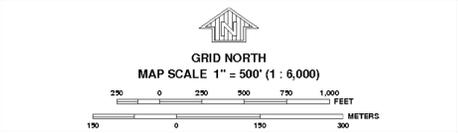
1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Roadway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
Base Flood Elevation line and value, elevation in feet*
Base Flood Elevation value where uniform within zone, elevation in feet*
* Referenced to the North American Vertical Datum of 1988

EL 987
Cross section line
Transsect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
1000-meter Universal Transverse Mercator or grid ticks, zone 17
2500-foot grid values: North Carolina State Plane coordinate system (NAD 83)
North Carolina Geodetic Survey bench mark (for more information visit <http://www.ncgs.state.nc.us>)
National Geodetic Survey bench mark (for more information visit <http://www.ngs.noaa.gov>)
NGS 58 GPS 2.5 m Vertical Control Mark or Contractor-Established NCEM Bench Mark (for more information visit <http://www.ngs.state.nc.us>)
1 M1.5 River Mile

MUNICIPAL SOLID WASTE LANDFILL FACILITY SITE STUDY EXPANSION OF EXISTING FACILITY IREDELL COUNTY, NORTH CAROLINA

FLOOD ZONE MAP

PROJECT NO. : G08002



NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles, Floodway Data, Limited Detailed Flood Hazard Data, and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of regulatory floodways shown on the FIRM for flooding sources studied by detailed methods were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data for flooding sources studied by detailed methods are non-enforcement waterway boundaries and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

Base map information and geospatial data used to develop this FIRM were obtained from various organizations, including the participating local community(ies), state and federal agencies, and/or other sources. The primary base for this FIRM is aerial imagery acquired by Iredell County. The time period of collection for the imagery is 2005. Information and geospatial data supplied by the local community(ies) that met FEMA base map specifications were considered the preferred source for development of the base map. See geospatial metadata for the associated digital FIRM for additional information about base map preparation.

Base map features shown on this map, such as corporate limits, are based on the most up-to-date data available at the time of publication. Changes in the corporate limits may have occurred since this map was published. Map users should consult the appropriate community official or website to verify current conditions of jurisdictional boundaries and base map features. This map may contain roads that were not considered in the hydraulic analysis of streams where no new hydraulic model was created during the production of this statewide format FIRM.

This map reflects more detailed and up to date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Please refer to the separately printed Map Index for an overview of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

If you have questions about this map, or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.

An accompanying Flood Insurance Study report, Letter of Map Revision (LOMR) or Letter of Map Amendment (LOMA) revising portions of this panel, and digital versions of this FIRM may be available. For more information, contact the community map repository.

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index or visit <http://www.cdfloodmap.com>

EFFECTIVE DATE OF FLOOD INSURANCE RATE MAP PANEL
MARCH 18, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to statewide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent, the North Carolina



NFIP PANEL 4753J

FIRM
FLOOD INSURANCE RATE MAP
NORTH CAROLINA

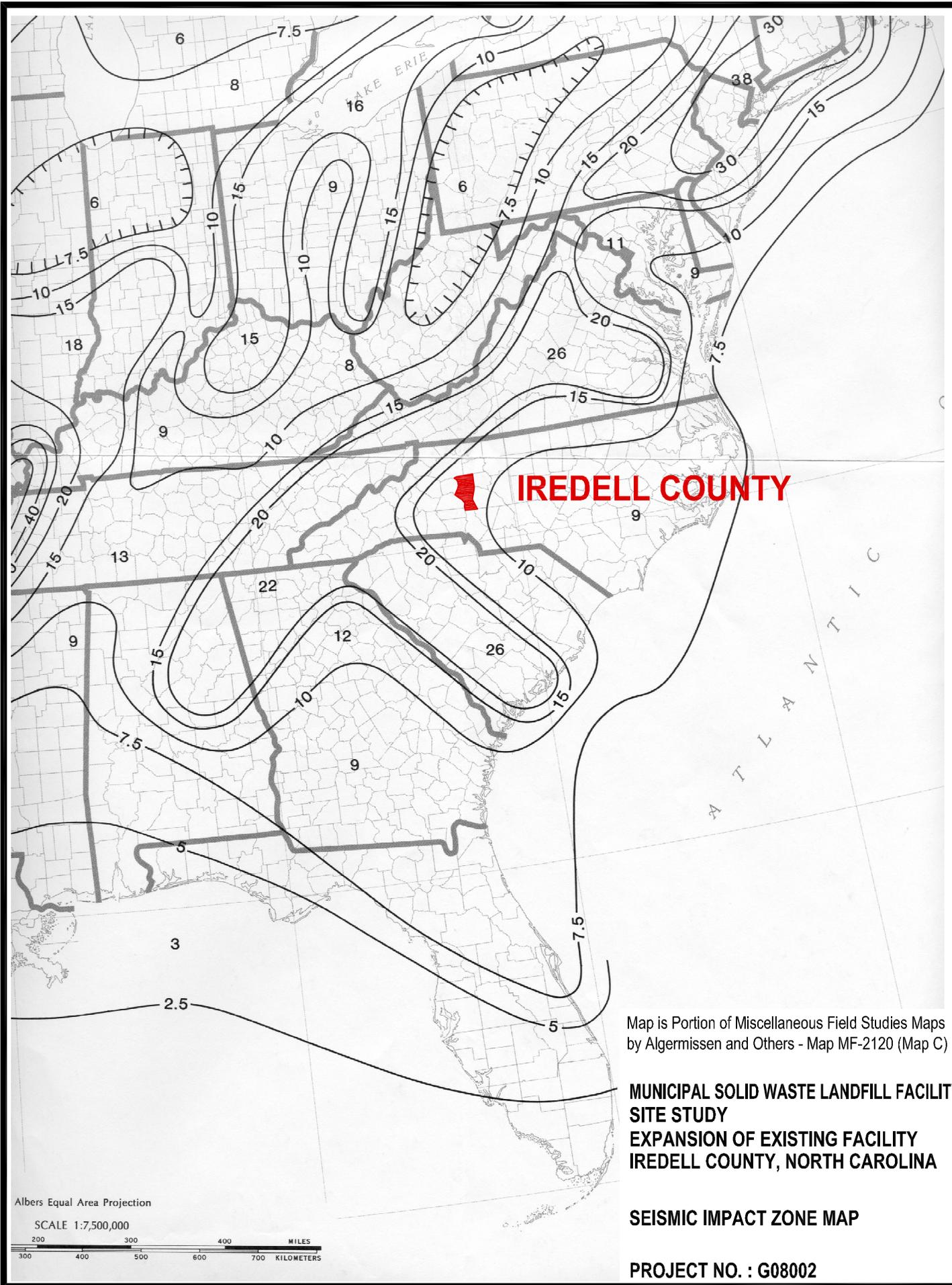
PANEL 4753
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY C/D No. PANEL SUFFIX
IREDELL COUNTY 37013 4753 J
STATESVILLE, CITY OF 370135 4753 J

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

EFFECTIVE DATE MAP NUMBER
MARCH 18, 2008 3710475300J

SEISMIC IMPACT ZONE MAP



IREDELL COUNTY

Map is Portion of Miscellaneous Field Studies Maps by Algermissen and Others - Map MF-2120 (Map C)

**MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA**

SEISMIC IMPACT ZONE MAP

PROJECT NO. : G08002

Albers Equal Area Projection
SCALE 1:7,500,000
200 300 400 500 600 700 MILES
300 400 500 600 700 KILOMETERS

SECTION 5.0 FACILITY REPORT

5.1 Geologic and Hydrogeologic Summary

The site lies in the Piedmont geologic, physiographic, and hydrologic provinces. The property is underlain by 40 to 60 feet of saprolitic silty sands and sandy silts underlain by medium to coarse grained gneiss. The ground water flows in the saprolitic soils southeastward from the recharge area to the discharge feature, a tributary of Fourth Creek. The recharge area is located off site, while the discharge feature is located on site.

5.2 Waste Stream

5.2.1 Waste Types

The facility will accept Municipal Solid Waste which is described as any solid waste resulting from the operation of residential, commercial, industrial, governmental or institutional establishments that would normally be collected, processed and disposed of through a public or private solid waste management service.

Construction/Demolition and Land Clearing and Inert Debris will be accepted at this and will be disposed at the Construction/Demolition Landfill or be ground and used for mulch.

Spoiled foods, animal carcasses, abattoir waste, hatchery waste, and other animal waste will be accepted and will be covered immediately upon dumping.

Asbestos waste shall be accepted and managed in accordance with 40 CFR 61. The waste shall be covered immediately with soil in a manner that will not cause airborne conditions and must be disposed of separate and apart from other solid wastes:

- i. At the bottom of the working face; or,
- ii. In an area not contiguous with other disposal areas. Separate areas shall be clearly designated so that asbestos is not exposed by future land disturbing activities.

Wastewater treatment sludges may be accepted and co-disposed in the lined area.

Hazardous waste as defined within 15A NCAC 13A, to also include hazardous waste from conditional exempt small quantity generators, Polychlorinated biphenyls (PCB) waste as defined in 40 CFR 761 are prohibited.

5.2.2 Disposal Rates

The Facility is open for 5.5 days per week. The tonnage per day was approximately 708 tons in the Fiscal year 2008-2009. The average monthly disposal rates will be approximately 16,863 tons per month. The life of the Facility will depend on disposal rates and compaction, which can vary through out the life of the Facility. This variance can either increase or decrease the life of the Facility. All calculations are based on an annual growth in the population of 3.2%, which is the average annual growth between 1990 and 2000 based on the 2000 Census Data.

5.2.3 Service Area

The facility will only accept waste from within Iredell County.

5.2.4 Waste Segregation

The Iredell County Landfill facility will segregate municipal solid waste, yard waste, land clearing and inert debris, recyclables, white goods and tires. The scale house attendant will direct incoming wastes to their appropriate areas.

5.2.5 Equipment Requirements

The Iredell County Facility utilizes a variety of equipment to accomplish the required tasks. The equipment they use is as follows:

1. Bulldozers
2. Pans
3. Tub Grinder
4. Rex 3-70 Trash Packer
5. Track Loader.

5.3 Landfill Capacity

The Life Expectancy calculations were calculated for Phases 3-9 of development with a vertical expansion being included when a phase is constructed adjacent to the previous phase. Each successive phase will vary in size due to being able to expand onto the previously filled areas. Each individual phase volume is estimated. The airspace is a net volume excluding the capping requirements.

Life expectancy based on actual air space used in Annual Report Fiscal Year 09-10 is as follows:

Life expectancy based on using the annual average of 262,876 cubic yards/year, for the first year and an annual increase of 3.2% for each year thereafter.

<u>Phases</u>	<u>Airspace Available</u>	<u>Years of Life</u>
Existing Phases 1-4	= 3,989,912 cubic yards	= USED
Phases 3-4 Remaining	= 1,553,850 cubic yards	= 5.5 years
Phase 5	= 1,163,003 cubic yards	= 4.5 years
Phase 6	= 1,426,403 cubic yards	= 4.0 years
Phase 7	= 1,673,824 cubic yards	= 4.0 years
Phase 8	= 1,905,025 cubic yards	= 4.0 years
Phase 9	= <u>1,021,826 cubic yards</u>	= <u>2.0 years</u>
	8,743,931 cubic yards Remaining	24.0 years Remaining

For a Total Capacity of 12,733,843 cubic yards

Soil requirements for construction, daily cover and final caps for Phases 1-9
(Assume an 8:1 Trash to soil ratio)

Soil needed for Construction = 451,733 cubic yards
 Soil needed for Daily Cover = 971,548 cubic yards
 Soil needed for Closure = 406,560 cubic yards

Overall Soil Requirements = 1,829,841 cubic yards
(soil needed for construction, closure and daily cover)

The County owns property adjacent to landfill that may be used for borrow material if additional soil is needed.

Note: All volumes are determined by Autodesk Land Development computer program.

5.4 Containment and Environmental Control Systems

Iredell County MSWLF will be constructed with a Base Liner System consisting of a cohesive soil liner with a permeability no greater than 1.0×10^{-7} cm/sec. or an Alternate Liner System consisting of a cohesive soil liner with a permeability no greater than 1.0×10^{-5} cm/sec. with a reinforced Geosynthetic clay liner (GCL), sixty (60) mil High Density Polyethylene (HDPE) liner, 3' of protective cover, 250 mil composite drainage net and leachate collection system consisting of stone filled leachate trenches and pipes to collect the leachate. The leachate will be tied in to the existing collection system. The waste will be covered daily with either a synthetic cover and/or on-site soils to control disease vectors. The cap system will consist of twelve inches (12") of bridging material (temporary cover), eighteen inches (18") of soil liner with a permeability no greater than 1.0×10^{-5} cm/sec, forty (40) mil Linear Low Density Polyethylene (LLDPE) flexible membrane liner, drainage layer, and twenty four inches (24") of protective/erosive layer. The cap will contain a gas venting system consisting of a series of washed stone trenches below the soil liner that will be vented through pipes that penetrate the cap. The cap system will also include the proper seeding and mulching of the erosive layer and other erosion control devices.

5.5 Special Engineering Features

There are no other special engineering features.

**SECTION 6.0
APPENDICES**

APPENDIX A

City of Statesville Public Information

PO Box 1111 Statesville NC 28687-1111
OFFICE: 704-878-3586 FAX: 704-878-6428

To: David Lambert
From: Nancy Davis
RE: Notice of Public Meeting

This is to certify that the announcement provided did run on cable channel 20 on Tuesday, September 7, 2010. I have attached a copy of the notice as it appeared. Please let me know if you need further information.

Notice of Public Meeting

To inform the public of the proposed expansion and waste management activities of the Iredell County Landfill

Tuesday, Oct. 12 at 2 p.m.

Iredell Solid Waste Facility

354 Twin Oaks Rd.

Documents available to view at same address, M-F, 8 a.m. – 4 p.m.

and Iredell County Library

139163



1400 WSIC
Iredell Broadcasting, Inc.
1117 Radio Road
Statesville, NC 28677
accounts@iredellbroadcasting.com

1400 WSIC Invoice for Services

ok to pay ↑
per Mark
@ WSIC
10/2/10
JST

Invoice ID: 10090145
Invoice Date: 9/30/2010
Account ID: 3096
Order ID: 3096-001
Account Rep: Walter Sterling

Amount Due: \$45.00

Amount Paid: _____

IREDELL COUNTY SOLID WASTE FACILITY
354 TWIN OAKS RD.
STATESVILLE, NC 28625

Thank you for allowing us to serve you. Please note: accounts not paid within 15 days of invoice incur a fee of 12% apr.

Sponsor: Iredell County Solid Waste Facility
Iredell County Solid Waste Facility

Dates	Qty	Description	Rate	Cost
9/7/2010 - 9/7/2010	1	:60 Commercial	[Package]	[Package]
9/30/2010 - 9/30/2010	1	Package	45.00	45.00
1 Total Items			Total Cost:	45.00

PAID

This instrument has been preaudited in the manner required by the Local Government Budget and Fiscal Control Act.

Suzanne B. Scarborough
Finance Officers

Received in Iredell County yes no
(Circle One)

2010 OCT 11 AM 9:47

Po# _____

Picked Up in _____ County, NC

Code 525751-53000 *adm.*

Approved By *Susan Carrell*

OCT 11 2010

RECEIVED

JAN 13 2011

Municipal Engineering Services
Company, PA

Amount Due: 45.00

Iredell County, Statesville, NC 28687

Page Number: 1

Check Number: 00402581

Invoice Date	Invoice Number	P.O. No.	Invoice Description	Net Invoice Amount
09/30/2010	10090145		ACCT #3096 - ADVERTISING - SOL	45.00
Vendor No.	Vendor Name	Check No.	Check Date	Check Amount
139163	WSIC RADIO	00402581	10/20/2010	45.00



Iredell County
 P.O. Box 788
 Statesville, NC 28687
 (704) 878-3042 Fax (704) 878-3032

Vendor Number: 139163
 Check Date: 10/20/2010
 Check Number: 00402581

\$45.00

This disbursement has been approved as required by the Local Government Budget and Fiscal Control Act.

Forty Five dollars and 00 cents *****

Pay To The Order Of
WSIC RADIO
 1117 RADIO RD
 STATESVILLE, NC 28677-0000
 First Citizens Bnk
 Statesville, NC 28677

FILE COPY

NON-NEGOTIABLE

AP



Iredell County
 P.O. Box 788
 Statesville, NC 28687

00402581

WSIC RADIO
 1117 RADIO RD
 STATESVILLE, NC 28677-0000

Susan Cornell

From: Walter Sterling [wsterling@wsicweb.com]
Sent: Friday, September 03, 2010 8:18 AM
To: Susan Cornell
Subject: RE: Radio ad

Thank you, I was able to open this.

It is definitely a 60 second ad so the cost would be \$45 to run one time on 9/7.

We will just invoice you.

Thank you,

Walter Sterling

Account Executive

704-872-6345 ext. 250

wsterling@wsicweb.com

 Right-click here to
download pictures. To
help protect your
privacv. Outlook

-----Original Message-----

From: Susan Cornell [mailto:scornell@co.iredell.nc.us]
Sent: Friday, September 03, 2010 07:47
To: wsterling@wsicweb.com
Subject: FW: Radio ad

Mr Sterling – please see if you can open this one.

From: David Lambert
Sent: Friday, September 03, 2010 7:43 AM
To: Susan Cornell
Subject: FW: Radio ad

The ad I asked you to convert is for this. After you get a format contact Mr. Sterling and arrange to pay.

From: Walter Sterling [mailto:wsterling@wsicweb.com]
Sent: Thursday, September 02, 2010 4:29 PM
To: David Lambert

Subject: Radio ad

David,

Can you send this in a different format?

I can't open a .docx

Also, how many times do you want us to run this? We can start as early as tomorrow or run on 9/6 and 9/7.

A thirty second ad would be \$25 each, and a sixty is \$45. Once I look at the info I'll see which one would work.

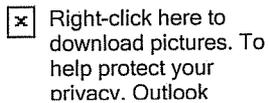
Thanks,

Walter Sterling

Account Executive

704-872-6345 ext. 250

wsterling@wsicweb.com

 Right-click here to download pictures. To help protect your privacy, Outlook

NOTICE OF PUBLIC MEETING

In compliance with the North Carolina Department of Environment and Natural Resources (NCDENR) Solid Waste Management Rules 15A NCAC 13B .1618(c)(5), the County of Iredell has scheduled a public meeting for October 12, 2010 at 2:00 p.m. It is the intent of the County to expand the existing landfill onto adjoining property which will also expand the capacity of the landfill. This meeting is to inform the public of the proposed expansion and waste management activities as described in the proposed facility plan. All interested parties should attend. The public meeting will be held at the County's Solid Waste Facility located at 354 Twin Oaks Rd., Statesville, NC 28625. Application documents may be viewed at the County Solid Waste Facility offices located at 354 Twin Oaks Rd., Statesville, NC 28625 between the hours of 8:00 a.m. – 4:00 p.m., Monday through Friday and in the County Library located at 201 North Tradd Street, Statesville NC 28625. For further information concerning this meeting, contact the County Solid Waste Department at (704) 878-5430.

County of Iredell
354 Twin Oaks Road
Statesville, NC 28625

Publish One Time: September 7, 2010

Statesville Record & Landmark

Advertising Affidavit

Account Number

3520371

North Carolina Community Newspapers

PO Box 968

Hickory, NC 28603

Date

September 07, 2010

IREDELL COUNTY SOLID WASTE FACILITY
354 TWIN OAKS ROAD
STATESVILLE, NC 28625

Date	Category	Description	Ad Number	Ad Size
09/13/2010	Legal Notices	NOTICE OF PUBLIC MEETING In compliance	0002025863	1 x 29 L

NOTICE OF PUBLIC MEETING

In compliance with the North Carolina Department of Environment and Natural Resources (NCDENR) Solid Waste Management Rules 15A NCAC 13B .1618(c)(5), the County of Iredell has scheduled a public meeting for October 12, 2010 at 2:00 p.m. It is the intent of the County to expand the existing landfill onto adjoining property which will also expand the capacity of the landfill. This meeting is to inform the public of the proposed expansion and waste management activities as described in the proposed facility plan. All interested parties should attend. The public meeting will be held at the County's Solid Waste Facility located at 354 Twin Oaks Rd., Statesville, NC 28625. Application documents may be viewed at the County Solid Waste Facility offices located at 354 Twin Oaks Rd., Statesville, NC 28625 between the hours of 8:00 a.m. - 4:00 p.m., Monday through Friday and in the County Library located at 201 North Tradd Street, Statesville NC 28625. For further information concerning this meeting, contact the County Solid Waste Department at (704) 878-5430.

County of Iredell
354 Twin Oaks Road
Statesville, NC 28625
Publish: September 7, 2010

Media General Operations, Inc.

Publisher of

Statesville Record & Landmark

Iredell County

Before the undersigned, a Notary Public of Catawba County, North Carolina, duly commissioned, qualified, and authorized by law to administer oaths, in said County and State; that he/she is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a copy of which is attached hereto, was published in the Statesville Record & Landmark on the following dates:

09/07/2010

and that the said newspaper in which such notice, or legal advertisement was published, was a newspaper meeting all the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina.

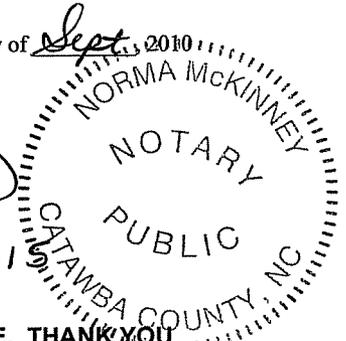
Tanya Layne
Assistant Bookkeeper

Newspaper reference: 0002025863

Sworn to and subscribed before me, this 9th day of Sept, 2010

Norma McKinney
Notary Public

My Commission expires: June 26, 2015



THIS IS NOT A BILL. PLEASE PAY FROM INVOICE. THANK YOU

The Mooresville Tribune

Advertising Affidavit

Account Number

3520371

North Carolina Community Newspapers

PO Box 968

Hickory, NC 28603

Date

September 08, 2010

IREDELL COUNTY SOLID WASTE FACILITY
354 TWIN OAKS ROAD
STATESVILLE, NC 28625

Date	Category	Description	Ad Number	Ad Size
09/14/2010	Legal Notices	NOTICE OF PUBLIC MEETING In compliance	0002025882	1 x 29 L

NOTICE OF PUBLIC MEETING

In compliance with the North Carolina Department of Environment and Natural Resources (NCDENR) Solid Waste Management Rules 15A NCAC 13B .1618(c)(5), the County of Iredell has scheduled a public meeting for October 12, 2010 at 2:00 p.m. It is the intent of the County to expand the existing landfill onto adjoining property which will also expand the capacity of the landfill. This meeting is to inform the public of the proposed expansion and waste management activities as described in the proposed facility plan. All interested parties should attend. The public meeting will be held at the County's Solid Waste Facility located at 354 Twin Oaks Rd., Statesville, NC 28625. Application documents may be viewed at the County Solid Waste Facility offices located at 354 Twin Oaks Rd., Statesville, NC 28625 between the hours of 8:00 a.m. - 4:00 p.m., Monday through Friday and in the County Library located at 201 North Tradd Street, Statesville NC 28625. For further information concerning this meeting, contact the County Solid Waste Department at (704) 878-5430.

County of Iredell
354 Twin Oaks Road
Statesville, NC 28625
Publish: September 8, 2010

Media General Operations, Inc.

Publisher of

The Mooresville Tribune

Iredell County

Before the undersigned, a Notary Public of Catawba County, North Carolina, duly commissioned, qualified, and authorized by law to administer oaths, in said County and State; that he/she is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a copy of which is attached hereto, was published in the The Mooresville Tribune on the following dates:

09/08/2010

and that the said newspaper in which such notice, or legal advertisement was published, was a newspaper meeting all the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina.

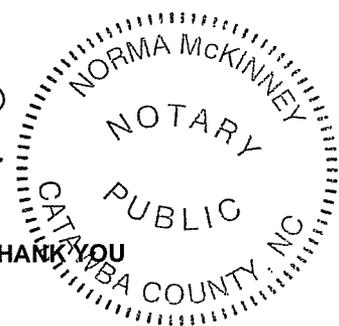
James Lafone
Assistant Bookkeeper

Newspaper reference: 0002025882

Sworn to and subscribed before me, this 8th day of Sept, 2010

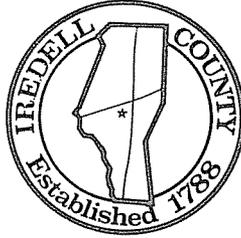
Norma McKinney
Notary Public

My Commission expires: June 26, 2015



THIS IS NOT A BILL. PLEASE PAY FROM INVOICE. THANK YOU

Marvin Norman, Chairman
Steve Johnson, Vice Chairman
Scott Keadle
Frank Mitchell
Ken Robertson



Post Office Box 788
Statesville, North Carolina 28687
Phone (704) 878-3058
Fax (704) 878-3053
www.co.iredell.nc.us

IREDELL COUNTY BOARD OF COMMISSIONERS

RESOLUTION FOR THE ISSUANCE OF A SANITARY LANDFILL PERMIT AS REQUIRED BY 15A NCAC 13B.1618 (5)

BE IT RESOLVED that the Board of County Commissioners of Iredell County, hereby grants prior approval for the issuance of a sanitary landfill permit by the Division of Waste Management to Iredell County. The landfill will be expanded on an additional 57 acres with a combined total of 284 acres, as shown on the attached map. All acreage is located within the incorporated limits of Iredell County.

The Board of County Commissioners hereby approves of the following items related to this proposed solid waste management facility:

1. The population and area to be served is Iredell County and its population of 158,153.
2. Total capacity of the landfill, Phases 1 through 9, is approximately 12,733,843 cubic yards, which includes daily and intermediate operational cover.
3. A projection on the useful life of the facility, based on the estimated tons/day or tons/year of disposal. Life of the facility is approximately 24 years.

This the 23rd day of November 2010.

IREDELL COUNTY BOARD OF COMMISSIONERS

A handwritten signature in cursive script that reads "Marvin Norman".

Marvin Norman, Chairman

Attest:

A handwritten signature in cursive script that reads "Jean C. Moore".

Clerk to the Board

**MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA**



Municipal Services Engineering Company, P.A.

PROPOSED SUBGRADE
FACILITY PLAN

NO.	DATE	BY	APP.	REV.



- LEGEND**
- PROPOSED FACILITY
 - EXISTING FACILITY
 - PROPOSED SUBGRADE
 - EXISTING SUBGRADE
 - PROPOSED ROAD
 - EXISTING ROAD
 - PROPOSED DRAINAGE
 - EXISTING DRAINAGE
 - PROPOSED UTILITY
 - EXISTING UTILITY
 - PROPOSED STRUCTURE
 - EXISTING STRUCTURE
 - PROPOSED ELEVATION
 - EXISTING ELEVATION
 - PROPOSED BOUNDARY
 - EXISTING BOUNDARY
 - PROPOSED PROPERTY LINE
 - EXISTING PROPERTY LINE
 - PROPOSED ADJACENT PROPERTY
 - EXISTING ADJACENT PROPERTY
 - PROPOSED ADJACENT ROAD
 - EXISTING ADJACENT ROAD
 - PROPOSED ADJACENT DRAINAGE
 - EXISTING ADJACENT DRAINAGE
 - PROPOSED ADJACENT UTILITY
 - EXISTING ADJACENT UTILITY
 - PROPOSED ADJACENT STRUCTURE
 - EXISTING ADJACENT STRUCTURE
 - PROPOSED ADJACENT ELEVATION
 - EXISTING ADJACENT ELEVATION
 - PROPOSED ADJACENT BOUNDARY
 - EXISTING ADJACENT BOUNDARY
 - PROPOSED ADJACENT PROPERTY LINE
 - EXISTING ADJACENT PROPERTY LINE

NOTE: ALL EXISTING BUILDINGS AND ROADS SHOWN ON THIS MAP ARE FOR INFORMATION ONLY AND WILL BE DEMOLISHED AT THE TIME OF CONSTRUCTION.


 9/27/2010
 4 OF 10

APPENDIX B

APPENDIX C

MUNICIPAL SOLID WASTE LANDFILL FACILITY

SITE STUDY EXPANSION OF EXISTING FACILITY FACILITY PLAN

**Permit Number: 4903-MSWLF-1993
Site Location: 354 Twin Oaks Road
Statesville, NC 28625**

**Applicant: Iredell County
Applicant's Address: 354 Twin Oaks Road
Statesville, NC 28625**

BOARD OF COMMISSIONERS

**R. Godfrey Williams - Chairman
Stephen D. Johnson
Scott Keadle
Marvin Norman
Kenneth M. Robertson, Jr.**

COUNTY MANAGER

Joel Mashburn

SOLID WASTE DIRECTOR

David Lambert

**Engineer
Municipal Engineering Services Company, P.A.
Garner, NC - Morehead City, NC - Boone, NC**

by  *J. Woodie* 9/27/2010
Professional Engineer
(Garner Office)

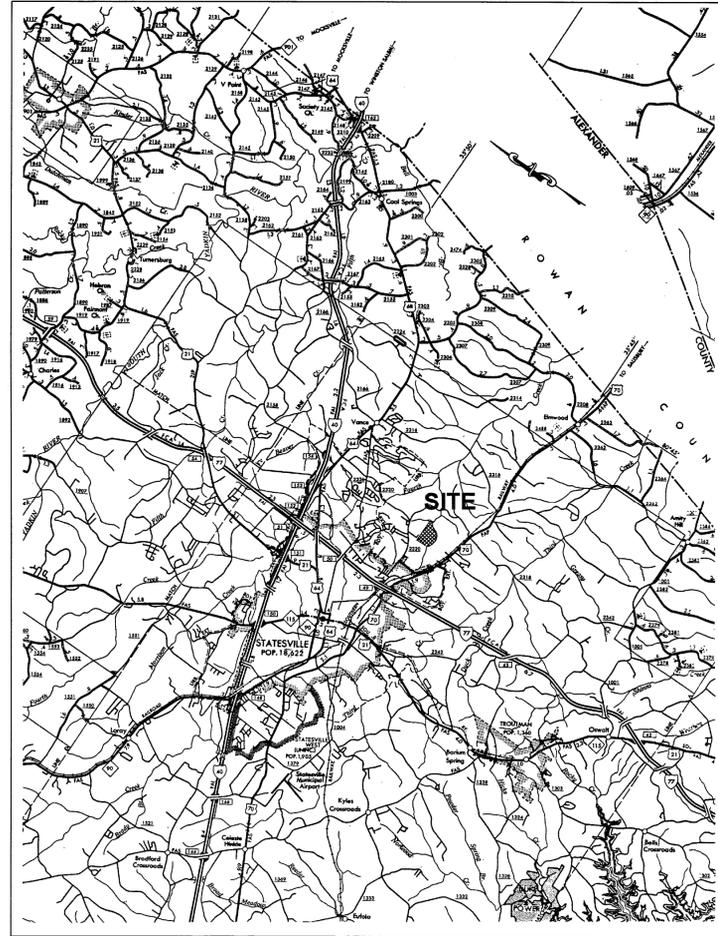


SCALE:	NONE
DATE:	9/17/2010
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER:	G08002
DRAWING NO.	T1
SHEET NO.	1 OF 10

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INDEX

SHEET NO.	DRAWING NO.	DESCRIPTION
1	T1	TITLE SHEET
2	T2	INDEX SHEET
3	F1	AREAL LIMITS & EXISTING CONDITIONS
4	F2	PROPOSED SUBGRADE
5	F3	LEACHATE COLLECTION SYSTEM
6	F4	PHASES 3 AND 4 REMAINING FILL AND PHASE 5 FILL PLAN
7	F5	PHASE 6 FILL PLAN
8	F6	PHASE 7 FILL PLAN
9	F7	PHASE 8 FILL PLAN
10	F8	PHASE 9 FILL PLAN



Engineering Company, P.A.



Municipal Services

LICENSE NUMBER C-0281

**MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA**

DATE	BY	REV.	DESCRIPTION
			FACILITY PLAN INDEX AND VICINITY MAP

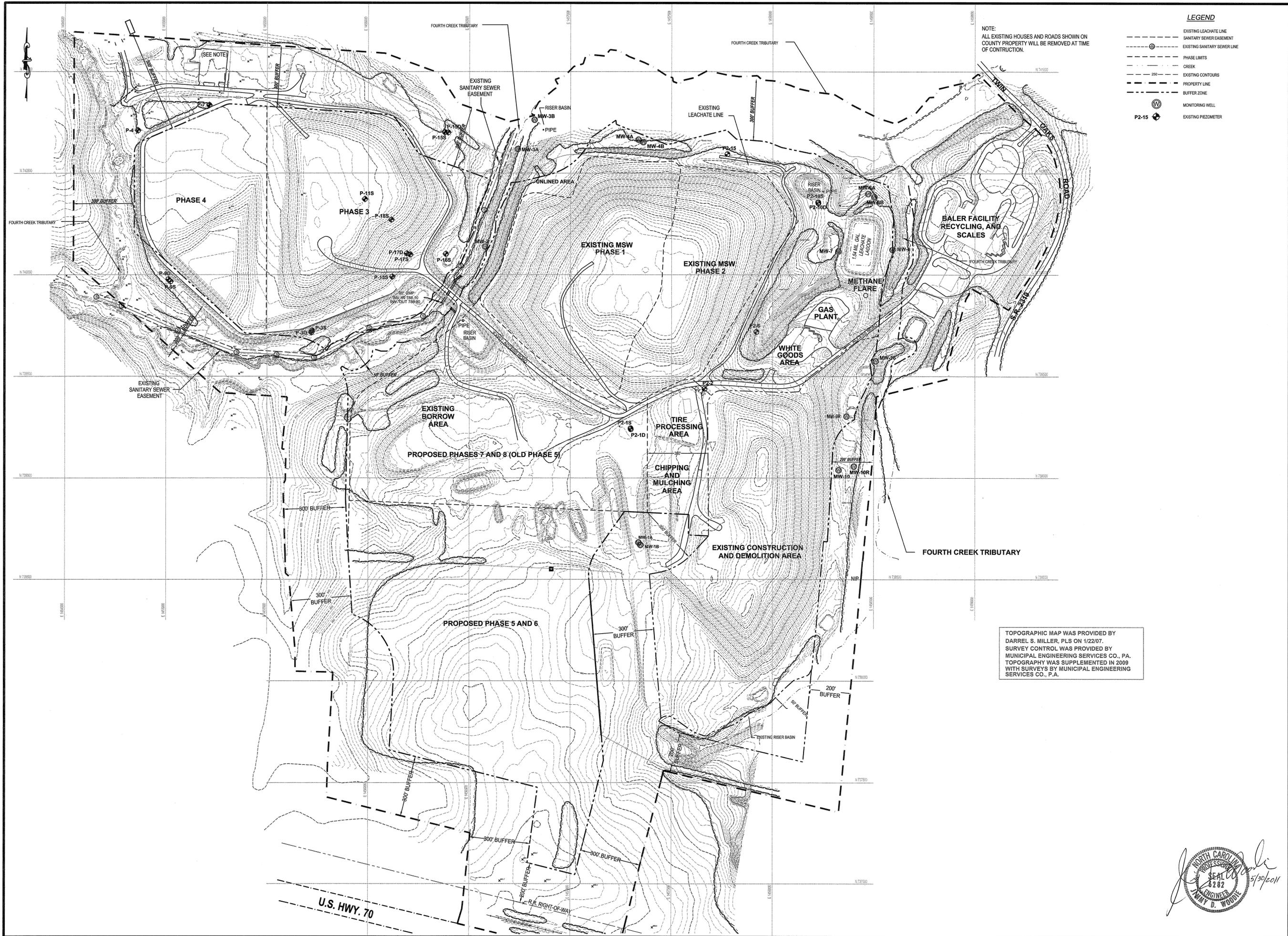
SCALE: NONE
DATE: 9/17/2010
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER
G08002

DRAWING NO. T2 SHEET NO. 2 OF 10

P.O. BOX 548 BOONE, N.C. 28607 (828) 282-1767

P.O. BOX 87 GARNER, N.C. 27829 (919) 772-5393

P.O. BOX 828 MCPHEEHEAD CITY, N.C. 28557 (252) 453-9451

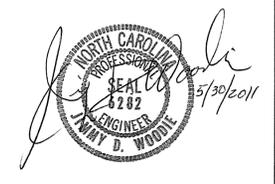


Engineering Company, P.A.
 P.O. BOX 345 BOONE, N.C. 28607
 (828) 262-1767

Municipal Services
 LICENSE NUMBER: C-0281
 P.O. BOX 87 GARNER, N.C. 27529
 (919) 772-5993
 P.O. BOX 828 MOREHEAD CITY, N.C. 28557
 (252) 726-9481

**MUNICIPAL SOLID WASTE LANDFILL FACILITY
 SITE STUDY
 EXPANSION OF EXISTING FACILITY
 IREDELL COUNTY, NORTH CAROLINA**

FACILITY PLAN AREAL LIMITS & EXISTING CONDITIONS																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>DATE</th> <th>BY</th> <th>REV.</th> <th>DESCRIPTION</th> </tr> <tr> <td>5/30/2011</td> <td>LHC</td> <td>1</td> <td>REVISED PER DWM COMMENT LETTER DATED 4/29/2011</td> </tr> </table>	DATE	BY	REV.	DESCRIPTION	5/30/2011	LHC	1	REVISED PER DWM COMMENT LETTER DATED 4/29/2011	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>SCALE:</td> <td>1" = 200'</td> </tr> <tr> <td>DATE:</td> <td>9/17/2010</td> </tr> <tr> <td>DRWN. BY:</td> <td>L. HAMPTON</td> </tr> <tr> <td>CHKD. BY:</td> <td>J. WOODIE</td> </tr> <tr> <td>PROJECT NUMBER:</td> <td>G08002</td> </tr> <tr> <td>DRAWING NO.:</td> <td>F1</td> </tr> <tr> <td>SHEET NO.:</td> <td>3 OF 10</td> </tr> </table>	SCALE:	1" = 200'	DATE:	9/17/2010	DRWN. BY:	L. HAMPTON	CHKD. BY:	J. WOODIE	PROJECT NUMBER:	G08002	DRAWING NO.:	F1	SHEET NO.:	3 OF 10
DATE	BY	REV.	DESCRIPTION																				
5/30/2011	LHC	1	REVISED PER DWM COMMENT LETTER DATED 4/29/2011																				
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DATE:	9/17/2010																						
DRWN. BY:	L. HAMPTON																						
CHKD. BY:	J. WOODIE																						
PROJECT NUMBER:	G08002																						
DRAWING NO.:	F1																						
SHEET NO.:	3 OF 10																						



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NOTE:
ALL EXISTING HOUSES AND ROADS SHOWN ON
COUNTY PROPERTY WILL BE REMOVED AT TIME
OF CONSTRUCTION.

LEGEND

- - - - - EXISTING LEACHATE LINE
- - - - - SANITARY SEWER EASEMENT
- - - - - EXISTING SANITARY SEWER LINE
- - - - - PHASE LIMITS
- - - - - CREEK
- - - - - EXISTING CONTOURS
- - - - - PROPOSED CONTOURS
- - - - - PROPERTY LINE
- - - - - BUFFER ZONE
- MONITORING WELL
- P2-15 EXISTING PIEZOMETER

**Engineering
Company, P.A.**

**Municipal
Services**

LICENSE NUMBER C-0281

P.O. BOX 349 BOONE, N.C. 28607
(828) 282-1767

P.O. BOX 97 GARNER, N.C. 27529
(919) 772-9393

P.O. BOX 628 MOREHEAD CITY, N.C. 28557
(252) 732-9451

**MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY**

**EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA**

DATE	BY	REV.	DESCRIPTION
FACILITY PLAN PROPOSED SUBGRADE			
SCALE: 1" = 200'			
DATE: 9/17/2010			
DRWN. BY: L. HAMPTON			
CHKD. BY: J. WOODIE			
PROJECT NUMBER G08002			
DRAWING NO. F2	SHEET NO. 4 OF 10		

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- LEGEND**
- EXISTING LEACHATE PIPE
 - SANITARY SEWER EASEMENT
 - EXISTING SANITARY SEWER LINE
 - PHASE LIMITS
 - CREEK
 - 200' EXISTING CONTOURS
 - PROPERTY LINE
 - BUFFER ZONE
 - ⊕ MONITORING WELL
 - ⊕ P2-15 EXISTING PIEZOMETER

Engineering Company, P.A.

P.O. BOX 349 BOONE, N.C. 28607
(828) 262-1767

Municipal Services

P.O. BOX 97 GARNER, N.C. 27529
(919) 772-5393

P.O. BOX 828 MOREHEAD CITY, N.C. 28557
(252) 726-9481

LICENSE NUMBER: C-0281

**MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA**

5/30/2011	LHC	1	REV.	REVISOR	DESCRIPTION
DATE	BY	REV.	REV.	REV.	DESCRIPTION
FACILITY PLAN LEACHATE COLLECTION SYSTEM					
PROJECT NUMBER G08002					
DRAWING NO. SHEET NO. F3 5 OF 10					

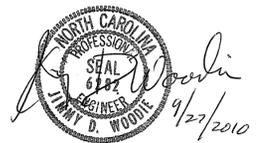


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LEGEND

- EXISTING LEACHATE PIPE
- - - SANITARY SEWER EASEMENT
- EXISTING SANITARY SEWER LINE
- PHASE LIMITS
- CREEK
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPERTY LINE
- BUFFER ZONE
- ⊙ MONITORING WELL



Engineering Company, P.A.

P.O. BOX 549 BOONE, N.C. 28607
(628) 262-1767

Municipal Services

P.O. BOX 97 GARNER, N.C. 27729
(919) 772-5383

P.O. BOX 828 ROCKHEAD CITY, N.C. 28557
(252) 753-2451

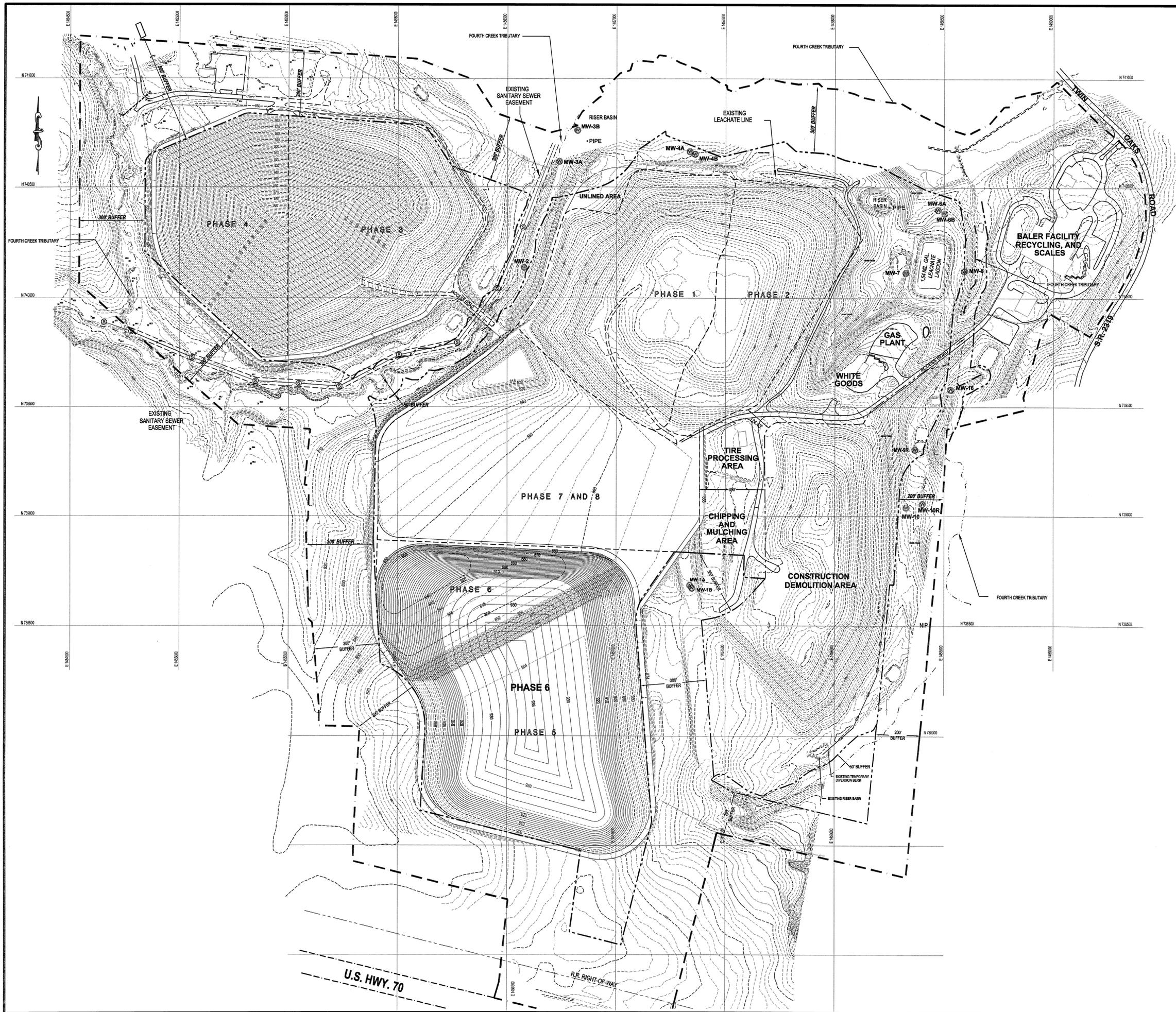
LICENSE NUMBER: C-0281

**MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA**

DATE	BY	REV.	DESCRIPTION

**FACILITY PLAN
REMAINING FILL PHASES 3 AND 4
AND PHASE 5 FILL PLAN**

SCALE: 1" = 200'
DATE: 9/17/2010
DRWN. BY: L. HAMPTON
CHKD. BY: J. WOODIE
PROJECT NUMBER: G08002
DRAWING NO. SHEET NO.
F4 6 OF 10



- LEGEND**
- EXISTING LEACHATE PIPE
 - - - SANITARY SEWER EASEMENT
 - EXISTING SANITARY SEWER LINE
 - PHASE LIMITS
 - CREEK
 - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - PROPERTY LINE
 - BUFFER ZONE
 - ⊙ MONITORING WELL

Engineering Company, P.A.
 P.O. BOX 349 BOONE, N.C. 28607
 (828) 262-1767
Municipal Services
 P.O. BOX 97 GARNER, N.C. 27529
 (919) 772-5953
 P.O. BOX 828 WIREHEAD CITY, N.C. 28557
 (252) 426-5861

MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA

SCALE:	1" = 200'
DATE:	9/17/2010
DRWN. BY:	L. HAMPTON
CHKD. BY:	J. WOODIE
PROJECT NUMBER:	G08002
DRAWING NO.:	F5
SHEET NO.:	7 OF 10

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J. Woodie

 9/27/2010

- LEGEND**
- EXISTING LEACHATE PIPE
 - SANITARY SEWER EASEMENT
 - EXISTING SANITARY SEWER LINE
 - PHASE LIMITS
 - CREEK
 - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - PROPERTY LINE
 - BUFFER ZONE
 - ⊙ MONITORING WELL

Municipal Services Engineering, P.A.

 LICENSE NUMBER: C-0281

 P.O. BOX 87 GARNER, N.C. 27529 (919) 772-5395

 P.O. BOX 346 BOONE, N.C. 28607 (828) 262-1767

 P.O. BOX 628 MARSHFIELD CITY, N.C. 28557 (828) 736-9481

MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA

DATE	BY	REV.	DESCRIPTION

FACILITY PLAN
PHASE 7 FILL PLAN

SCALE: 1" = 200'	
DATE: 9/17/2010	
DRWN. BY: L. HAMPTON	
CHKD. BY: J. WOODIE	
PROJECT NUMBER: G08002	
DRAWING NO. F6	SHEET NO. 8 OF 10

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- LEGEND**
- EXISTING LEACHATE PIPE
 - SANITARY SEWER EASEMENT
 - EXISTING SANITARY SEWER LINE
 - PHASE LIMITS
 - CREEK
 - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - PROPERTY LINE
 - BUFFER ZONE
 - ⊙ MONITORING WELL

Engineering Company, P.A.

P.O. BOX 348 BOONE, N.C. 28607
(828) 262-1767

Municipal Services

LICENSE NUMBER: C-0281
P.O. BOX 97 GARNER, N.C. 27829
(919) 772-5383
P.O. BOX 928 MOREHEAD CITY, N.C. 28557
(252) 778-9481

**MUNICIPAL SOLID WASTE LANDFILL FACILITY
SITE STUDY
EXPANSION OF EXISTING FACILITY
IREDELL COUNTY, NORTH CAROLINA**

DATE	BY	REV.	DESCRIPTION

FACILITY PLAN
PHASE 9 FILL PLAN

SCALE: 1" = 200'	
DATE: 9/17/2010	
DRWN. BY: L. HAMPTON	
CHKD. BY: J. WOODIE	
PROJECT NUMBER: G08002	
DRAWING NO. F8	SHEET NO. 10 OF 10



APPENDIX D



North Carolina Department of Cultural Resources
State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

May 2, 2008

Scott Siebel, RPA
Environmental Services, Inc.
524 E. New Hope Road
Raleigh, NC 27610

Re: Steele Property, proposed landfill expansion, near Statesville, Iredell County, ER08-1011

Dear Mr. Siebel:

Thank you for your letter of April 16, 2008 concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

Sincerely,


Peter Sandbeck

23 April 2008

Mr. Wayne Sullivan, PE
Municipal Engineering Services Company, PA
PO Box 97
Garner, NC 27529

**Re: Steele Property Jurisdictional Determination
Iredell County, North Carolina**

ESI Project Number EE08-013

Mr. Sullivan:

Environmental Services, Inc., (ESI) has conducted a jurisdictional determination effort and preliminary Threatened and Endangered species habitat evaluation within the approximately 53-acre parcel designated as the Steele property, as depicted on the mapping you have provided. It is our understanding that this area is being considered as a potential expansion area for the Iredell County C&D facility located near the City of Statesville, Iredell County, North Carolina. This letter serves as the deliverable for this project.

The project study area contains an agricultural field with an isolated stand of mixed hardwoods in the eastern portion of the property. The central portion of the study area is former agricultural field that has been recently graded and seeded. The western portion of the study area contains a small, disturbed mixed hardwood forest. There is also a small, urban disturbed area along railroad tracks near the southern boundary of the property.

Jurisdictional Determination

The jurisdictional determination was conducted on 15 April 2008. The project study area was reviewed to determine the presence or absence of jurisdictional wetland areas using the three parameter approach outlined by the U.S. Army Corps of Engineers (USACE), including hydric soils, hydrophytic vegetation, and evidence of jurisdictional hydrology). The project study area was also reviewed to determine the presence or absence of jurisdictional stream channels based on criteria from the USACE and the N.C. Division of Water Quality (DWQ).

Based on our evaluation, jurisdictional stream channels and wetland areas are present within the project study area. Additionally, jurisdictional features just to the west of the project study area boundary were noted. The approximate extent and location of these features are depicted on the attached figure.

In the western portion of the project study area, a stream channel forms and flows into a pond located approximately 200 feet north. The channel exits the pond and continues flowing to the north. The pond and channel feature north of the pond are located outside of, but in close proximity to the project study area's western boundary. The pond has associated wetlands which intrude into the project study area. The stream channel reach within the project study area has a small associated wetland area located upstream of the pond. The approximate extent and location of these features are depicted on Figure 1 (attached). No other jurisdictional features were noted within the project study area.

An additional feature located on the western third of the project study area boundary was reviewed and was determined to be a storm water basin. It is our opinion that these features are isolated, non-jurisdictional features. Please note, the final decision on jurisdictional status rests with the USACE and/or DWQ. These features are depicted on Figure 1.

Threatened Species Habitat Evaluation

As part of this project, ESI evaluated the project study area for the presence or absence of potentially suitable habitat for two federally protected species with ranges considered to extend into Iredell County, bog turtle and dwarf-flowered heartleaf, based on the most recent U.S. Fish and Wildlife Service (USFWS) county list (list date 20 December 2007).

Bog turtle (*Clemmys muhlenbergii*): The southern population of bog turtle is listed as Threatened due to Similarity in Appearance (T [S/A]) to the northern population of this species. Species or distinct populations that are federally listed as “Threatened due to Similarity of Appearance” have a similar appearance to other rare species that are federally listed. These species or distinct populations are not biologically endangered or threatened and are not subject to Section 7 consultation.

The T(S/A) designation prohibits collecting individual turtles from the southern population and bans interstate and international commercial trade. This designation has no effect on land management activities of private landowners in southern states where the bog turtle lives.

A review of records held by the N.C. Natural Heritage Program (NHP) does not document any known occurrences of this species within the project study area or within 2.0 miles of the project study area.

Bog turtles inhabit shallow spring-fed fens, sphagnum bogs, marshy meadows, pastures with muddy bottom streams, and swamps with aquatic and semi-aquatic vegetation. Potentially suitable habitat for this species is present within the project study area. Potentially suitable habitat is present in the jurisdictional wetland areas within the project study area (Figure 1). These areas consist of stream/wetland/pond system with patches of aquatic and semi-aquatic vegetation.

Dwarf-flowered heartleaf (*Hexastylis naniflora*): Dwarf-flowered heartleaf is listed as Federally Threatened by the USFWS; as such this species is subject to Section 7 consultation under The Endangered Species Act.

A review of records held by the NHP does not document any known occurrences of this species within the project study area or within 2.0 miles of the project study area.

Dwarf-flowered heartleaf is a small rhizomatous herb with heart-shaped, evergreen leaves which are often high-lighted by a white to silver reticulation pattern. This species is most commonly found on acidic sandy loam or sandy clay loam soils. Dwarf-flowered heartleaf is most often found on bluffs, slopes, hillsides, or edges of seeps, springs, and streams in deciduous forests. Potentially suitable habitat for this species is present within the project study area. The mixed hardwood buffer along the stream comprising much of the western boundary of the provided project study area extent represents potentially suitable habitat for this species, however, no members of *Hexastylis* or *Asarum* were noted during the field effort.

Cultural Resource Review

On 14 April 2008, ESI conducted research at the North Carolina Office of State Archaeology (OSA) and the Survey and Planning Branch (S&P) of the North Carolina State Historic Preservation Office (SHPO). Research revealed that a portion of the existing landfill property to the north of the current study area had an archaeological survey, which resulted in the recording

of three archaeological sites (31IR156-158). Additionally, other portions of the existing landfill, as well as the northern third of the current study area, were reviewed by the SHPO in 2001 (ER 01-7054). No archaeological investigations were recommended as a result of the 2001 review. No historic properties eligible for or listed in the *National Register of Historic Places* were found on the S&P map within a 1-mile radius of the study area.

ESI submitted a letter to the SHPO requesting comment on the project in the event it requires federal or state permitting or funding on 16 April 2008. Response is expected in mid-May. Given previous SHPO comments on portions of the property and the history of disturbance, the chance of the SHPO recommending any additional cultural resource investigations is low.

If for some reason the SHPO does request additional cultural resource investigations, this request would only apply to federal or state permit areas. If the proposed project does not require a U.S. Army Corps of Engineers (ACOE) Individual Permit or is not subject to the North Carolina State Environmental Policy Act (SEPA), it is unlikely that any additional cultural resource work would need to be conducted.

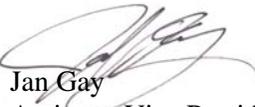
Summary

Based on the field review, jurisdictional wetlands and streams exist within the project study area. Additionally, potentially suitable habitat exists within the project study area for the federally protected species dwarf-flowered heartleaf and bog turtle. NHP records do not indicate any known occurrences of either species within the project study area or within 2.0 miles of the project study area. ESI has submitted a SHPO coordination letter, and is waiting for a response. Once the response is received, we will forward the letter to you.

Environmental Services, Inc., appreciates the opportunity to offer you our services. If you have any questions or comments, or need any additional information, please feel free to contact me at (828) 254-0811.

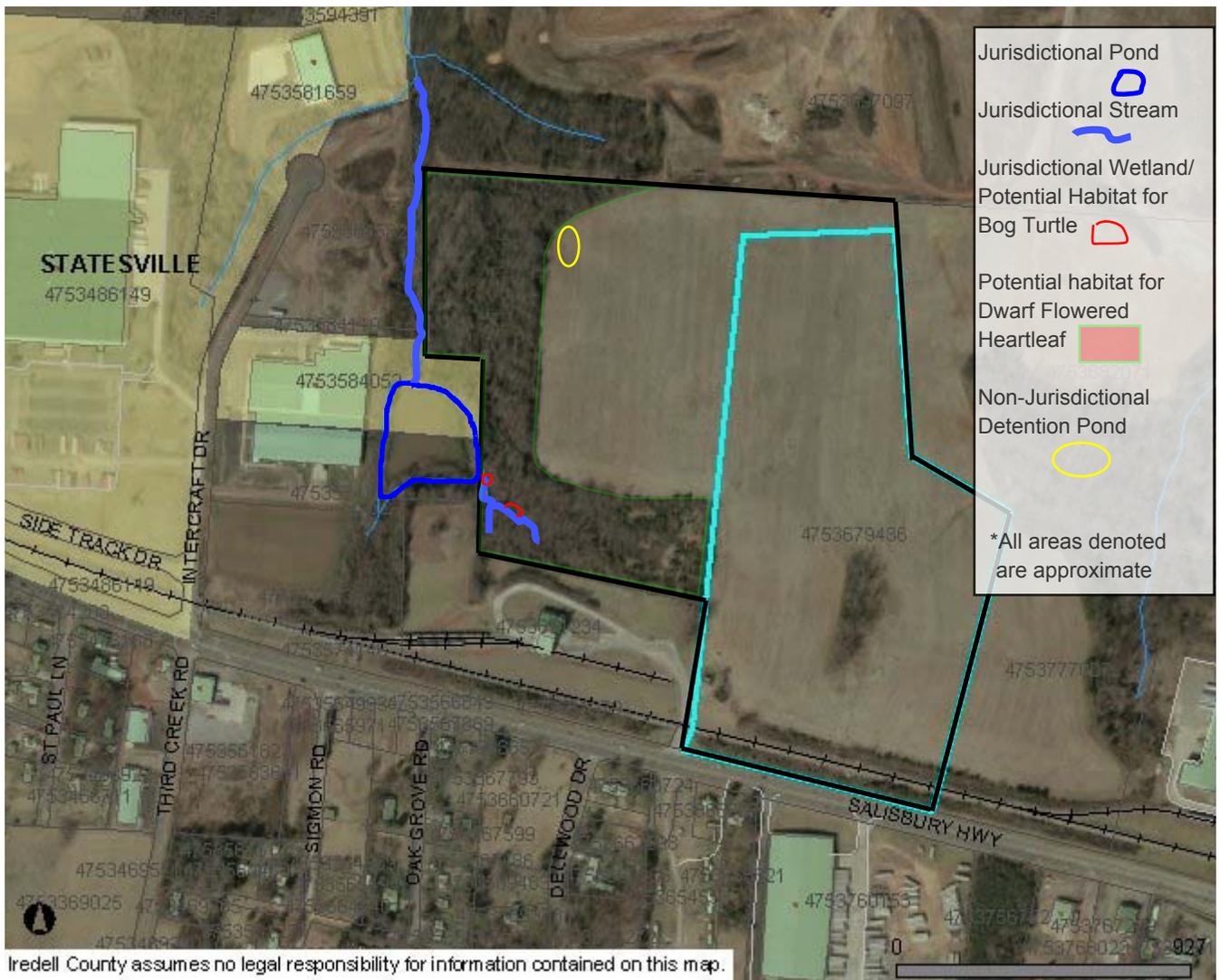
Sincerely,

ENVIRONMENTAL SERVICES, INC.



Jan Gay
Assistant Vice President

Attached: Figure 1



APPENDIX E

GEOLOGIC REPORT (Submitted under separate cover)