

Safe Routes to Schools

programs and content sheets for CTT Review | 8.21.2018

Capital Area Metropolitan Planning Organization

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Southwest Area Study 2018

Overweight and Obesity Among Children and Adolescents in North Carolina

Fact Sheet

What are overweight and obesity?

- Overweight and obesity are conditions that result from excess body fat and/or abnormal body fat distribution.
- For children and adolescents, the amount of body fat is usually estimated by using weight and height to calculate a number called the body mass index (BMI). For a child and teen BMI calculator, visit nccd.cdc.gov/dnpabmi/Calculator.aspx. BMI is not a direct measure of body fat, but it is a reasonable indicator of the amount of body fat for most children and adolescents.
- Overweight and obesity in children and adolescents are generally defined using an age- and sex-specific percentile for BMI rather than the BMI categories used for adults because children's body composition varies with age and between boys and girls.

After a child or adolescent's BMI has been calculated from his/her weight and height, it is compared to a standard growth chart to determine the percentile in which his/her BMI falls and his/her weight status. Standard growth charts are derived by aggregating the BMI of thousands of children and adolescents according to age and sex. For standard growth charts used by the Centers for Disease Control and Prevention (CDC), visit www.cdc.gov/growthcharts/cdc_charts.htm. Table 1 shows how BMI-for-age and sex percentile is generally used to classify weight status for children and adolescents.

Table 1. Classification of weight status by BMI-for-age and sex percentile for children and adolescents

Body Mass Index (BMI)-for-age and sex percentile	Weight Status
Below 5	Underweight
5 to less than 85	Healthy weight
85 to less than 95	Overweight
95 or higher	Obese

Created based on information from www.cdc.gov/obesity/childhood/basics.html.

- A variety of factors play a role in overweight and obesity including: behavior, environment, genetics, some health conditions, medications, psychological factors, culture, socioeconomic status and others.

How many children and adolescents are overweight or obese?

- North Carolina has the 27th highest overweight and obesity rates among children age 10 to 17 in the nation.¹
- About one in three (31%) high school students in North Carolina are either overweight or obese.²

- Among North Carolina children ages 2–4 who participate in the Supplemental Nutrition Program for Women, Infants and Children (WIC), the prevalence of overweight and obesity is 31%.³



3 out of 10 children age 10 to 17 in North Carolina are either overweight or obese.

What are the complications of obesity?

- Overweight or obesity in children and adolescents increases the risk of several conditions including:
 - Hypertension (high blood pressure).
 - Hyperlipidemia including high cholesterol.
 - Abnormal glucose tolerance including type 2 diabetes.
 - Liver and gallbladder disease, sleep apnea, asthma and other respiratory problems.
 - Joint, muscle and bone problems.
 - Social and psychological problems (e.g., discrimination, poor self-esteem).
- Overweight or obese children and adolescents are more likely to become severely overweight or obese adults. For more information about overweight and obesity in adults, visit communityclinicalconnections.com/Data.

What are the risk factors for overweight and obesity?

- The basic cause of overweight and obesity is calorie (energy) imbalance whereby calorie intake is greater than calorie use. Consequently, diet (calorie intake) and physical activity (calorie use) are major determinants of overweight and obesity.
- Time of onset, duration and exclusivity of breastfeeding, as well as consumption of sugar-sweetened beverages and television viewing and screen time are also important risk factors for overweight and obesity in children and adolescents.
- Environments that lack places for physical activity or have limited access to healthy food options also contribute to overweight and obesity. For example, a child or adolescent's ability to be physically active may be limited because he or she doesn't have access to convenient, safe places to play.
- In certain rare disorders, genes can directly cause overweight and obesity. More commonly however, multiple genes may increase one's susceptibility for overweight or obesity but require outside factors, such as excess calorie intake and/or insufficient physical activity, for overweight or obesity to actually develop.

What options are available to prevent or manage overweight and obesity?

- The main objectives for the management of overweight and obesity are gradual and steady weight loss until a healthy weight is achieved, and thereafter, maintenance of a healthy weight. Even modest weight loss may lead to significant health benefits and the prevention or delay of complications.

- Maintaining a healthy diet and engaging in regular physical activity are the underpinnings of any successful weight loss plan. (See Table 3 for detailed physical activity guidelines for children and adolescents.) For general information on physical activity, healthy eating and strategies for healthy weight loss in children and adolescents, please visit

—www.cdc.gov/HealthyYouth/physicalactivity/guidelines.htm.

—cdc.gov/healthyweight.

- **North Carolina's Plan to Address Obesity: Healthy Weight and Healthy Communities: 2013–2020⁴** identifies the following core behaviors to address overweight and obesity in children and adolescents:

- Increase physical activity.
- Increase consumption of fruits and vegetables.
- Decrease consumption of sugar-sweetened beverages.
- Reduce consumption of energy-dense foods.
- Decrease television viewing and screen time.
- Increase breastfeeding initiation, duration and exclusivity.

To learn how strategies related to these behaviors can be applied in eight different community settings, please visit EatSmartMoveMoreNC.com.

- Creating environments that make it easier to engage in physical activity and healthy eating in community, home, child care, school, health care and workplace settings is a proven strategy in controlling overweight and obesity. To learn more about the North Carolina Division of Public Health's efforts to promote environments that foster physical activity and healthy eating, please visit communityclinicalconnections.com/What_We_Do/improve.html.

- In some cases, medication and surgical procedures may be needed to complement lifestyle changes for weight loss.
- Children or adolescents on medications or with health conditions that may lead to weight gain should talk to their health care provider about how to best manage their condition and prevent obesity.

Table 2: Risk Factors for Overweight and Obesity among High School Students, North Carolina, 2017²

Risk Factor	Students
Did not meet physical activity recommendations	77.7%
Spent 3 or more hours per day watching TV	23.1%
Spent 3 or more hours per day playing video games or using computer	41.6%
Drank soda or pop at least once per day	22.3%

Table 3: Key Physical Activity Guidelines for Children and Adolescents

Children and adolescents should do 60 minutes or more of physical activity daily.

Aerobic: Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week.

Muscle-strengthening: As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week.

Bone-strengthening: As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days of the week.

It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable and that offer variety.

Source: www.health.gov/paguidelines/guidelines/chapter3.aspx

REFERENCES

1. Child and Adolescent Health Measurement Initiative. Data Resource Center for Child and Adolescent Health. 2016 National Survey of Children's Health (NSCH) data query. Accessed at: www.childhealthdata.org/browse/survey on March 29, 2018.
 2. Youth Risk Behavioral Survey (High School Survey Results). North Carolina Healthy Schools. Department of Public Instruction and Department of Health and Human Resources. 2017. Accessed at: cdc.gov/healthyyouth/data/yrbhs/pdf/2017/ss6708.pdf on July 17, 2018.
 3. Division of Public Health, Nutrition Services Branch. North Carolina Pediatric Nutrition and Epidemiology Surveillance System (NC-PedNESS). 2016 Report produced upon request, July 03, 2018.
 4. Eat Smart, Move More North Carolina Leadership Team. 2013. North Carolina's Plan to Address Obesity: Healthy Weight and Healthy Communities 2013–2020. Eat Smart, Move More NC, Raleigh, NC. Available at: www.EatSmartMoveMoreNC.com.
- In addition to the above references, this fact sheet was developed with heavy reliance on information from the Centers for Disease Control and Prevention website: www.cdc.gov/obesity/childhood/index.html.

If you have any questions about data used in this fact sheet or about healthy eating and physical activity efforts in North Carolina, please email info@eatsmartmovemorenc.com.

For more information on Eat Smart, Move More North Carolina, please visit EatSmartMoveMoreNC.com.



The Importance of School Encouragement Programs

The recommended improvements on the following pages alone will not create or encourage a health walking and biking environment around schools. A variety of programs should also be implemented to create and support a multi-modal culture. Such a culture has several different characteristics:

- the behavior of people when they are walking and cycling,
- the attitude of motorists in the community towards pedestrians and cyclists, and
- the role of police and other law officials to enforce pedestrian safety.

To address all of these elements, programs are often created to address education, encouragement, and enforcement.

Education programs teach others about safe pedestrian and cycling behaviors, the benefits of choosing alternative modes of travel, and can assist people in feeling more comfortable with their “new” mode of travel. Education programs can also be used to teach motorists how to interact safely with alternative modes.

Encouragement programs, like education programs, can promote walking and cycling friendly behavior through various activities and incentives. Finally, **enforcement programs** provide the “teeth” of a safe and legal pedestrian and cycling environment. When law enforcement officers and other officials protect pedestrians and cyclists a clear message is sent that the presence of pedestrians and cyclists is a legitimate and permanent condition in the area’s transportation network. Additional resources for educational and enforcement resources are available at www.pedbikeinfo.org. The education programs teach others about safe travel behaviors, the benefits of walking and cycling, and can assist people in getting acquainted with their “new” way of travel. It is recommended that the school’s leaders implement programs that fit in the context of the particular culture and needs.



Walk to School Day

As part of the local Safe Routes to School program, it is recommended that municipalities and counties in SWAS work with community members and local schools to promote an annual or bi-annual Walk to School Day; some schools in the study area do this now. This event could be held on International Walk to School Day in October and help to kick-off other Safe Routes to School programs by encouraging parents, teachers, students and community members to get involved. More at: www.walktoschool.org.

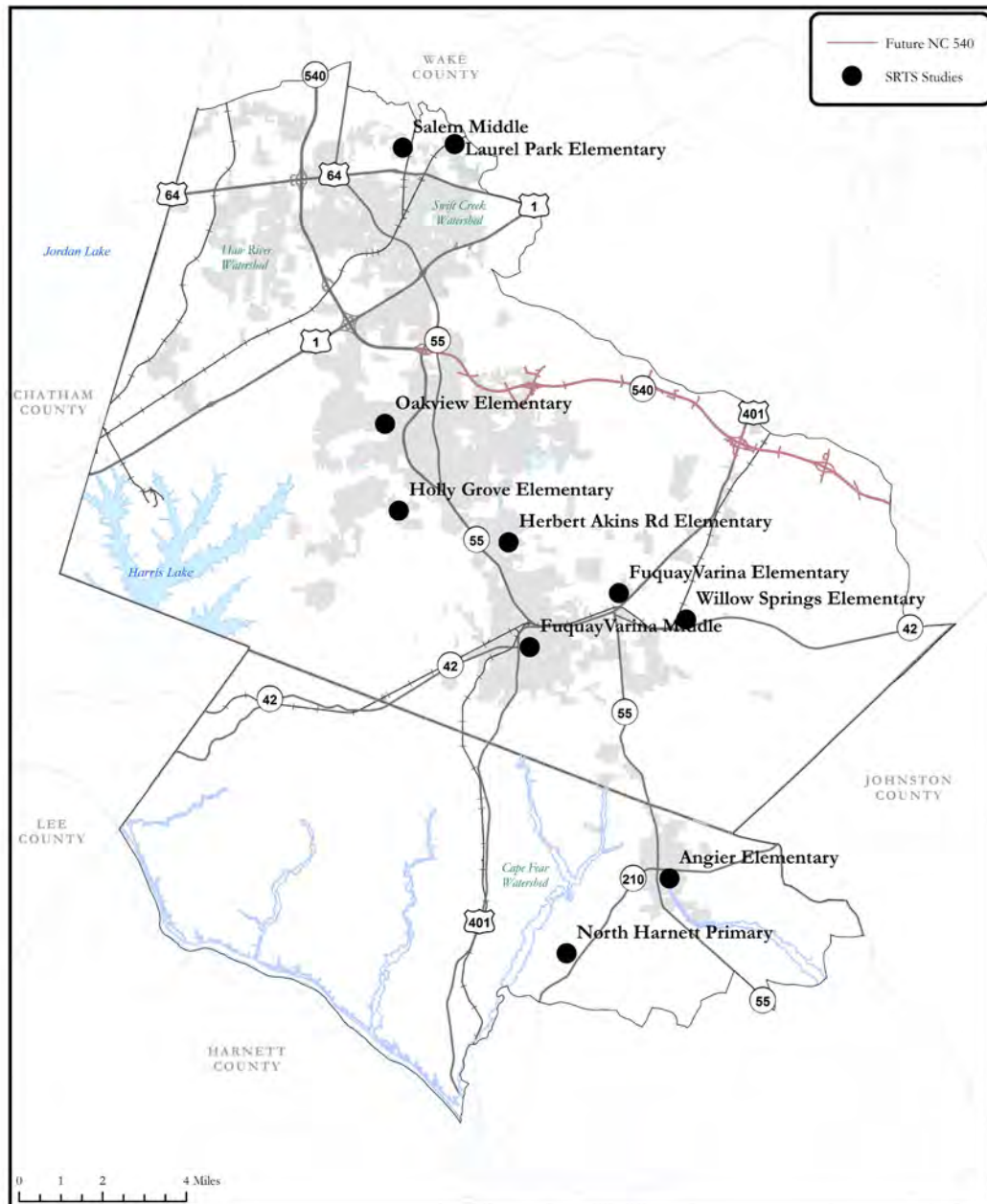
Volunteer Organizations

The League of American Bicyclists (LAB) promotes bicycle safety to children and adults nationwide. Volunteers, who have been trained directly or indirectly by LAB instructors, conduct on-site safety clinics that work directly with children to learn hand signals, helmet use, basic bicycle safety checks, and practices that will help them enjoy a safe ride. More information to get started can be found here: Jennifer Delcourt (NCDOT Active Routes Coordinator) at Jennifer.Delcourt@wakegov.com or Scott Lane (LAB Certified Master Instructor) at jslanempo@gmail.com.

Safe Routes to School

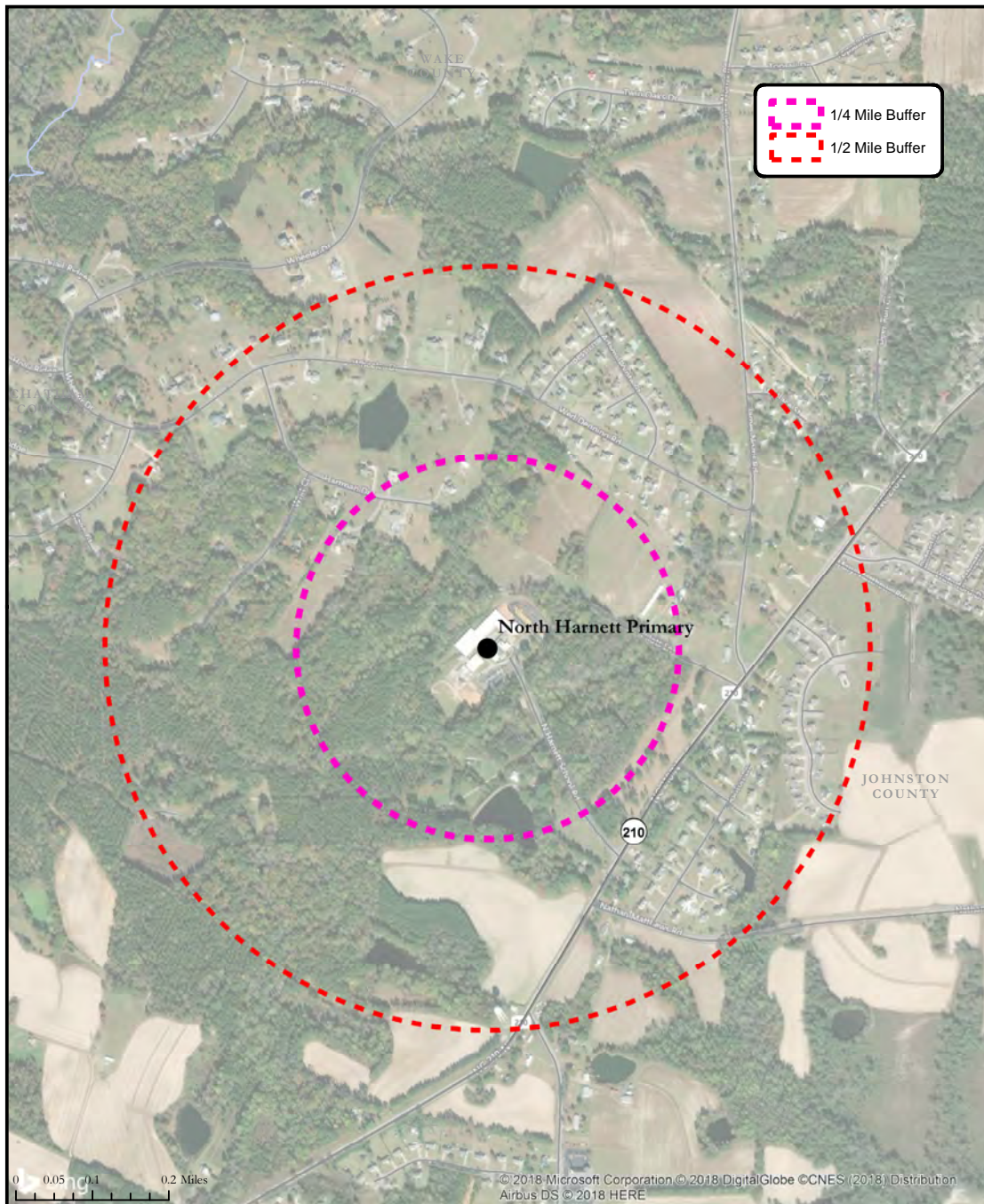
Safe Routes to School is a national and international movement to enable and encourage children, including those with disabilities, to walk and bicycle to school. Successful Safe Routes to School programs involve the whole community and take a comprehensive approach to improving safety, which benefits all pedestrians and bicyclists. Through a joint partnership between NCDOT’s Safe Routes to School Program and NC Division of Public Health, Active Routes to School Regional Coordinators help to implement Safe Routes to School strategies in partnership with local communities across North Carolina. School safety audits should be conducted with the Active Routes to School Regional Coordinator for each participating school. Information on Active Routes to School is available at www.communityclinicalconnections.com/activeroutes.

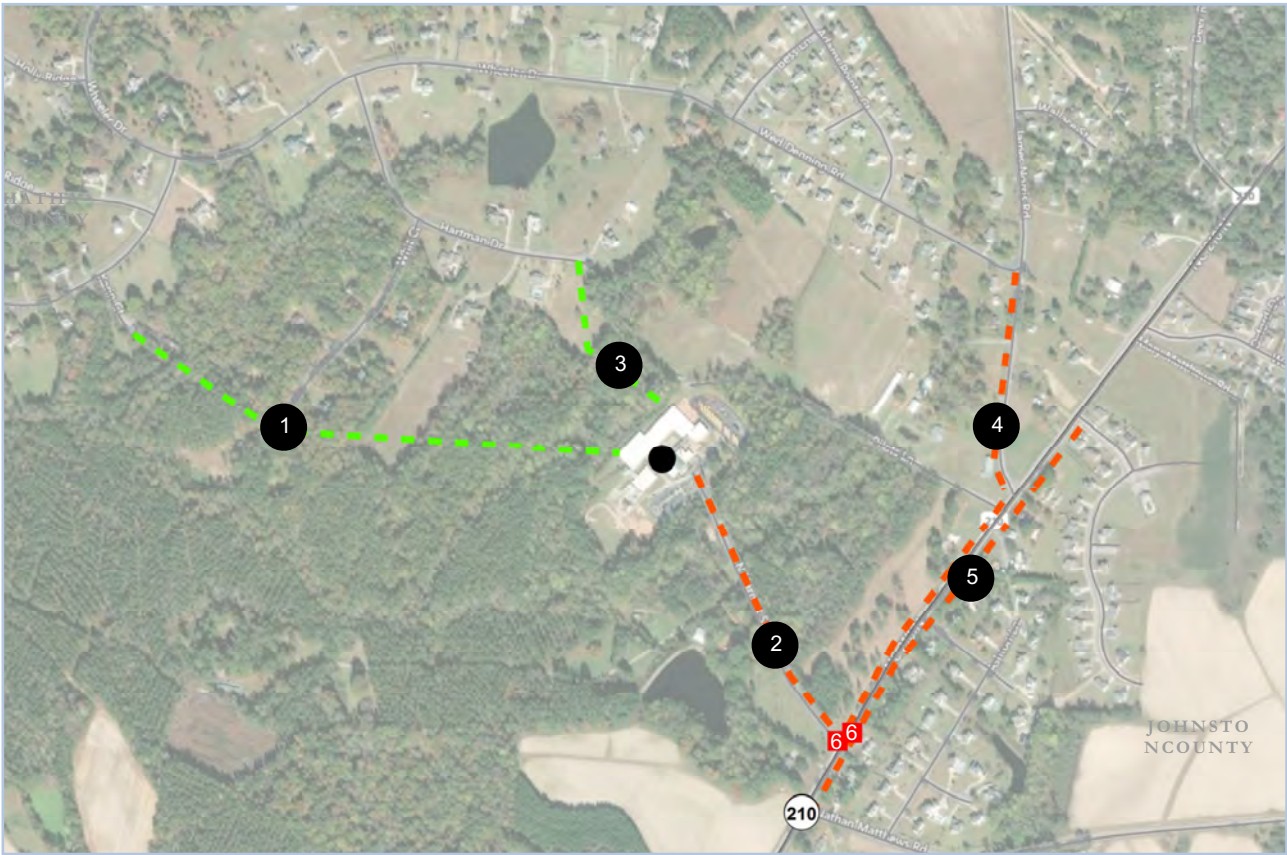
Safe Routes to School Studies



Salem Middle (2,800) – Apex
 Laurel Park Elementary (1,315) – Apex
 Oakview Elementary (6,358) – Holly Springs
 Holly Grove Elementary (4,733) – Holly Springs
 Herbert Akins Road Elementary (2,546) – Fuquay-Varina
 Fuquay-Varina Elementary (6,069) – Fuquay-Varina
 Fuquay-Varina Middle (2,997) – Fuquay-Varina
 Angier Elementary (2,847) – Angier
 North Harnett Primary (2,147) – Harnett County
 Willow Springs Elementary (2,341) – Wake County

The following pages provide a brief characterization of the issues that each of the school sites on this page face to creating better, safer walking and cycling environments for their students and faculty.





Address: 282 N. Harnett School Rd, Angier
Grade Levels: K-5
Current Enrollment: 439
Capacity: 475
Population Within One Mile: 2,847
Arrival/Dismissal Times: 7:55am/3:10am

Identified Concerns

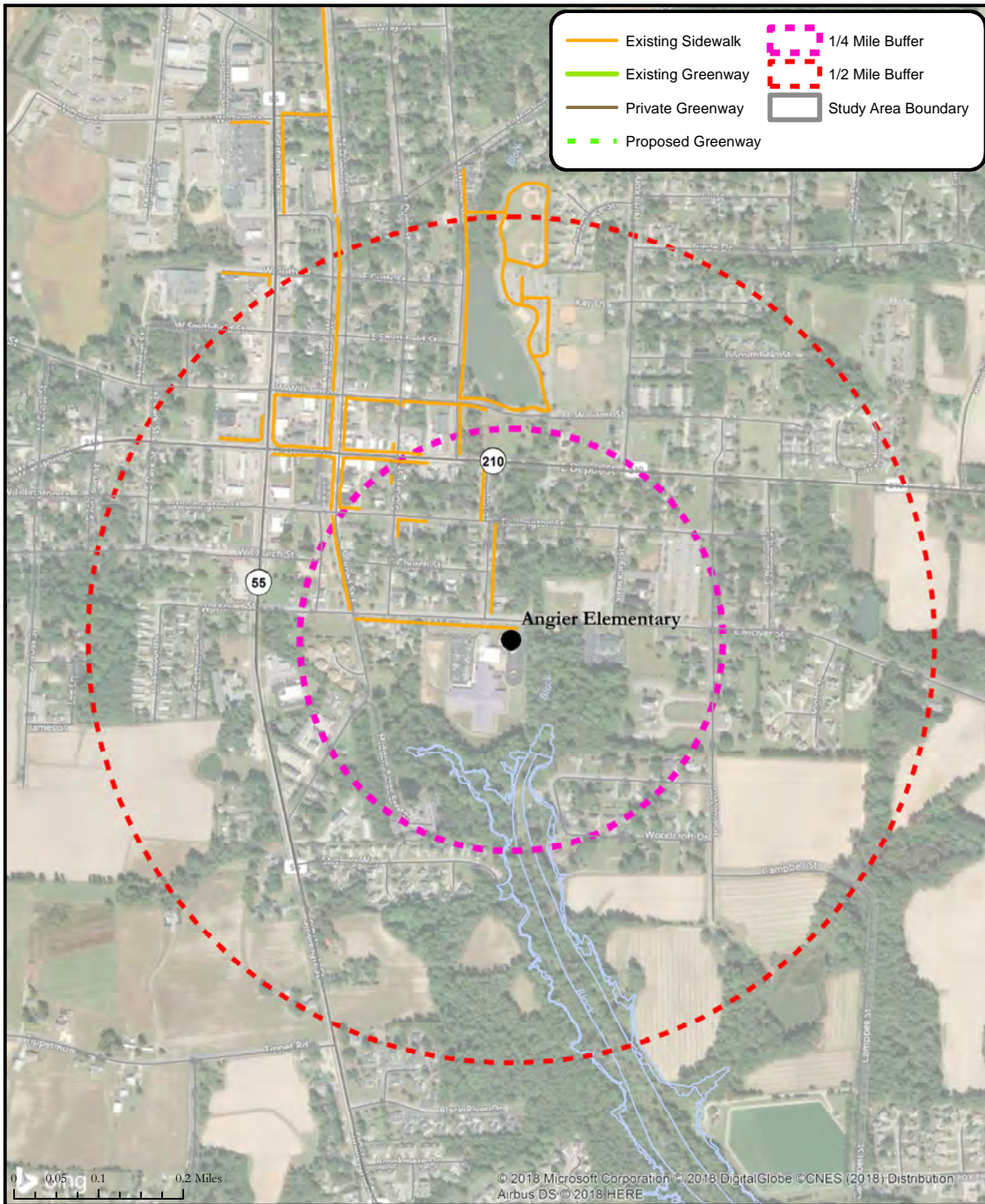
North Harnett Primary is located off of Hwy 210. The area is primarily rural, yet two residential neighborhoods are located to the east and north of the school site. A large tract of land located to the west of the school has the potential for development. No sidewalks are available within a half-mile of the school. Several houses are located within 1/4-mile of the school but there is a lack of roadways that connect to the school without students being forced onto Hwy 210.

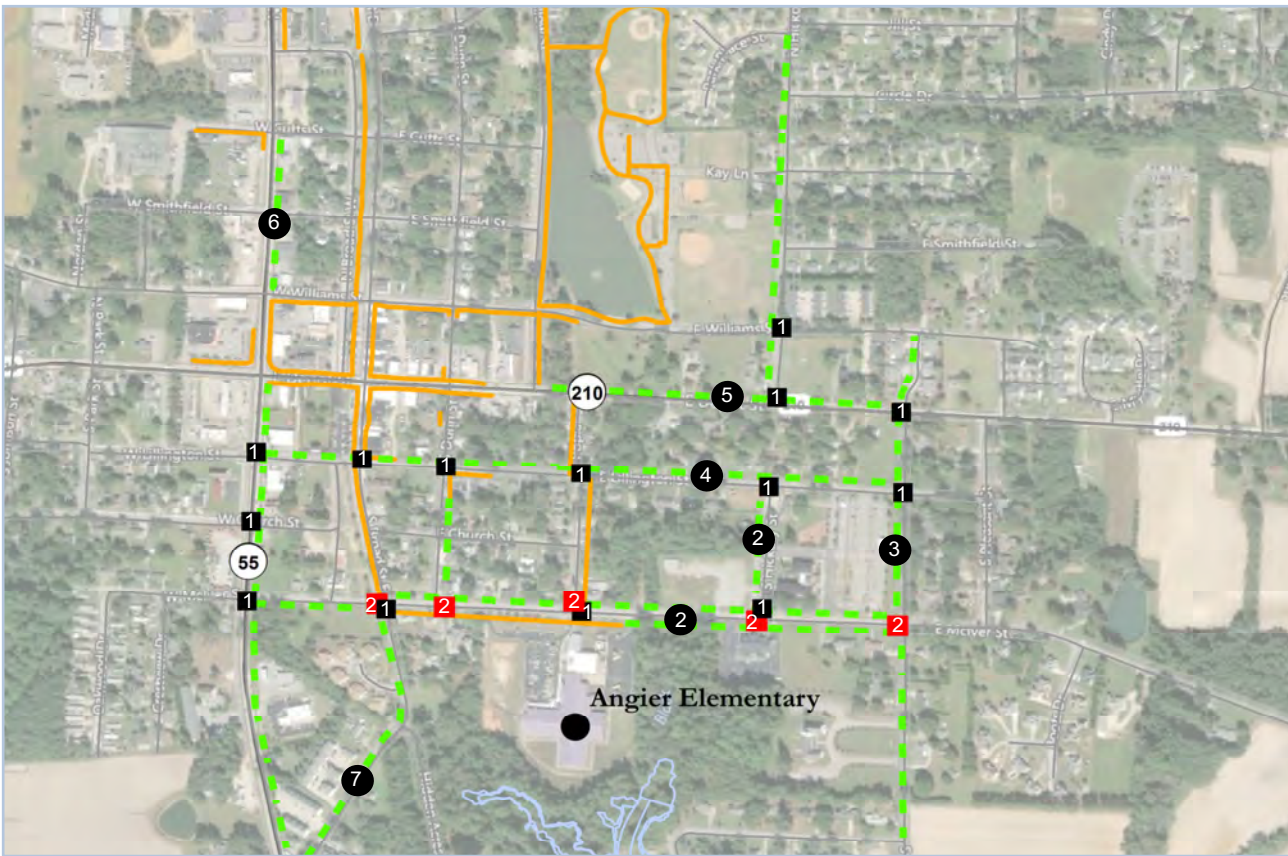
Summary of Recommendations

Sidewalks on school property, Hwy 210, and James Norris Rd. Greenways are recommended for any future development adjacent to the site as well as connecting the school to the residential development just north of the school.

Map ID	Recommendation	Cost
1	Greenway connection	\$xxx
2	Sidewalk along school entrance road	\$xxx
3	Greenway connection	\$xxx
4	Sidewalk along James Norris Rd	\$xxx
5	Sidewalk on both sides of Hwy 210	\$xxx
6	High visibility crosswalks	\$xxx

Safe Routes to School Studies





Address: 130 E McIver Street, Angier

Grade Levels: K-5

Current Enrollment: 457

Capacity: 750

Population Within One Mile: 2,847

Arrival/Dismissal Times: 7:55 am/3:10pm

Identified Concerns

Angier Elementary is just south of the downtown area. The school is bordered by Hwy 55 and 210. A small amount of sidewalks are located within the immediate vicinity of the school. There is also a lack of crosswalk and accessibility ramps at intersections located with 1/4 mile of the school as well as the driveways onto school property. A mid block crossing is present at one entrance of the school. This crossing is a standard transverse crosswalk. A more visible and pronounced crosswalk could attract the attention of drivers when students are crossing. Two pedestrian crashes and one bicycle crash have been reported in the area over the last ten years.

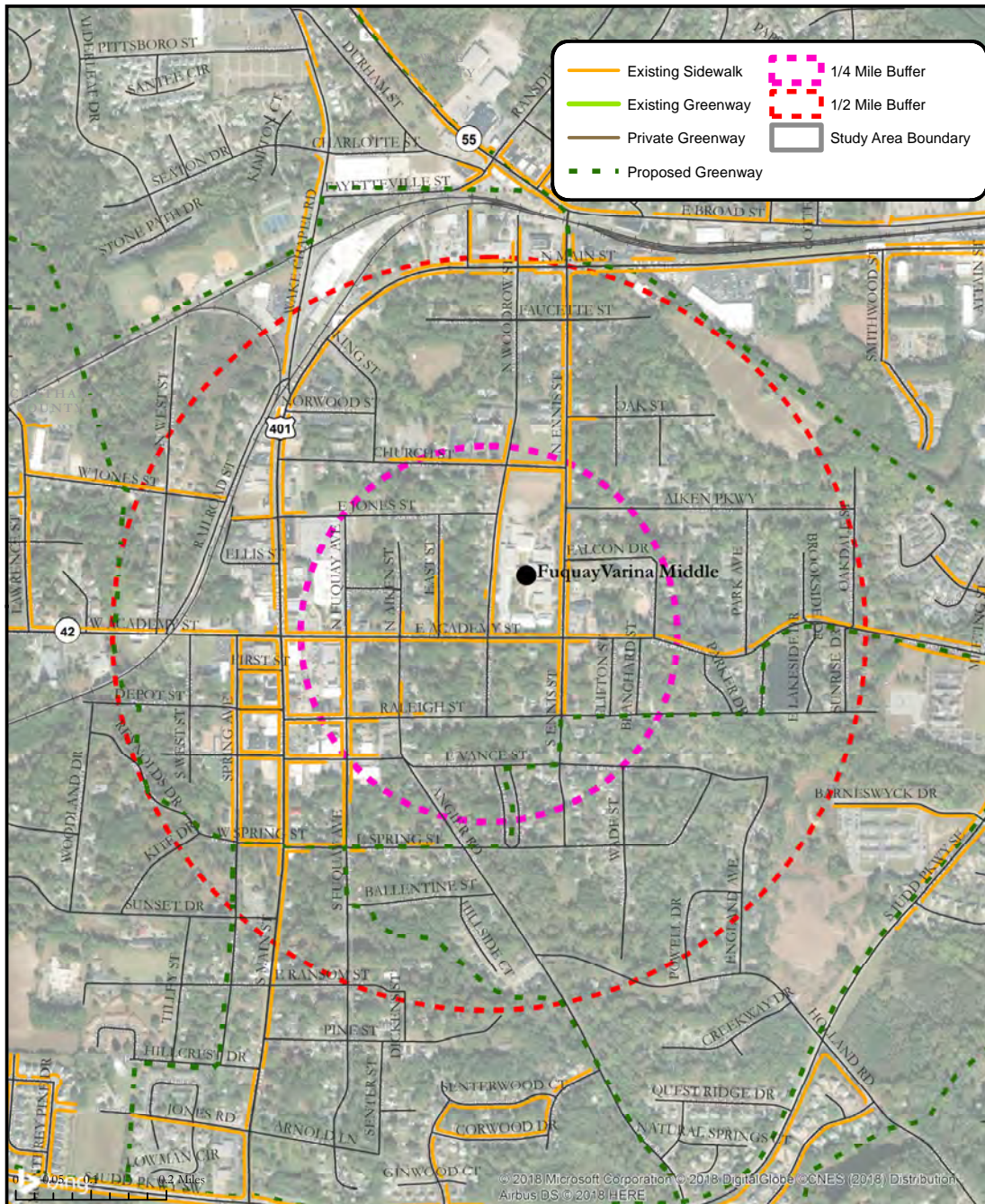
Summary of Recommendations

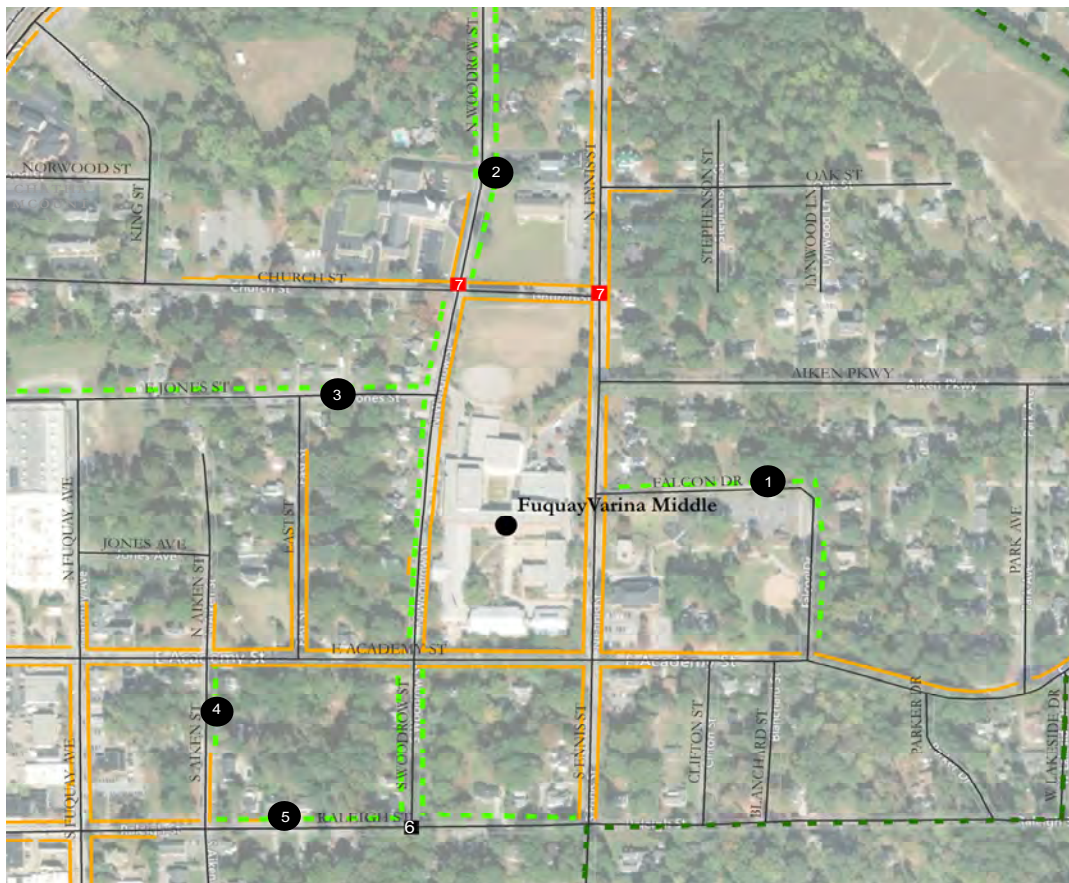
Intersections within 1/4 mile of school should be equipped with compliant accessibility ramps and crosswalks. The crosswalks adjacent to the school site should be furnished with high visibility ladder style crossings. Entrances to school should have marked crossings. Sidewalks are recommended on McIver St where currently lacking, as well as most of the connector streets to the school.

Map ID No.	Recommendation	Cost
1	Crosswalks	\$xxx
2	High visisbility crosswalks	\$xxx
3	Sidewalks along Wilma St	\$xxx
4	Sidewalks along Lillingston St	\$xxx
5	Sidewalks along Depot St	\$xxx
6	Sidewalks along Hwy 55	\$xxx
7	Sidewalks along Broad St	\$xxx



Safe Routes to School Studies





Address: 109 North Ennis Street, Fuquay-Varina
 Grade Levels: 6-8
 Current Enrollment: 896
 Capacity: 903
 Population Within One Mile: 2,997
 Arrival/Dismissal Times: 8:15am/3:00pm

Identified Concerns

Sidewalks are present within the school site, yet a full connection is not available on the west side of the school as well as the south. Recent work has been completed at many of the intersections to install pedestrian signals and high visibility crossings. Two pedestrian accidents have been reported along Woodrow Street by the school.

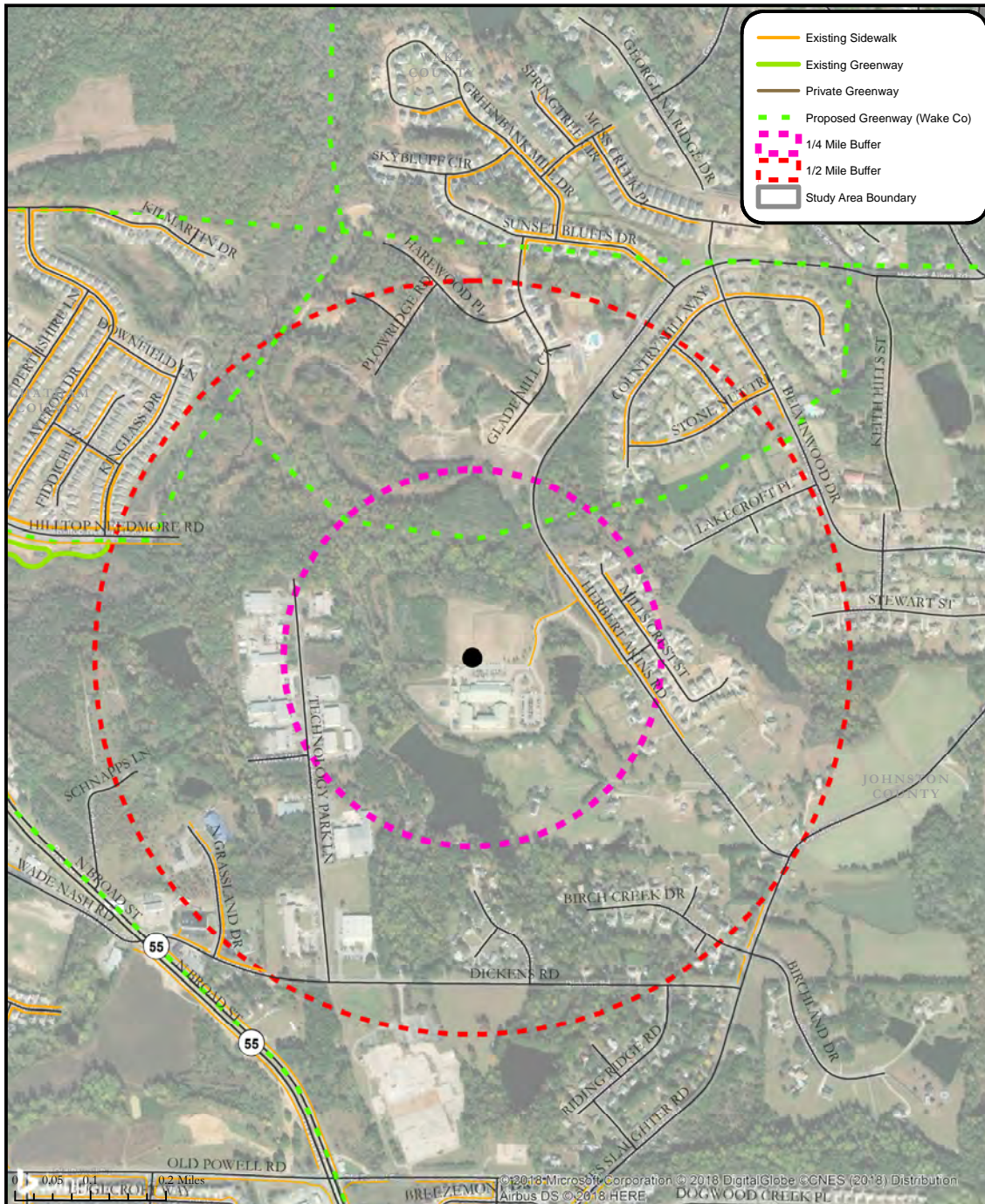
Summary of Recommendations

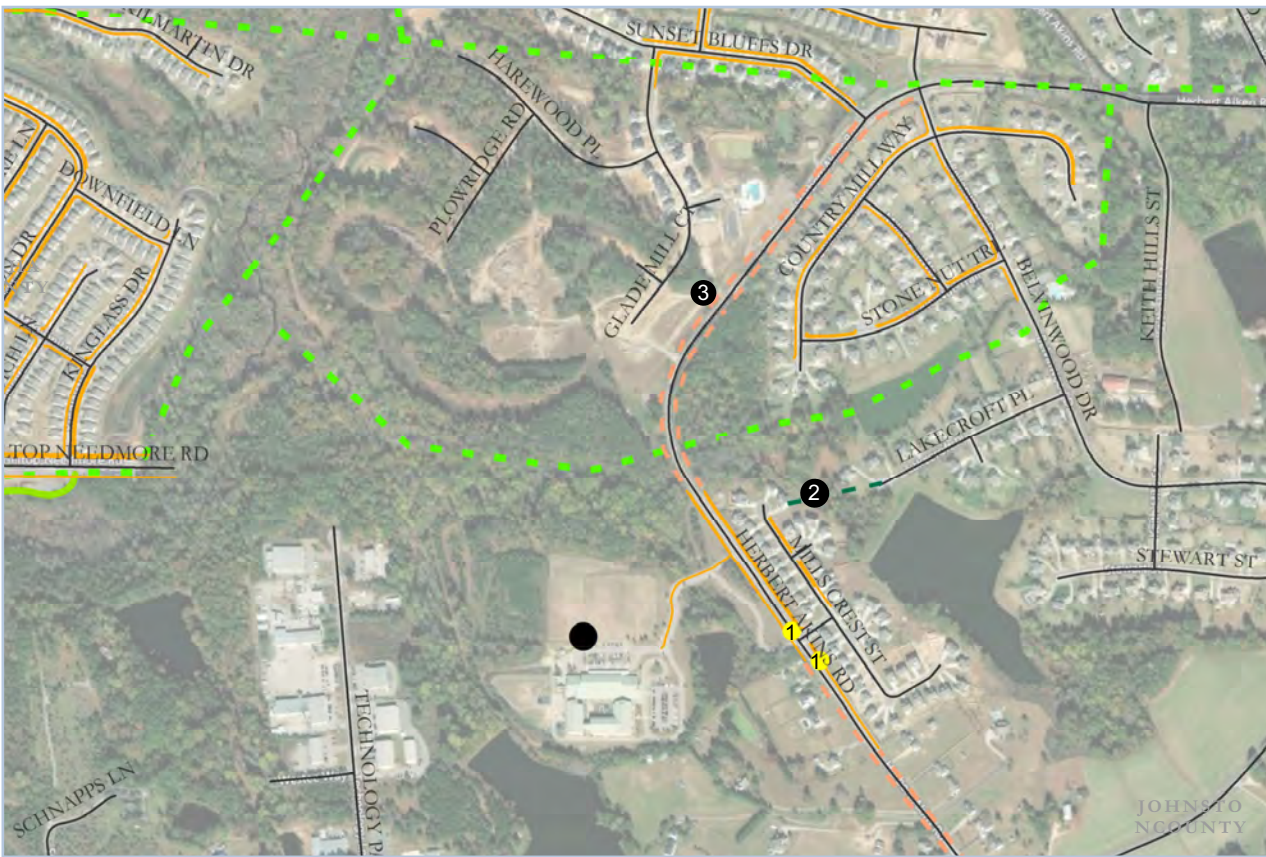
Work should continue along at intersections adding pedestrian signals where appropriate, crosswalks, and accessibility compliant ramps. Additional sidewalks are needed along Woodrow St, Raleigh St, Ennis St, Falcon Dr and Jones Street. Bicycle racks should be included on school property.

Map ID No.	Recommendation	Cost
1	Sidewalks along Falcon Dr	\$xxx
2	Sidewalks along Woodrow St	\$xxx
3	Sidewalks along Jones St	\$xxx
4	Sidewalks along Ennis St	\$xxx
5	Sidewalks along Raleigh St	\$xxx
6	Crosswalks	\$xxx



Safe Routes to School Studies





Address: 2255 Herbert Akins Road, Fuquay Varina

Grade Levels: K-5

Current Enrollment: 1,044

Capacity: 1,078

Population Within One Mile: 2,546

Arrival/Dismissal Times: 9:15am/3:45pm

Identified Concerns

Herbert Akins Road Elementary is located in a rural Fuquay-Varina. Residential development is occurring in the immediate area. In 2017, a residential development opened across the street recently from the school and for the first time, the school has student walkers for the 2018-2019 school year. Sidewalks are limited in the area and found mainly in new development and on school property. Vacant land is located within 1/2 mile of the property that is ripe for development. As the area grows, the amount of traffic in the area increases and walkers and cyclists are more prone to face dangerous situations.

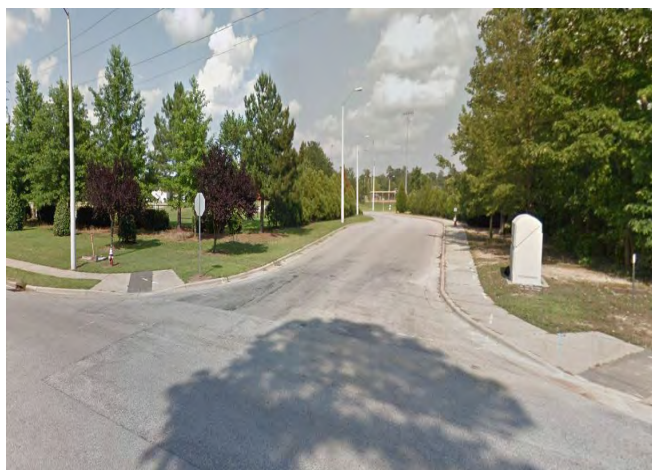
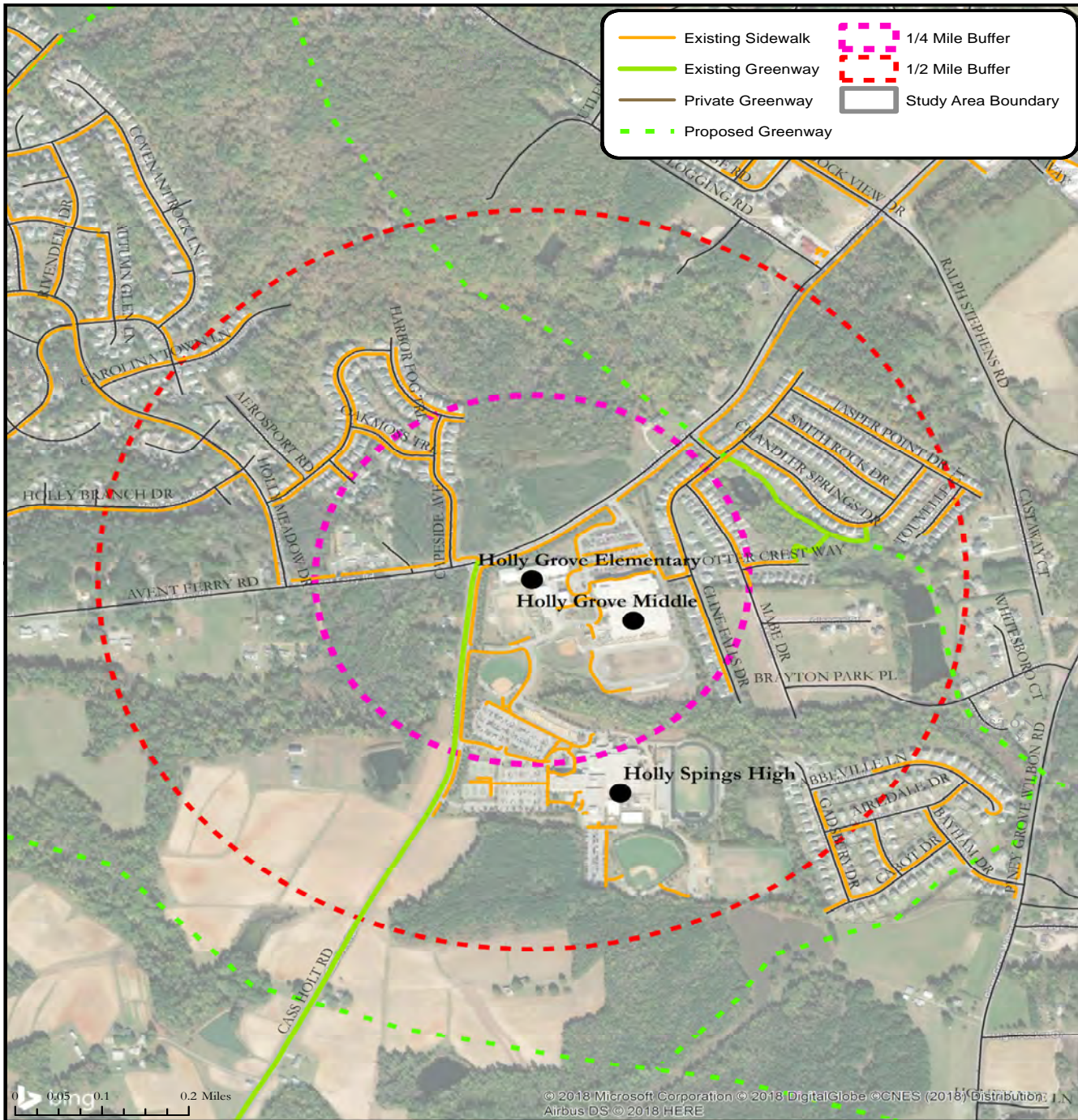
Summary of Recommendations

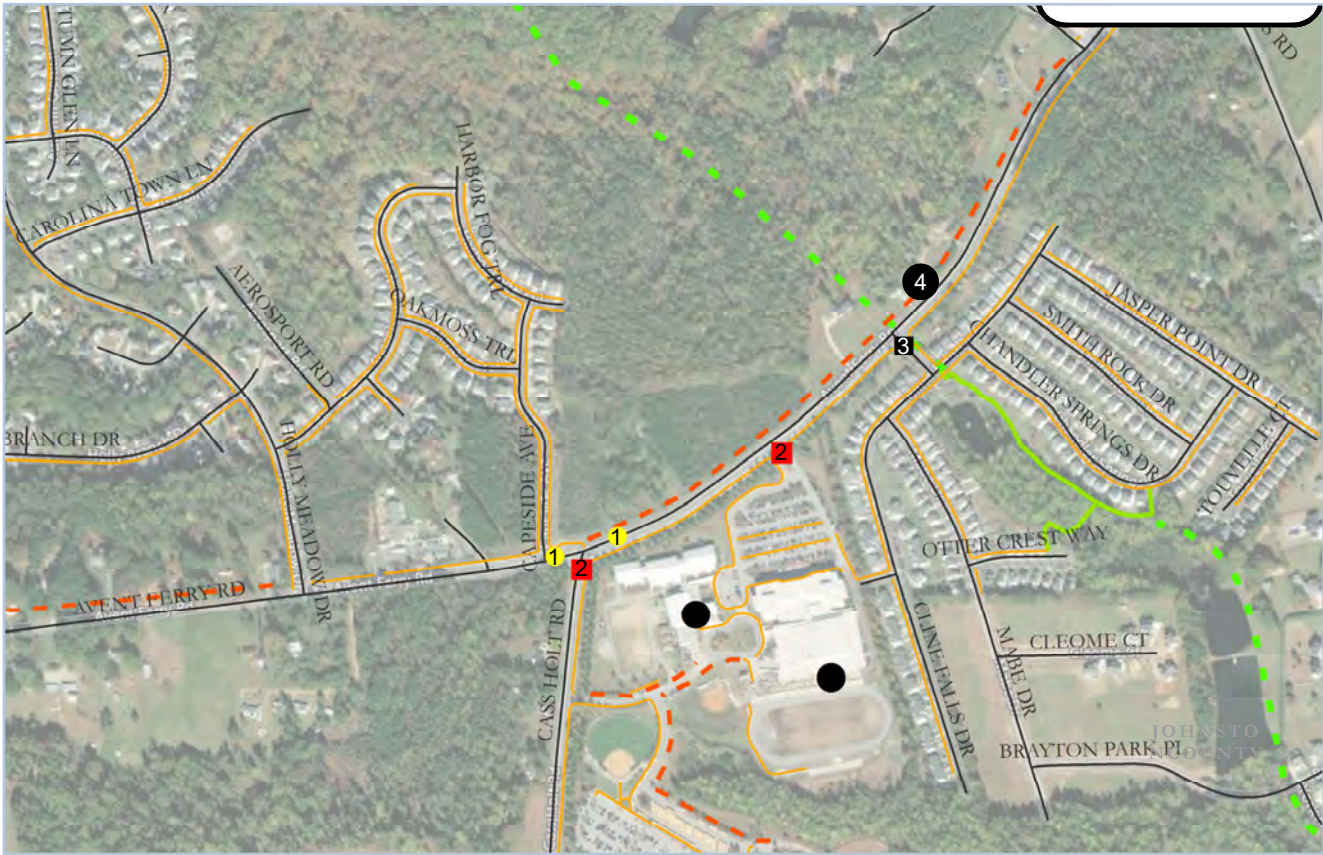
Additional sidewalk are needed along Herbert Akins Road. Future roadways and development in the area should be equipped with a complete sidewalk network. Pedestrian beacon motion signs are recommended at the crossing from Mill Ridge South subdivision to the school. Safety programs are strongly encouraged for Herbert Akins as it is new to having additional modes of travel to and from school.

Map ID No.	Recommendation	Cost
1	Flashing beacon motion signs	\$xxx
2	Off-road path connecting two neighborhoods	\$xxx
3	Sidewalks along Herbert Akins Rd	\$xxx



Safe Routes to School Studies





Address: 1451 Avent Ferry Rd, Holly Springs-Elementary / 5329 Cass Holt Rd, Holly Springs - High School

Grade Levels: K-5- Elementary / 6-8 - Middle / 9-12 - High

Current Enrollment: 1,143-Elementary/1,595-Middle/2,103-High

Capacity: 963 -Elementary/1,623-Middle/1,735-High

Population Within One Mile: 4,733

Arrival/Dismissal Times: 9:15am/3:45pm

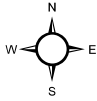
Identified Concerns

Holly Grove Elementary, Middle, and Holly Springs High School are located within the same parcel at the intersection of Cass Holt Rd and Avent Ferry Rd. Previous surveys completed by Wake County Active Routes to School identifies needs from parents and staff including more sidewalks, crossing guard needs and the amount of traffic on Avent Ferry Rd makes walking and biking unsafe. Officials from Holly Springs Planning Department noted a large amount of trips made daily to the school sites for carpool. Sidewalks are primarily located near the school site and only on one side of Avent Ferry Rd and Cass Holt Rd. Crosswalks are lacking at school driveways. Sidewalk paths on school property should provide full connectivity from all entrances to school doors.

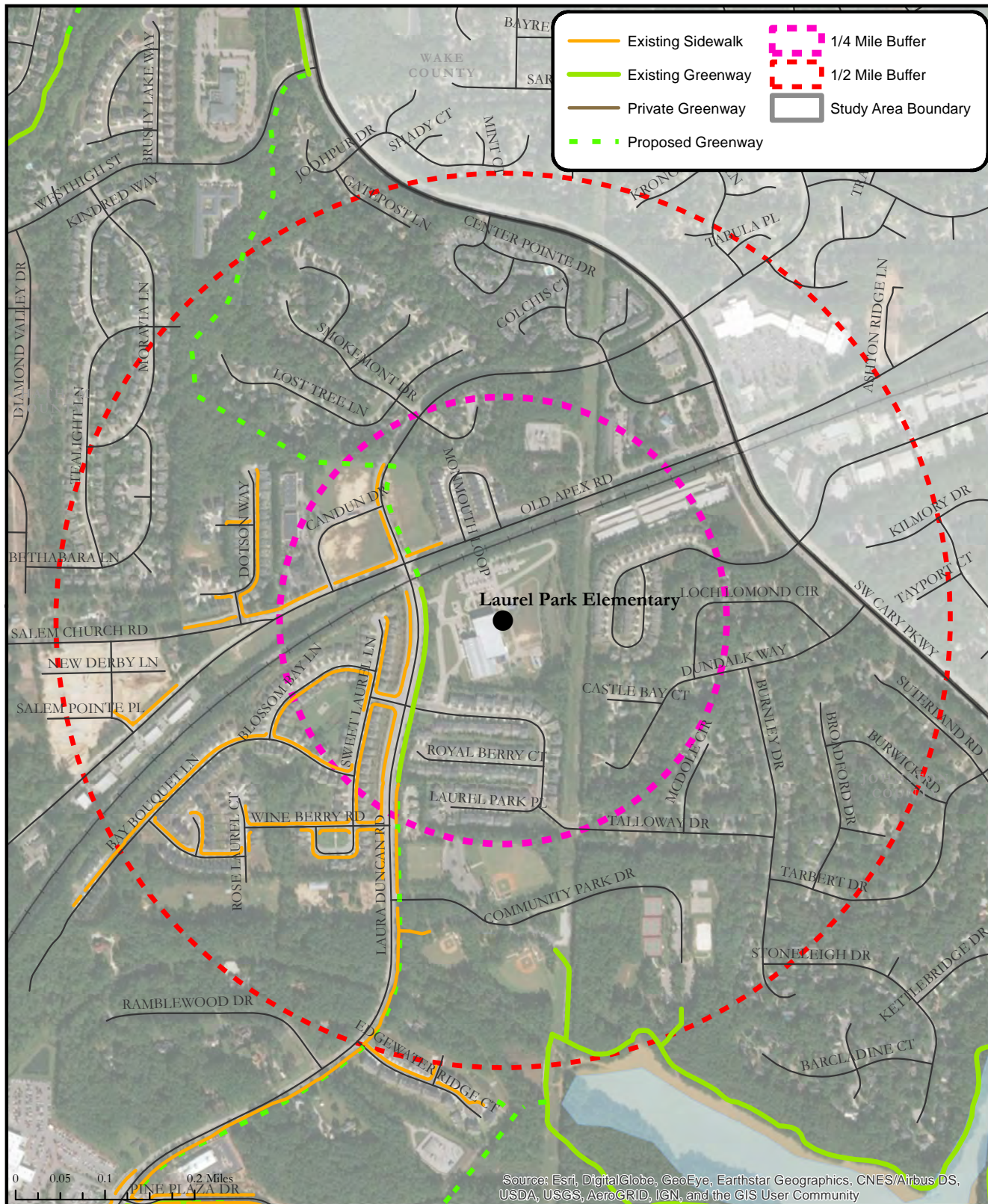
Summary of Recommendations

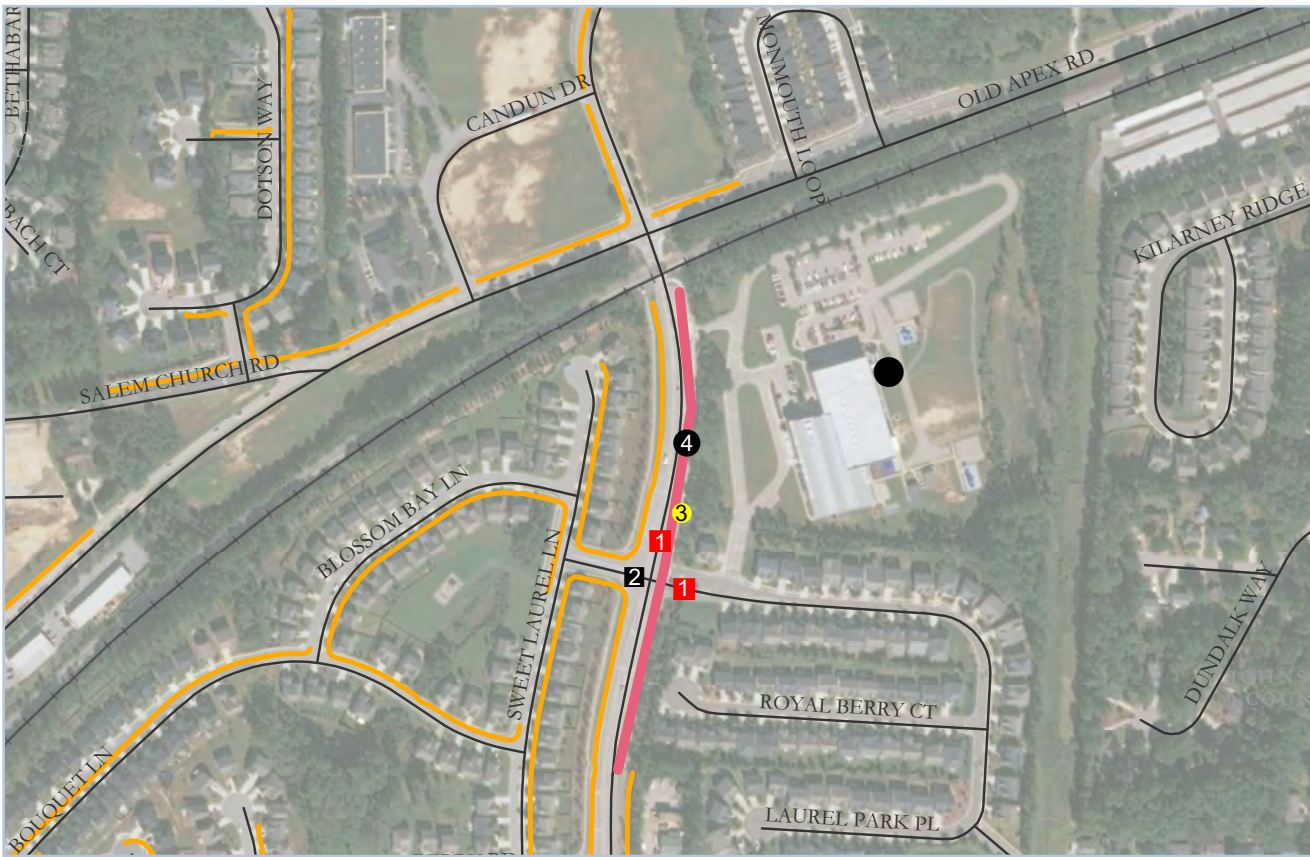
Additional sidewalks are needed along corridors as well as on school property. Driveways on school property should include high visibility sidewalks. Safety programs are encouraged with students and to encourage more walking and biking.

Map ID No.	Recommendation	Cost
1	Flashing beacon motion signs	\$xxx
2	High visibility crosswalks	\$xxx
3	Crosswalk at Autumn Park Ave	\$xxx
4	Sidewalk along Avent Ferry Rd	\$xxx



Safe Routes to School Studies





Address: 2450 Laura Duncan Rd, Apex

Grade Levels: K-5

Current Enrollment: 962

Capacity: 986

Population Within One Mile: 1,315

Arrival/Dismissal Times: 9:15am/3:45pm

Identified Concerns

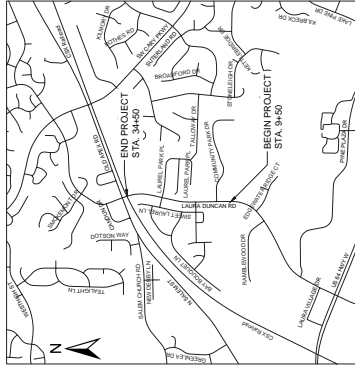
Laurel Park Elementary is located in a heavily developed residential area of Apex. Laura Duncan Rd is a busy collector connecting to Old Apex Rd. As vacant land continues to develop in the area, additional traffic in the area will impact continued problems for school traffic. A student was involved in a pedestrian crash 2017 leaving school walking home.

Summary of Recommendations

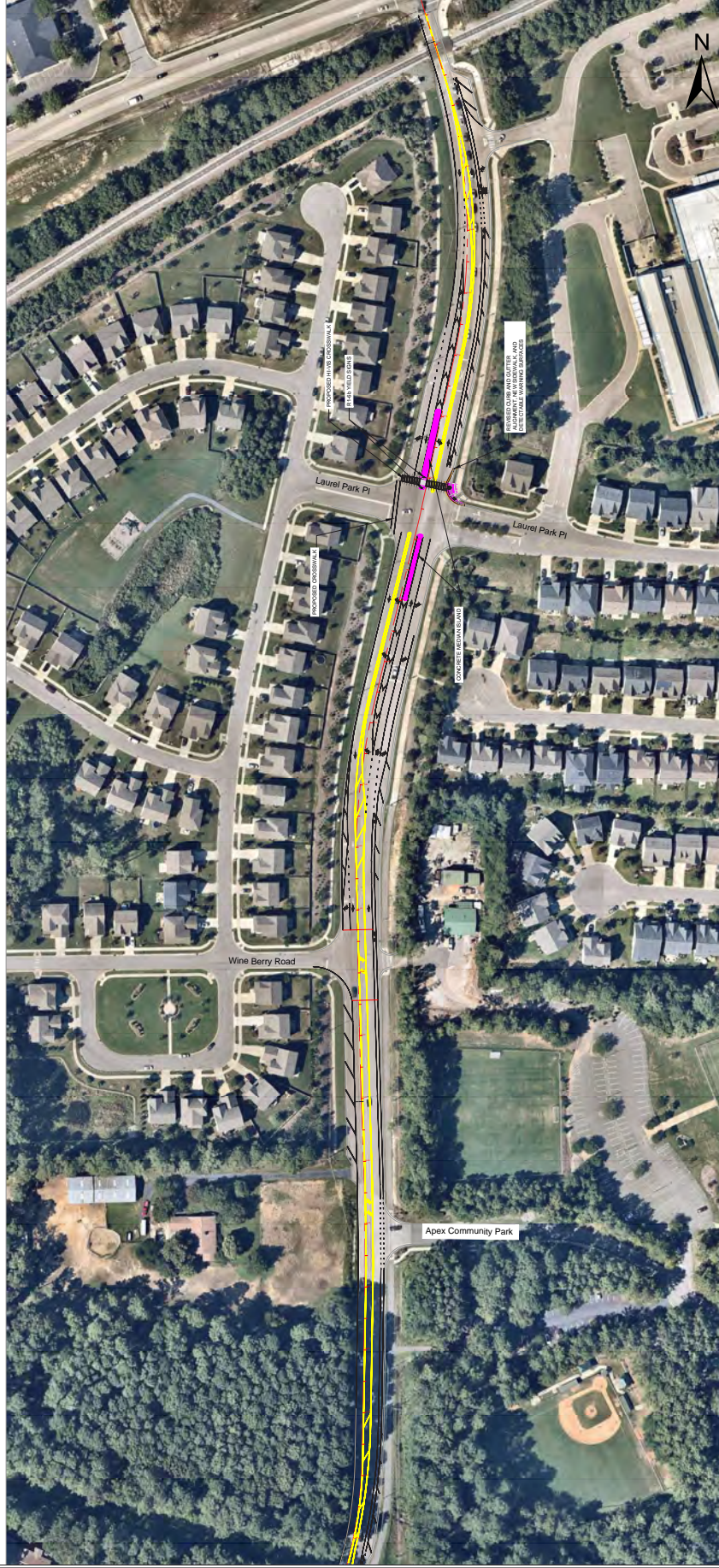
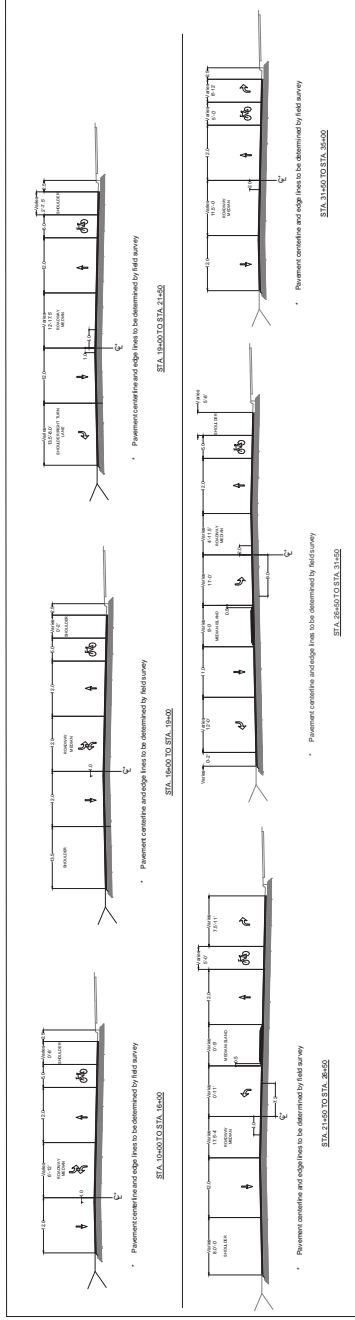
A concrete median is recommended along Laura Duncan Rd to provide refuge for pedestrians crossing the roadway. An increase in curb-radi at the intersection of Laura Duncan Rd and Laurel Park Pl by the school entrance will provide a safer place for pedestrians to cross. High visibility crosswalks should be included at all intersections adjacent to the school as well as flashing beacon motion pedestrian crossing signs on Laura Duncan Rd. Bicycle lanes are also recommend to provide a safe, separate area for cyclists to travel.

Map ID No.	Recommendation	Cost
1	High visibility crosswalks	\$xxx
2	Crosswalk	\$xxx
3	Flashing beacon motion sign	\$xxx
4	Re-design including bike lanes, medians, restriping (see following page)	\$xxx

PROJECT LOCATION MAP



TYPICAL SECTIONS



LAURA DUNCAN ROAD

PEDESTRIAN CROSSWALK AND PAVEMENT RESTRIPIING PLAN

TOWN OF APEX
PUBLIC WORKS & TRANSPORTATION
73 HAZARD STREET
APEX, NC 27502
919-469-3417

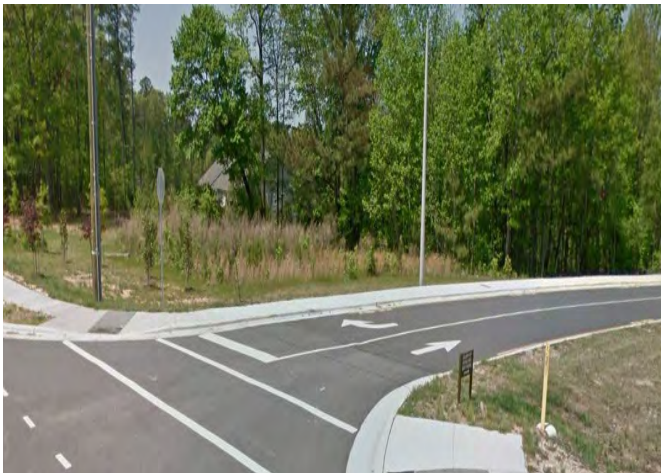
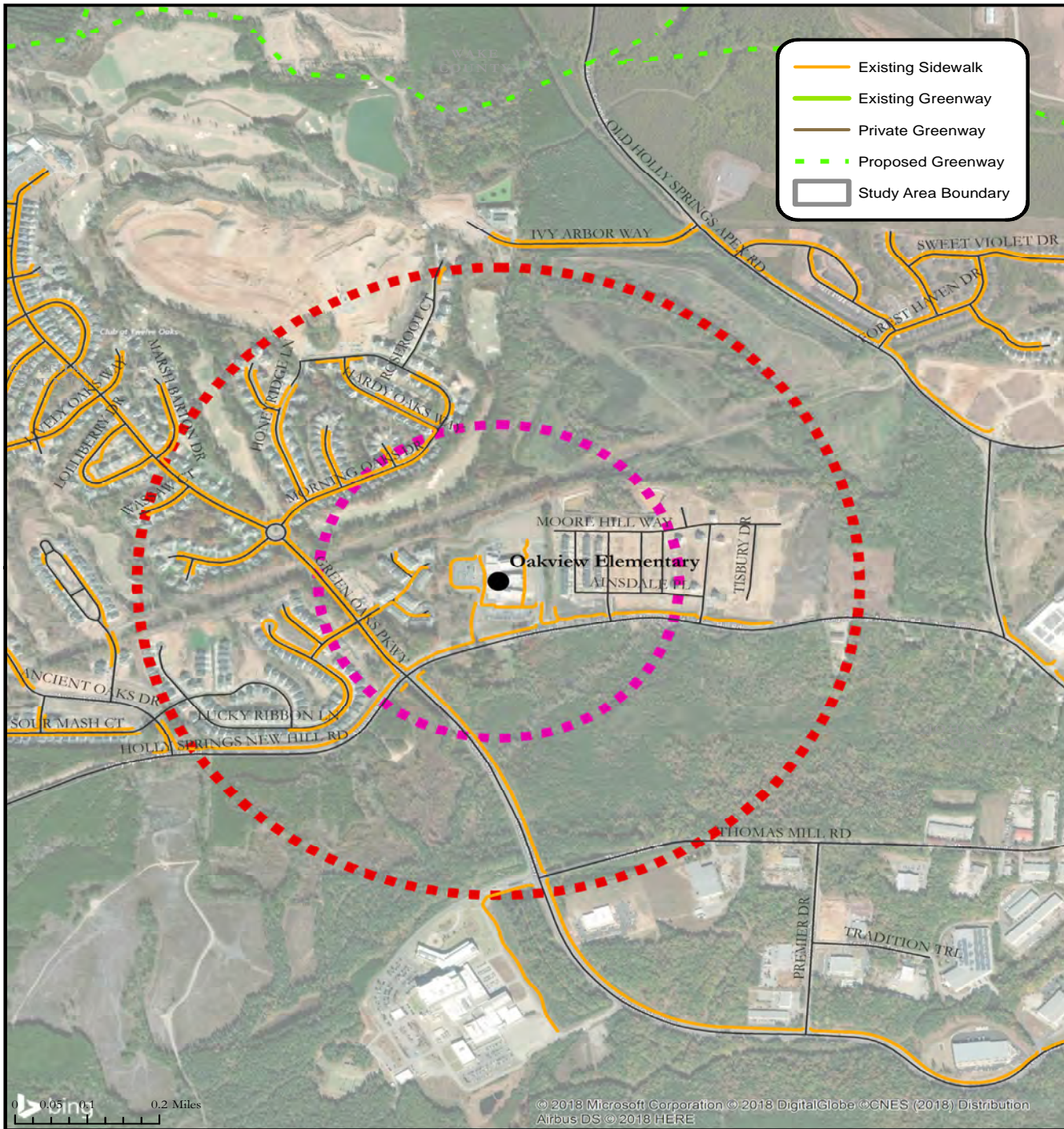
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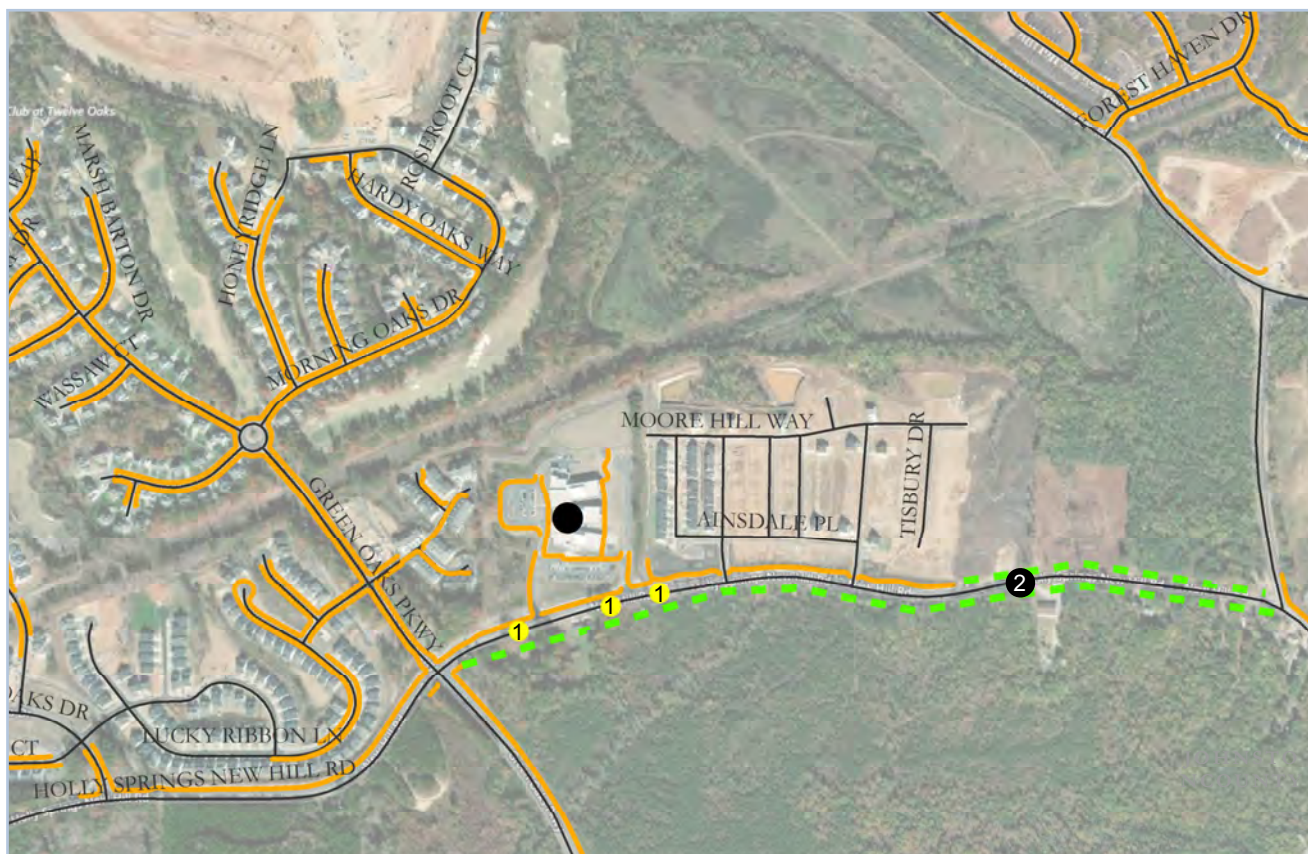


roadway design provided by Town of Apex



Safe Routes to School Studies





Address: 11500 Holly Springs New Hill Rd, Apex

Grade Levels: K-5

Current Enrollment: 698

Capacity: 872

Population Within One Mile: 6,358

Arrival/Dismissal Times: 9:15am/3:45pm

Identified Concerns

Oakview Elementary opened in 2017. Around 9% of the school population walks to bikes to school currently and enter the school from two directions. School administration noted additional crosswalks are needed on both sides. Crosswalks are present at driveways of the school property but are not high visibility.

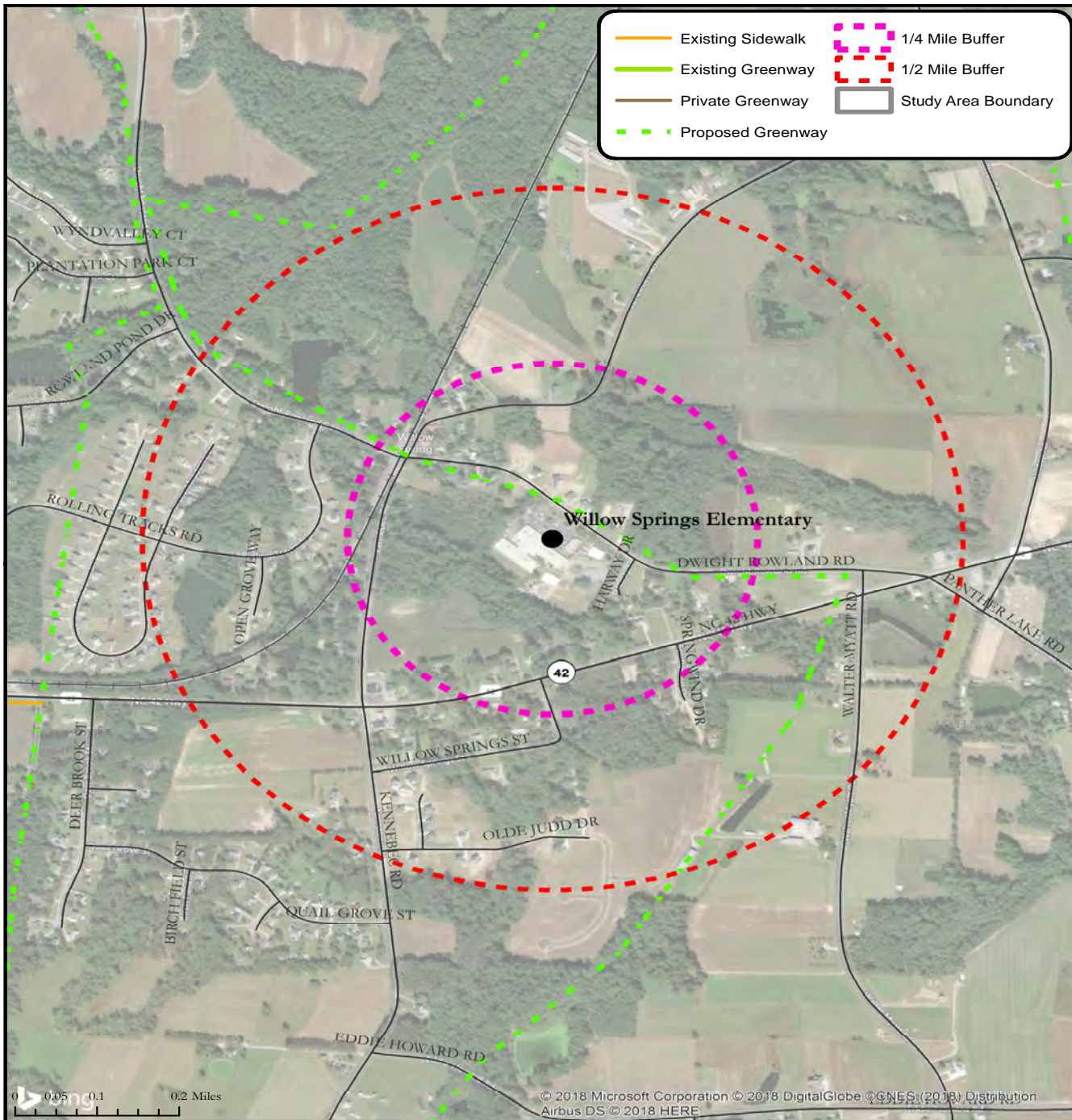
Summary of Recommendations

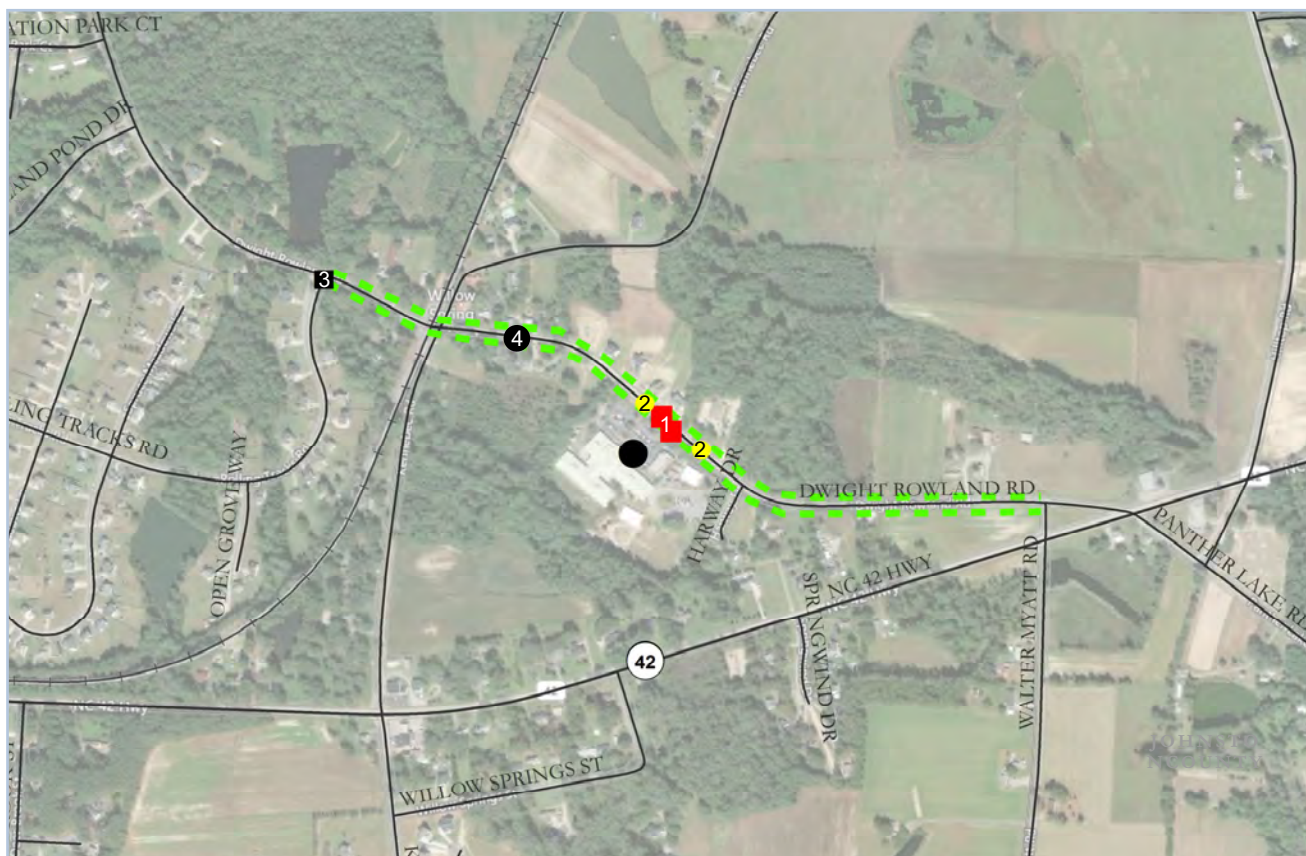
Crosswalk on school property should be converted to high visibility. Safety programs are strongly encouraged for Oakview as the potential of additional walkers and bikers can increase each school year. If future development occurs on New Hill Rd, high visibility crosswalks and flashing beacon motion signs are recommended.

Map ID No.	Recommendation	Cost
1	Flashing beacon motion signs	\$xxx
2	Sidewalks along New Hill Rd	\$xxx



Safe Routes to School Studies





Address: 6800 Dwight Rowland Rd, Willow Spring

Grade Levels: K-5

Current Enrollment: 1,070

Capacity: 744

Population Within One Mile: 2,341

Arrival/Dismissal Times: 9:15am/3:45pm

Identified Concerns

Willow Springs Elementary is located in rural southern Wake County. Development is occurring in the area at a high rate. The area lacks sidewalks. Sidewalks on school property are present but do not provide access to Dwight Rowland Rd. Crosswalks are missing from the driveways on school property as well as accessibility ramps. Tracts of undeveloped land within 1/4 mile are currently being developed or have the opportunity for development in the near future. A railroad crossing is located less than 1/4 mile from the school.

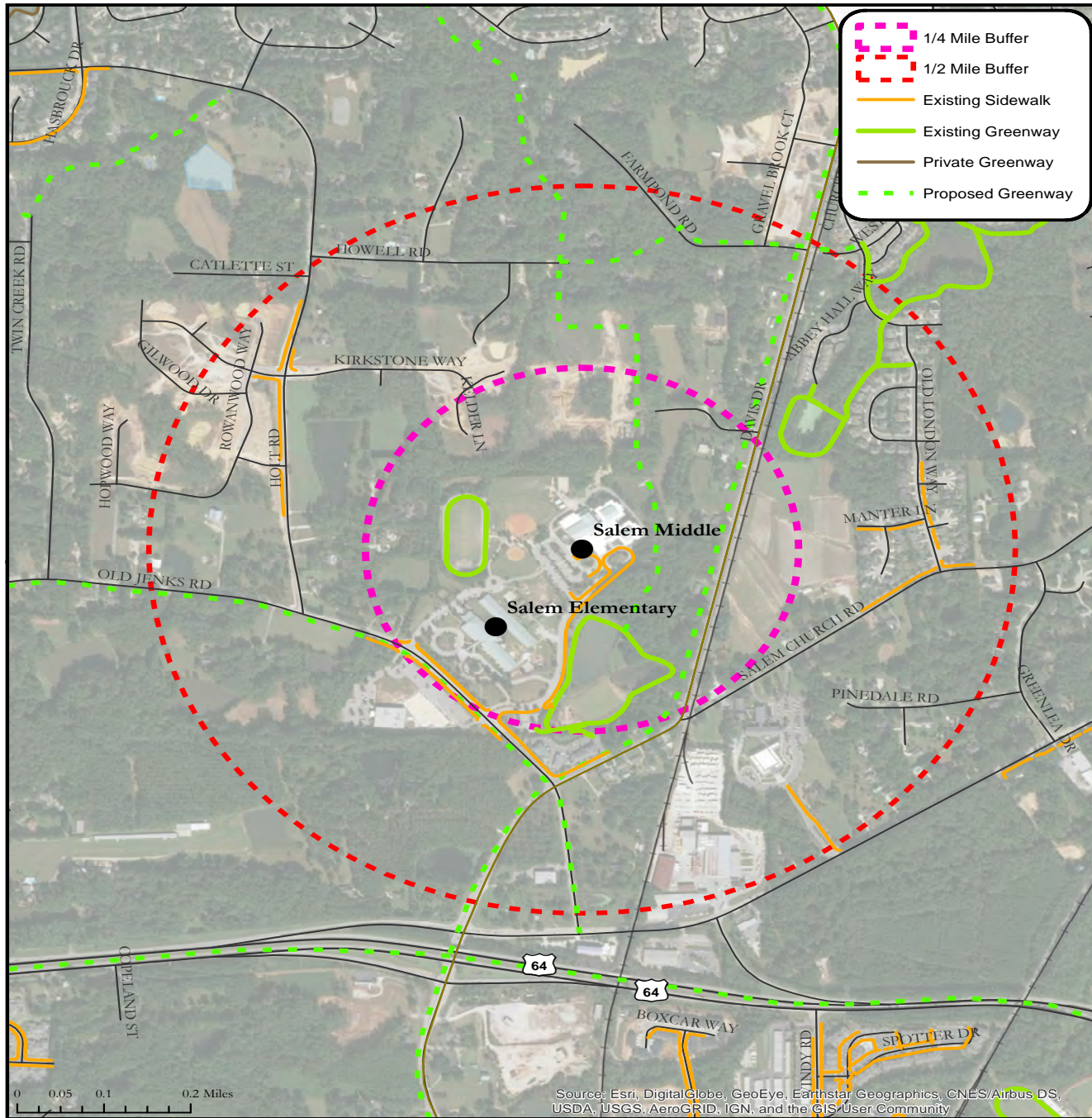
Summary of Recommendations

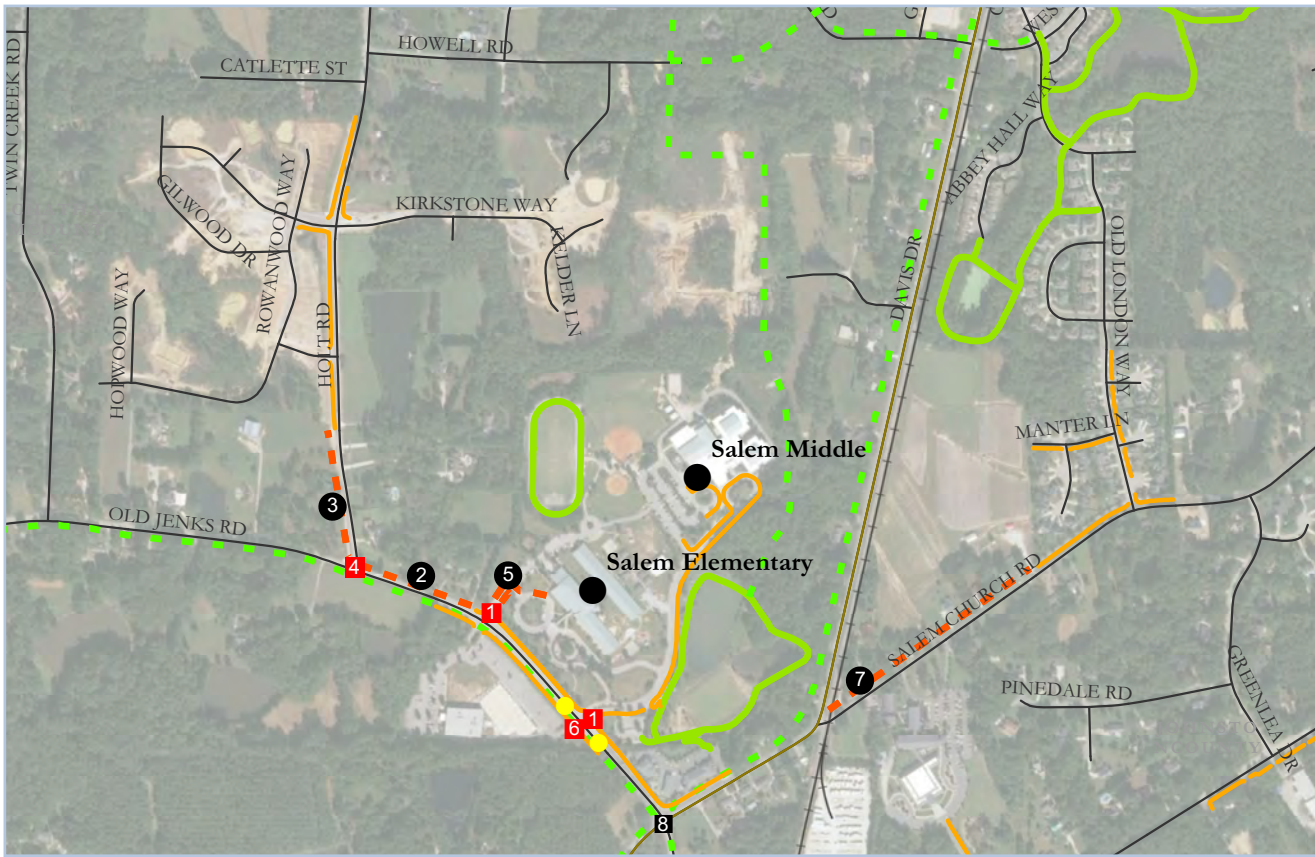
Sidewalks are needed along Dwight Rowland Rd on both side of the road and provide a connection to the sidewalks on school property. When development occurs on Dwight Rowland Rd, flashing beacon motion signs are recommended for safe crossing from the school property. Railroad track improvements are needed to improve pedestrian and cyclist crossing.

Map ID No.	Recommendation	Cost
1	High visibility crossings at school driveway and across the Dwight Rowland Rd	\$xxx
2	Flashing beacon motion signs	\$xxx
3	Crosswalks at Rolling Track Rd and Dwight Rowland Rd	\$xxx
4	Sidewalks along Dwight Rowland Rd (both sides)	\$xxx



Safe Routes to School Studies





Address: 6150 Old Jenks Road Apex 27523

Grade Levels: Elementary - K-5 Middle - 6-8

Current Enrollment: Elementary -588 Middle - 1,110

Capacity: Elementary - 843 Middle - 1,215

Population Within One Mile: 2,800

Arrival/Dismissal Times: Elementary - 915 am Middle - 815am

Identified Concerns

Salem Elementary and Middle School are located within the same parcel. Sidewalks are present in the area and are primarily found near the school grounds. The existing sidewalks do not provide a full connection to nearby residential areas. Both entrances to the school property lack crosswalks.

Summary of Recommendations

High visibility crosswalks should be added to both the entrances of school property. The proposed greenways and multi-use paths in the area will provide safe routes for walkers and bikers. Additional sidewalks and crosswalks along Holt Rd and Jenks Rd are recommended to provide a full connection along both sides of the roadway along the perimeter of the school.

Map ID No.	Recommendation	Cost
1	Crosswalk at both entrances of school property	\$xxx
2	Sidewalk along Jenks Rd between school and Holt Rd	\$xxx
3	Sidewalk along west side of Holt Rd	\$xxx
4	Crosswalk at Jenks Rd and Holt Rd	\$xxx
5	Sidewalk from Jenks Rd on school property to front door	\$xxx
6	High Visibility Crosswalk crossing Old Jenks Rd	\$xxx
7	Sidewalk along Salem Church Rd	\$xxx
8	Crosswalk at Salem Church Rd and Old Jenks Rd	\$xxx

