

GROUNDWATER MONITORING REPORT (PRECAP - INITIAL)

KONNOAK TEXACO

300 West Clemmons Road
Winston-Salem, Forsyth County, North Carolina

Facility ID: 00-0-0000015475
Incident: # 44182
Site Risk: High
Site Name: Konnoak Texaco - Gasoline
Site Location: 300 West Clemmons Road
Winston-Salem, NC
Latitude: 36° 02' 55.06" North
Longitude: 80° 13' 58.91" West
UST Owner: Leonard Oil Company
2037 Vargrave Street
Winston-Salem, NC 27127
Report Date: April 22, 2016

Project No: 13-111

I, A. Barry Nelson, a Licensed Geologist for Northwest Geoscience, P.C. (NC License No. 165), do certify that the information contained in this report is correct and accurate to the best of my knowledge.

Northwest Geoscience, P.C. is a licensed North Carolina geological corporation. The license number of the company is C442.



4-22-16
Date



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EXECUTIVE SUMMARY

The Konnoak Texaco site is located at 300 West Clemmons Road in Winston-Salem, NC. Commercial Underground Storage Tanks (USTs) were closed at the site in July, 2013. A release discovered from the product lines and dispensers for three (3) gasoline USTs (Tanks 1A, 2A, and 3A) was reported to the North Carolina Department of Environmental Quality (NCDEQ) Winston Salem Regional Office (WSRO) and assigned Incident #44182. Contaminant concentrations detected in over-excavation samples following soil abatement exceeded Soil-to-Groundwater Maximum Soil Contaminant Concentrations (MSCCs).

Monitoring well (MW-1) was installed in the source area of the release during a Phase I LSA. As groundwater contaminant concentrations in MW-1 exceeded NCAC 2L Standards by a factor of ten (10); three (3) additional wells (MW-2, MW-3, and MW-4) were installed during Phase II LSA activities. A potential receptor survey identified two (2) private water supply wells within 250 feet of the source area for Incident #44182. Therefore, Incident # 44182 was assigned a "High" risk ranking. Four (4) soil borings and three (3) additional monitoring wells (MW-5, MW-6, and MW-7) were installed during a Comprehensive Site Assessment (CSA) on the Incident site and at 3616 Konnoak Drive, the adjoining property to the south.

During pre-Corrective Action Plan (pre-CAP) Monitoring, two (2) monitoring wells were installed at the 3616 Konnoak Drive and one (1) monitoring well was installed at 3619 Konnoak Drive. Monitoring wells MW-1 - MW-10 were sampled on February 18, 2016. The highest contaminant concentrations were detected in MW-1, located in the source area of the release and MW-5, located at the southern property boundary. Benzene concentrations in these wells exceeded the NCDEQ Gross Contamination Level (GCL) for this contaminant (5,000 ppb). 1,2-Dichloroethane was also detected in MW-5 above the GCL for this compound (400 ppb). Groundwater contamination has migrated off site at concentrations above NCAC Groundwater Quality (2L) Standards and GCLs.

MW-8 is located along Hartle Street, approximately 200 feet south of the source area. Despite the distance to this well, located furthest downgradient, benzene, MTBE, naphthalene, and C5-C8 aliphatic concentrations in samples from this well were above 2L Standards. Concentrations were Below Quantitation Limits (BQL) for most contaminant compounds in samples from MW-9 and MW-10 further east and west.

Due to concerns about potential vapor impacts to the residents at 3616 Konnoak Drive, exterior soil-gas vapor intrusion samples were collected in February, 2015. These samples were collected and tested using EPA Method TO-15. No detectable concentrations of petroleum hydrocarbons including BTEX and naphthalene were identified in these samples.

At this time, Northwest Geoscience recommends completion of a Corrective Action Plan (CAP) for Incident #44182. The abandonment of nearby potential receptor wells will likely lower the risk ranking from High to Intermediate. A reduction in groundwater contaminant concentrations to below GCLs using a period of active groundwater remediation followed by natural attenuation may further reduce the risk classification from Intermediate to Low.

Chapter 3. Growth Management Plan

Goal:

Manage growth and development to reduce sprawl, create a more compact and balanced urban development pattern, and preserve open space and rural character. Emphasize compact development in appropriate locations to accommodate our growing population.

Introduction

Legacy 2030's Growth Management Plan is a tool used to help direct future growth; protect existing neighborhoods, natural areas, farmland, and employment sites; and target areas for redevelopment and revitalization. A well thought out and consistently supported growth management plan should reduce sprawl, create a more compact and balanced development pattern, support more transportation options, and preserve open space and rural character.

The Growth Management Plan developed as part of the *2001 Legacy Plan* sets the framework for Forsyth County's physical development. It provides guidance by identifying where growth should be concentrated based on the goal of making efficient use of our limited land resources. Forsyth County first started using a growth management plan in 1987 with the adoption of *Vision 2005*. The *2001 Legacy Plan* further refined the growth management concept and created the Ten Guiding Principles of the *Legacy's* Growth Management Plan with the input of Forsyth County citizens. The Ten Guiding Principles are still very relevant to our future challenges as we look to the year 2030. Additionally, the federal and our State government have established six livability principles that align very closely with *Legacy's* Ten Guiding Principles.

Ten Guiding Principles of the *Legacy* Growth Management Plan

- Create a vibrant city center
- Seek variety in neighborhoods
- Designate growth areas
- Focus commercial development
- Provide transportation choices
- Protect environmental quality
- Encourage balanced growth
- Promote design excellence
- Recycle and reuse land and buildings
- Follow through on implementation

Livability Principles Established at the Federal and State Levels

- Provide more transportation choices
- Promote equitable, affordable housing
- Enhance economic competitiveness
- Support existing communities
- Coordinate policies and leverage investment
- Value communities and neighborhoods — rural, urban, or suburban

Under *Legacy* Growth Management Plan, Winston-Salem's Downtown has become more vibrant and citizens enjoy diversity in housing choices including more urban-style housing units in and near the Downtown. Commercial development has been encouraged in activity centers as designated in the *2001 Legacy Plan*. Numerous ordinance changes protect the environment and promote design excellence. Older industrial buildings are being given new life as residential, office, research, and commercial uses in and around Downtown. Current efforts to plan for a streetcar system and regional rail as well as increasing pedestrian and bike accommodations could broaden our transportation choices and help focus development more in the future.

Designating growth areas and encouraging balanced growth are goals that have been a bit more difficult to influence with growth management policies. Much of the area that was designated as Future Growth in the southeastern section of the county has been receiving a good deal of development attention, including the construction of the Dell and Caterpillar facilities, planned improvements for Union Cross Road, new residential development, and the Heart of the Triad effort. In terms of balanced growth, the west side of Winston-Salem continues to see more new development than the east side, but there are indications of progress. The Housing Authority of Winston-Salem is looking at a major new mixed-use project in the Cleveland Avenue area and several community development corporations are actively seeking new development and revitalization on the east side of Winston-Salem and north of the Wake Forest Innovation Quarter. Under the Revitalizing Urban Commercial Areas Program, older commercial areas are undergoing much needed improvements.

Chapter 6. Economic Development

Goal:

Attract new businesses and expand existing large and small businesses to provide a broad range of employment opportunities and a high quality of life and prosperity for people living and working in all areas of Forsyth County.

Introduction

Winston-Salem and Forsyth County's economy has changed dramatically over the last two decades. Offshore labor pools, advanced technologies, and new customers have challenged established business practices at the local level. Forsyth County lost 18,903 manufacturing jobs between 1990 and 2010 – a 39 percent drop that continued into the recession.

Despite the trend in this sector, our community has weathered the loss of jobs fairly well. Winston-Salem and Forsyth County have managed to shift, in many ways, to a knowledge- and service-based economy by attracting high-tech medical research companies, nurturing home-grown corporate and entrepreneurial companies, and taking advantage of rapidly rising labor, land and shipping costs in China to “re-shore” manufacturing operations like Caterpillar.

For economic growth and job creation to occur and be sustained in today's environment, communities need excellence in four important areas: 1) companies engaged in progressive research, advanced production, and professional services; 2) a trained workforce with varied skills and crafts; 3) robust business facilities, sites, and infrastructure; and 4) a vibrant quality of life. The relative strength in these factors affects a community's ability to grow organizations, companies, and jobs

What the 2001 Legacy Plan says about Economic Development...

Attract new businesses and expand existing businesses
Provide a broad range of employment opportunities
Encourage economic diversification
Facilitate spin-off companies
Support entrepreneurial innovation
Attract high-tech medical research, visual film, and financial, insurance and real estate companies
Provide opportunities for higher educational attainment by the local workforce
Identify and protect suitable large industrial park sites
Rehabilitate older, derelict, and underutilized commercial properties
Redevelop vacant, obsolete, and abandoned industrial sites
Retain and improve excellent quality of life factors (schools, arts and leisure, environmental quality, safety)
Recruit sports and entertainment venues Downtown
Support tourism, historic, recreational, and arts-related attractions

to compete with other areas. At the heart of all of these factors is a culture of active learning, the attainment of knowledge and an atmosphere that encourages innovation.

How Have the 2001 Legacy Plan Strategies Worked?

Many of *Legacy's* economic development strategies have worked in spite of the recent recession. Forsyth County and its municipalities support the efforts of Winston-Salem Business Inc., the Winston-Salem Chamber of Commerce, and the Winston-Salem Alliance to facilitate community business growth. These organizations have been successful in attracting and retaining major companies such as Dell, Caterpillar, Pepsi, US Airways, and Wachovia/Wells Fargo.

Wake Forest University and the N.C. Biotechnology Center have been leaders in attracting high-tech medical research companies to Forsyth County. A legacy of the R. J. Reynolds Tobacco Company is the Wake Forest Innovation Quarter. This 200-acre site at the edge of Downtown Winston-Salem provides an appealing urban environment for researchers that is close to housing and retail. The potential growth in high-tech jobs, particularly in biotechnology and life sciences, could be significant. However, to attract higher-paying employers, both our present and future work force must have the capacity to learn new skills when needed. Forsyth Tech has a nationally-recognized biotechnology training program, one of several successful retraining programs.

Winston-Salem and Kernersville have been successful in the establishment of needed business parks in our community. Since the 1990s, Winston-Salem and Forsyth County have provided land or extended infrastructure to the Union Cross Business Park, the Centre 311 Business Park, and the Dell site. The City also established the Brookwood Business Park near Smith Reynolds Airport to attract smaller, airport-related businesses. In 2007,

Chapter 11. Neighborhoods and Towns

Goal:

Enhance neighborhoods in Winston-Salem and smaller municipalities through preservation, revitalization, quality infill development, and attractive neighborhood service areas. Focus higher-intensity, quality mixed-use development in activity centers, growth corridors, and town centers.

Introduction

Neighborhoods are where we live and raise our families. Their protection, preservation, and revitalization are therefore in the interest of everybody in the community. However, the idea of “protecting” a neighborhood—from development or redevelopment—varies greatly throughout our community. Some residents express concern over any nonresidential development near housing; others perceive increased residential densities or attached housing to be negative. Still others are more concerned with the design of development, historic preservation, or traffic problems. This chapter will explore these issues as well as strategies to accommodate 120,000 more people.



The College Park development was funded by the Happy Hill Gardens HOPE VI grant.

What the 2001 *Legacy Plan* says about Neighborhoods...

Locate commercial areas in and near neighborhoods to serve as focal points and reduce automobile trips

Include public spaces and amenities in the design of new and retrofitted neighborhoods

Encourage a sense of community by incorporating features that enhance interaction

Ensure neighborhoods are inclusive of all races, ages, and incomes

Connect streets for a system of roads that disperses traffic instead of concentrating it on a few roads

Revise street standards to address concerns about speeding and safety on residential streets

Require sidewalks in standard subdivisions

Ensure a variety of quality housing types for all income levels

Continue public-private partnerships for the provision of affordable housing

Allow accessory apartments with fewer restrictions on occupancy in urban areas

Improve the quality of current public housing and disperse units throughout the community

Foster a climate that is hospitable to affordable housing developments

What the 2001 *Legacy Plan* says about Towns...

Develop successful town centers

Encourage coordination between the planning boards of the different towns in the county

Recognize local community plans and include them in countywide planning efforts

Develop design guidelines for buildings, parking, sidewalks, and public spaces that are appropriate for small town centers

Preserve the special character of each town

Protect historic resources and the natural environment