



MEMORANDUM

December 14, 2015

To: Mr. Scott Hammerbacher, Franklin County Planning Director

**From: Kevin Yates, McAdams Company
Rachel Cotter, McAdams Company**

**Re: Owens Park at Bull Creek
Natural Resource Summary of Findings
Franklin County, NC
SPEC-15470**

The John R. McAdams Company conducted natural resource investigations for the proposed project, known as Owens Park at Bull Creek, which is located on a 167.44-acre parcel of land (PIN 014565) 1.4 miles north of Hwy NC 56 on Wheless Road, at the intersection of Wheless Road and Massenberg-Baker Road, approximately 5 miles east of Louisburg, in Franklin County, North Carolina. The property is bisected by Massenberg-Baker Road, and bounded to the east by Cypress Creek, which is locally referred to as Bull Creek. An overhead utility easement runs on and adjacent to the northern property boundary.

The natural resource investigations included a review of natural resource data, a stream, stream buffer, and wetland assessment, Tar-Pamlico Riparian Buffer Rules concurrence, US Army Corps of Engineers stream and wetland concurrence, a threatened and endangered species assessment, and a cultural resources review. For the purposes of this summary, the Owens Park project is referred to as the "subject property". We are pleased to forward a summary and exhibits detailing our natural resource investigations.

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NATURAL RESOURCE DATA REVIEW:

The subject property, once an 18-hole golf course, consists now of maintained pasture lands of successional shrubs and grasses where the fairways and green once were, five ponds, approximately 5,900 linear feet of stream channel, approximately 9 acres of riparian wetlands, approximately 7 acres of mapped FEMA floodplain, with some mature forested areas along the riparian corridors and floodplain which lies along the eastern property boundary.

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Review of the United States Geological Survey (USGS) Justice, North Carolina Quadrangle revealed the project site contains gradual to moderate relief with elevations ranging from ± 340 feet to ± 250 feet. Topographic gradients and surface drainage is generally directed east toward Cypress Creek (Figure 1). Cypress Creek, or Bull Creek, as it is known locally, is located along the eastern property boundary and flows from north to south; and therefore, relief from the western side of the subject property is directed east. A review of the North Carolina Flood Insurance Rate Map 3720282400, effective 01/16/2004, revealed a FEMA flood hazard zone – 100-yr floodplain located on the eastern boundary of the subject property adjacent to Cypress Creek.

The subject property is located within the Northern Outer Piedmont ecoregion of North Carolina. A review of the Ecoregions of North Carolina and South Carolina (Griffith *et al.*, 2002) shows the geology in the area of the property is composed of mostly gneiss and schist rock intruded by granitic plutons, and veneered with saprolite. At the eastern boundary, the Fall Line is a broad transition zone where Piedmont rocks occur on the same landscape with Coastal Plain sediments, however the subject property is composed of traditional Piedmont rocks with some exposed outcropping due to its location west of the Fall Line.

Figure 2 depicts the Soil Survey of Franklin County, North Carolina (Soil Conservation Service, 1970) which lists the soils within the subject property area. Approximately 50% of the soils within the northern and western open pasture areas consists of Wedowee sandy loam, which is a well-drained soil type with moderate permeability. Other soil types in the southern and eastern portions of the subject property include Wake gravely loamy coarse sand, Wateree sandy loam, and Altavista sandy loam, which range from excessively drained soil types with rapid permeability to moderately well drained soil types with moderate permeability. The Chewacala soil series, which is considered a somewhat poorly drained soil, is prevalent within the floodplain and riparian areas along the eastern portion of the property.

The subject property is located within the Tar-Pamlico River Basin (8 digit USGS HUC 03020101), and drains to Cypress Creek. According to the DWQ Basinwide Information Management System (BIMS), Cypress Creek, in this location has a Stream Index # 28-31-(1) and classified as WS-IV (Water Supply IV), NSW (Nutrient Sensitive Waters), Class B (Primary Recreation – Freshwater).

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STREAM, STREAM BUFFER, AND WETLAND ASSESSMENT:

The wetland and stream assessment consisted of a review of natural resource information sources and an on-site inspection. The objective was to identify jurisdictional waters of the U.S. as defined by the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual and identify waters subject to the *Tar-Pamlico River Basin Riparian Buffer Rules*. Section 404 of the Clean Water Act (CWA) requires regulation of discharges into “waters of the United States.” Although the principal administrative agency of the CWA is the Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers (USACE) has major responsibility for implementation, permitting, and enforcement of provisions of the Act. The USACE regulatory program is defined in 33 CFR 320-330”. Water bodies such as rivers, lakes and stream are subject to jurisdictional consideration under the Section 404 program. However, by regulation, wetlands are also considered “waters of the United States.” The USACE requires the presence of three parameters (hydrophytic vegetation, hydric soils, and evidence of jurisdictional hydrology) in support of a jurisdictional determination.

Field Methodology

On August 20, 2015, Kevin Yates and Kelly Roth of McAdams Company conducted field investigations within the project area to identify potential water resource features subject to the *Tar-Pamlico River Basin Riparian Buffer Rules* as defined in the NC Division of Water Resources “Methodology for Identification of Intermittent and Perennial Streams and Their Origins Manual” (DWR, September 1, 2010; Version 4.11). McAdams also identified stream and wetland features within the project site pursuant to current methodology outlined in the *1987 Army Corps of Engineers Wetland Delineation Manual* (DOA, 1987) and the appropriate Regional Supplements. Because this was an assessment, detailed flagging was not conducted of each feature identified, but can be conducted upon request.

In the field, McAdams Company went to the location of each water resource feature shown on the USGS and Soil Survey exhibits. A DWR Stream Identification Form Version 4.11 was completed for potential stream features in the field. Based on the data forms, a stream is at least intermittent if the score of the form is equal to or greater than 19. If the stream receives a score which is equal to or greater than 30, then it is considered to be perennial. McAdams identified four intermittent and three perennial stream features. In addition four jurisdictional ponds and eleven jurisdictional wetland areas, and one isolated

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pond was identified. The “Existing Conditions” exhibit (Figure 3) depicts the approximate location of the stream, wetland, and pond features identified.

TABLE 1: STREAM, WETLAND, AND POND FEATURES					
Jurisdictional Stream Features					
Stream Feature ID	Latitude	Longitude	Subject to Buffer Rules	Stream Classification	Estimated amount of aquatic resource in review area
Stream A	36.098065	-78.205712	No	Intermittent	276 LF
Stream B	36.098178	-78.203187	Yes	Intermittent/ Perennial	3,142 LF
Stream C	36.097032	-78.202329	Yes	Intermittent	701 LF
Stream D	36.097044	-78.196842	Yes	Intermittent/ Perennial	673 LF
Stream E	36.091779	-78.200193	No	Intermittent	267 LF
Stream F	36.092383	-78.199804	Yes	Perennial	78 LF
Stream G	36.089750	-78.197917	Yes	Intermittent/ Perennial	740 LF
Jurisdictional Wetland Features					
Stream Feature ID	Latitude	Longitude	NC WAM Classification		Estimated amount of aquatic resource in review area
Wetland A	36.097699	-78.205743	Bottomland Hardwood Forest		0.7872 acres
Wetland B	36.096175	-78.204293	Headwater Forest		0.3458 acres
Wetland C	36.096792	-78.202890	Headwater Forest		0.3431 acres
Wetland D	36.097662	-78.200443	Bottomland Hardwood Forest		0.4147 acres
Wetland E	36.097662	-78.196062	Bottomland Hardwood Forest		2.1221 acres
Wetland F	36.096956	-78.197793	Headwater Forest		0.3335 acres
Wetland G	36.092761	-78.200630	Headwater Forest		0.6923 acres
Wetland H	36.092157	-78.200926	Headwater Forest		0.1354 acres
Wetland I	36.091968	-78.199461	Headwater Forest		0.2741 acres
Wetland J	36.092471	-78.200006	Headwater Forest		0.0866 acres
Wetland K	36.088629	-78.196015	Bottomland Hardwood Forest		3.8612 acres

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Table 1. (cont.) Jurisdictional Open Water Ponds				
Pond A	36.095911	-78.204870	Jurisdictional	0.2321 acres
Pond B	36.095696	-78.199071	Jurisdictional	0.5577 acres
Pond C	36.093076	-78.201191	Jurisdictional	2.1103 acres
Pond D	36.091098	-78.199164	Jurisdictional	2.7093 acres
Pond E	36.089977	-78.198931	Jurisdictional	0.3990 acres

Concurrence of our Field Investigations

Mr. James Lastinger, of the US Army Corps of Engineers (USACE) confirmed our field investigations with issuance of a preliminary jurisdictional determination on September 25, 2015 (SAW 2015-01910). A field concurrence meeting with Ms. Autumn Romanski of the NC Division of Water Resources (DWR) was conducted on October 12, 2015 to verify intermittent and perennial streams subject to the Tar-Pamlico Riparian Buffer Rules. Ms. Romanski concurred with our findings and determined Pond C, was not subject to the buffer rules. A DWR Surface Water Determination Letter was issued on November 16, 2015 (TPRRO# 15-376).

Tar-Pamlico Riparian Buffer Rules

The subject property is located within the Tar-Pamlico River Basin (Hydrologic Unit Code 03020101). The North Carolina Department of Environment and Natural Resources – Division of Water Resources (DWR) has adopted buffer rules for the Tar-Pamlico River Basin. This rule applies 50-foot wide riparian buffers in the Tar-Pamlico River Basin, directly adjacent to surface waters (intermittent and perennial streams, lakes, ponds, and estuaries) excluding wetlands. For the purpose of this rule, surface waters must be present in the field and be depicted on either the USDA County soil survey map or the most recent USGS topographic quadrangle map. The stream features noted in Table 1 as being subject to the buffer rules, are either depicted on the USGS quadrangle map and/or the Franklin County Soils Survey and therefore subject to the Tar-Pamlico River Buffer Rules.

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Within the protected 50-foot wide stream buffer, DWR's Tar-Pamlico River Basin Buffer Rules establish a restricted "Zone 1" buffer of 30-feet from edge of water, and a less restrictive "Zone 2" buffer being the outer 20-feet of the 50-foot wide stream buffer. Allowable development activities within either of the two zones of the 50-foot wide stream buffer is dependent upon the type of use (Table of Uses - DWR's Tar-Pamlico River Basin) within the zones and whether that activity is designated as exempt, allowable, allowable with mitigation, and/or prohibited. Perpendicular utility and roadway crossings are generally allowable uses, while new impervious and stormwater BMP's are considered prohibited uses within the stream buffer.

The following are examples of the limited uses allowed within Zone 1 (inner 30-foot):

- (1) Perpendicular crossings (between 75 degrees and 105 degrees, as measured from the stream centerline) for driveways, streets, roads, sidewalks, railroad crossings and associated bridge components;
- (2) Perpendicular overhead and underground utility crossings (between 75 degrees and 105 degrees, as measured from the stream centerline);
- (3) New parallel sanitary sewer lines as long as no "practicable alternative" exists and mitigation is performed for the riparian buffer impacts;
- (4) Perpendicular (between 75 degrees and 105 degrees, as measured from the stream centerline) greenways/hiking trails; that do not impact diffuse flow conditions;
- (5) Elevated greenways/hiking trails;
- (6) Fences that do not remove forested vegetation;
- (7) Vegetation management;
- (8) Dam maintenance;
- (9) Wetland/stream/buffer restoration; and
- (10) Mitigation approved by state or federal agencies pursuant to Section 401 or 404 of the Clean Water Act.

The following uses are allowed in the less restrictive Zone 2 (outer 20-foot):

- (1) All uses allowed in the stream side zone;
- (2) Overhead and underground utilities;
- (3) Greenways/hiking trails;
- (4) Playground equipment; and

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(5) Stormwater best management practices.

Existing Uses (Mowing) within the Buffer Zones

Per our conversations with County staff and on-site meetings, we have identified on-going (or grandfathered) existing uses (i.e. mowing, trails, pump-house) within the buffer zone in which the existing uses still need to be maintained to avoid restricting these uses in the future and potential permitting requirements.

Stream/Wetland/Buffer Impact Permitting for Future Park Amenities

USACE/DWR: A Nationwide Permit (NWP) can be utilized if the project is designed to impact less than 0.5 acres of jurisdictional wetlands/waters of the U.S. and/or a maximum of 300 linear feet of jurisdictional stream. Pre-construction notification and approval will be required for jurisdictional wetland, waters of the U.S., and stream impacts. The processing time for a NWP is 45 days with the USACE and 60 days for DWR, which issues the State Water Quality Certification that accompanies the USACE Nationwide Permit. Cumulative impacts for residential and commercial projects over the NWP thresholds will require an Individual Permit (IP). Individual Permits require an analysis to determine that the proposed impact to waters of the U.S. is the least environmentally damaging practical alternative, typically require compensatory mitigation, notification to adjacent property owners, a public notice, and may require a public hearing. Buffer impact authorizations can be applied for through the NC Division of Water Resources in conjunction with the USACE and DWR permitting processes.

Although a preliminary jurisdictional determination has been confirmed by the US Army Corps of Engineers, it is recommended that detailed flagging and survey be performed prior to detailed site planning within and/or adjacent to jurisdictional streams and wetlands.

Stream/Wetland/Buffer Mitigation

The USACE can require mitigation for any stream or wetland impacts. In most cases, stream mitigation is not triggered until stream impacts approach 150 linear feet; wetland mitigation is usually triggered when impacts exceed 0.1

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acre. The following is the current fee schedule, as of December 11, 2015, from the NC Division of Mitigation Services (DMS), allowing for payment to offset wetland and stream impacts.

Fee Category (Units)	Fee
Stream per linear foot	\$381
Riparian wetland per acre	\$69,736
Riparian Buffer per square foot	\$1.08

In addition to mitigation, demonstration of avoidance and minimization of impacts to waters of the U.S. will be required as justification for requested impacts. This will be required during the permitting process.

On-Site Buffer Restoration

McAdams staff have also identified potential buffer restoration areas that hold potential revenue generation if the County wishes to pursue this option with a mitigation banker. McAdams can provide more detailed cost and revenue potential upon request.

Stormwater Control Requirements

The DWR Stormwater Management Program protects waters by restricting impervious surface development, maintaining vegetative buffers, and prescribing vegetative conveyances to transport runoff. In general, management strategies are site-specific and require control of pollutants for water quality benefits.

In general, if new development adds impervious surface (e.g., roads, parking lots, buildings), then stormwater runoff must be controlled and treated with structural controls. Structural controls normally require engineering design and engineered construction. Examples include wet ponds, stormwater wetlands or permeable pavement.

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THREATENED AND ENDANGERED SPECIES ASSESSMENT

McAdams conducted a Threatened and Endangered Species Assessment for the subject property. The objective of the Threatened and Endangered Species Assessment was to determine the likelihood of Federally Listed Threatened and Endangered species, or their potential habitat, existing on the subject property.

Some populations of plants and animals are declining because of natural forces or their inability to coexist with human activity. Plants and animals with Endangered or Threatened status are protected under the Endangered Species Act (ESA) of 1973 (16 US 1531 et seq.). The USFWS web page (<http://www.fws.gov/endangered/>) and the Natural Heritage Data Explorer (<https://ncnhde.natureserve.org/content/map>) were accessed on November 10, 2015 to determine if the project would impact Endangered Species or Designated Critical Habitat. Based on this research, the Tar River spinymussel (*Elliptio steinstansana*), dwarf wedgemussel (*Alasmidonta heterodon*), and Michaux's sumac (*Rhus michauxii*) are federally listed species that occur in Franklin County.

Vegetative Communities and Wildlife

As part of conducting the Threatened and Endangered Species Assessment, McAdams evaluated the vegetative and wildlife community assemblages during field investigations. Distribution and composition of plant communities throughout the property reflect variations in topography, soils, hydrology, and past and present land use practices. Approximately 35 percent of the subject property is comprised of forested land with a mixture of oak, hickory, and pine species dominating the canopy layer. The remaining 65 percent of the subject property is comprised of fallow fields. The undeveloped forested land can be generally characterized as a Dry Mesic Oak-Hickory Forest according to the North Carolina Natural Heritage Program (NHP) classification system (Schafale and Weakley, 1990). Tree species on the property include various oak species (*Quercus* spp.), American beech (*Fagus grandifolia*), tulip poplar (*Liriodendron tulipifera*), various hickory species (*Carya* spp.), loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), and sweet gum (*Liquidambar styraciflua*). Groundcover and secondary canopy layer species consist of common greenbriar (*Smilax rotundifolia*), giant cane (*Arundinaria gigantea*), sweet pepperbush (*Clethra alnifolia*), Virginia creeper (*Parthenocissus quinquefolia*), American holly (*Ilex opaca*), red cedar (*Juniperus virginiana*),

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various viburnum species (*Viburnum* spp.), and Christmas fern (*Polystichium acrostichoides*).

Field Investigations and Coordination

McAdams conducted field surveys on August 20, 2015 by walking transects on the subject property. The objective of the field survey was to determine the presence of Federally Threatened or Endangered species and/or their habitat on the subject property. Based on the field investigations, there were no Federally Threatened or Endangered species observed during the field survey.

CULTURAL RESOURCES REVIEW

A review of the North Carolina State Historic Preservation Office interactive map, which shows the locations of properties and districts in Franklin County, North Carolina entered in the National Register of Historic Places (<http://gis.ncdcr.gov/hpoweb/>) was conducted on December 10, 2015. It did not reveal any listings within the project area. One structure approximately 0.6 miles southwest of the subject property (FK0005 Dean Farm 1975) is listed as a historic property on the National Register. Additionally, there are two other structures within 1.0 mile of the subject property that have been surveyed, but are not listed as historic sites. It is believed that the proposed project will not occur in or near an area that has been designated as having historic or cultural preservation status by the state, federal, or tribal governments.

There do not appear to be any elements of archaeological or historical significance and there are no structures on site or adjacent to the property that are 50 years old or older. A formal request to confirm these findings can be made to the North Carolina Department of Cultural Resources upon request.

CONCLUSIONS

McAdams staff have conducted a preliminary stream, stream buffer, and wetland assessment of the subject property on August 20, 2015, which are depicted on Figure 3. McAdams identified four intermittent and three perennial stream features. In addition, four jurisdictional ponds, eleven jurisdictional wetland areas, and one isolated pond were identified. The "Existing Conditions" exhibit (Figure 3) depicts the approximate location of the stream, wetland, and pond features identified. Mr. James Lastinger, of the US Army

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Corps of Engineers (USACE) confirmed our field investigations with issuance of a preliminary jurisdictional determination on September 25, 2015 (SAW 2015-01910). The subject property is located within the Tar-Pamlico River basin, and 50-ft riparian buffers apply in some areas depicted on Figure 3. A field concurrence meeting with the Ms. Autumn Romanski of the NC Division of Water Resources (DWR) was conducted on October 12, 2015 to verify intermittent and perennial streams subject to the Tar-Pamlico Riparian Buffer Rules (TPRRO# 15-376). Per our conversations with County staff and on-site meetings we have identified on-going (or grandfathered) existing uses (i.e. mowing, trails, pump-house) within the buffer zone in which the existing uses still need to be maintained to avoid restricting these uses in the future and potential permitting requirements. McAdams staff have also identified potential buffer restoration areas that hold potential revenue generation if the County wishes to pursue this option with a mitigation banker. McAdams can provide more detailed cost and revenue potential upon request.

Based on the Threatened and Endangered species assessment conducted by McAdams, there were no Federally Threatened or Endangered species observed during the field survey. It is believed that the proposed project will not occur in or near an area that has been designated as having historic or cultural preservation status by the state, federal, or tribal governments. There do not appear to be any elements of archaeological or historical significance and there are no structures on site or adjacent to the property that are 50 years old or older. Please do not hesitate to contact us at (919) 361-5000 with any questions or concerns you may have.