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www.ogeecheeriverkeeper.org
Working Together to Protect the Ogeechee, Canoochee and Coastal Rivers

July 16, 2024

Via E-Mail

Caity McKee, Senior Regional Planner
Coastal Regional Commission of Georgia
cmckee@crc.ga.gov

Re: Comments on DRI #4207 - Lucky Joe PUD - Pembroke

Dear Ms. McKee:

Ogeechee Riverkeeper 501(c)(3) (ORK) works to protect, preserve, and improve the water quality of the Ogeechee River basin, which includes the Canoochee River, tributary streams, and all of the streams flowing out to Ossabaw Sound and St. Catherine's Sound. The Ogeechee River system drains more than 5,500 square miles across 21 counties in Georgia. ORK works with local communities to retain the ecological and cultural integrity of rivers, streams, wetlands, and related habitats throughout the Basin. One of ORK's primary roles is as watchdog on new land development projects throughout the watershed that could pose a significant threat to its water quality and aquatic environments.

ORK's comments on the Lucky Joe Planned Unit Development (PUD) fall into five overarching categories. First, Pembroke should complete its planned housing study before this or any other PUD, or other significant housing project, is approved. Second, all construction should be wholly avoided within floodplains and flood risk areas, and wetlands should be properly considered and preserved. Third, stormwater management should take a long-term view of projected demand over the whole life of the development. Fourth, water supply and wastewater treatment demand should be fully confirmed prior to any approval or construction. Fifth and finally, natural areas and green spaces should be protected in order to preserve Pembroke's rural character, ecosystem functions, and natural flood control. ORK urges careful consideration of these topics prior to any rezoning, permitting, or construction permission decisions from the City of Pembroke. Ultimately, ORK urges the City to pause or deny this rezoning and development request until the housing study is updated and unless all concerns are fully and sufficiently addressed.

1. Update Housing Study to Guide Growth

It is imperative that the City of Pembroke updates its housing study prior to approving this or any other large housing development. With the likely influx of new residents to Pembroke, the City must fully understand its existing housing stock, the types of housing that are anticipated to be needed, locations available and suitable for new housing

developments, infrastructure capacity and needed expansions, and how much will be needed. Without this information and thoughtful planning, the City of Pembroke risks making hasty site choice, potentially unnecessary construction, and rushed development decisions at this critical time in the City's development. ORK urges the City of Pembroke to pause any decisions on new housing developments until this housing study update is completed and is able to guide the City's planning efforts.

Logistically, all six of the proposed PUDs¹ in and around Pembroke cannot be built and served by current, or even near-term, infrastructure. All six of the proposed PUDs note that they will get their water supply and wastewater treatment capacity from Pembroke. However, their combined demand will outpace even Pembroke's expanded supply and capacity multiple times over - demanding a combined 1.727 MGD of water supply and 1.232 MGD of wastewater treatment. This sets up a race among developers to access this limited supply, rushing construction projects, incentivizing rushed constructions and cutting corners in order to speed up timelines to secure services. It also risks clearing lands and building structures that might never have water supply or wastewater services supplied to them. The City of Pembroke should seriously consider the ramifications of rezoning and permitting any or all of these developments in light of this limited infrastructure capacity.

Additionally, the glut of units that these six proposed developments would present questions as to demand, eventual occupancy, and community need. Combined, these developments estimate up to 4,715 units could be created, more than quadrupling Pembroke's current housing supply.² With the average household size in Bryan County being 2.94, this would mean more than 13,800 people would be needed to fill the units - more than 5.5 times Pembroke's most recent population count of 2,513 people. Even with rapid growth in the area, this rate of exponential expansion appears extreme and should be carefully considered, as once these properties are rezoned, the incentive will be to clear the land, destroying natural spaces and diminishing the rural character of Pembroke. Further, many of these developments, including the Lucky Joe PUD, are proposing exclusively single-family units. Pembroke should ensure that a variety of housing types are developed, to ensure the needs of the citizens of Pembroke. Housing is an essential component of healthy communities, ensuring that all citizens have affordable and attractive options. A recent study found that the U.S. does not have a housing shortage, but an affordable housing shortage.³ A diversity of housing types and options helps to meet the needs of more people. This also has the twin benefit of ensuring that as many of the housing units are actually occupied and do not sit vacant due to speculative or hopeful construction of larger, more profitable housing. ORK urges careful consideration of the kinds of housing being proposed and to prefer a variety of housing options available for all residents of Pembroke.

To answer these questions of long-term planning, infrastructure capacity, and housing demand, the City of Pembroke should update its housing study before any rezoning, annexation, or construction begins. Pembroke's 2023 Comprehensive Plan Update⁴ identified the need for a housing study update. The Comprehensive Plan's steering

¹ The six proposed PUDs include: [1] Highway 119 (DRI #4212), [2] Warnell-GSL Cattle (DRI #4204), [3] Warnell Farms (#4118), [4] Wyndham (#4099), [5] Lucky Joe (#4207), and [6] Garrison Tract (DRI #4206).

² Census data identified 1087 housing units in Pembroke. See: <https://data.census.gov/profile?g=16oXXooUS1360004>

³ University of Kansas. "Study finds US does not have housing shortage, but shortage of affordable housing." June 17, 2024. Available at: <https://news.ku.edu/news/article/study-finds-us-does-not-have-housing-shortage-but-shortage-of-affordable-housing>

⁴ City of Pembroke. "2023 Comprehensive Plan Final Draft." Available at: https://pembroke.sophicity.com/Assets/Files/Pembroke_ComprehensivePlan_FinalDraft_033023.pdf

committee noted that the last housing study was completed in 2013-14.⁵ Much has changed in the intervening decade, and even more change is anticipated in the next decade. It is crucial that the City of Pembroke methodically and carefully plans for the future growth noted above ahead of these momentous housing decisions in order to avoid easily preventable issues in the long-term. It will also give the city a better idea of the types of housing that will be in demand and should be built. ORK asks the City of Pembroke and its decision makers to complete an updated housing study and fully consider how it will grow its housing stock. Until that study is completed, ORK urges Pembroke to pause all new housing-related rezoning, annexation, and construction permitting decisions.

In summary, ORK asks that:

- The City of Pembroke complete an update to its housing study to better prepare for new housing projects,
- The implications of limited water supply and wastewater treatment capacity be central in deciding whether to rezone or annex properties,
- The exponential growth required to occupy all proposed units is carefully considered in determining the need of a project and the types of housing it is proposing, and
- Until a housing study is updated, no rezoning, annexing, or construction permitting be approved for any new housing projects.

2. Preserve Floodplains and Wetlands to Reduce Long-Term Flooding Risk

Whenever this tract is developed, the floodplains and wetlands present on the Lucky Joe site should be central in the proposed design and construction of this development. A significant portion of the proposed properties are located in the Federal Emergency Management Agency's (FEMA) designated 1% Annual Chance Flood Hazard area, also known as the 100-year floodplain or Zone A. Of particular concern are the northern and eastern portions of the property along Mill Creek, the proposed tan-colored lots in southern and western portions of the residential area, and most of the proposed commercial area, as noted in the Conceptual Land Use Master Plan. Portions of the tan- and dark blue-colored residential lots and the remaining portion of the commercial area are also located in the 0.2% Annual Chance Flood Zone areas, also known as the 500-year floodplain or Zone X. Finally, the large amount of wetlands located on the proposed site are not properly delineated, enumerated, otherwise represented, or considered in the available application materials. ORK asks that the floodplains and wetlands present on the property are properly considered, guide layout and siting decisions, and are preserved wherever possible.

Flooding will be a concern for structures built on this property's floodplains. While the "100-year" flood zone name implies that floods will only occur once every 100 years, this obscures the actual risk. Over 30 years, the actual flood risk is 26%⁶ - a more than 1 in 4 chance for properties in the 100-year floodplain. And while the 500-year floodplain, or 0.2% Annual Chance Flood Zones, sees a lower likelihood of flooding, the risk still exists. This creates risk and financial pressure for all future property owners who may face significant flood damage and subsequent increases

Georgia Department of Community Affairs notes a June 20, 2023 submittal date, *see* <https://www.dca.ga.gov/sites/default/files/pembrokeci.cmpplnupdt.adopted.pdf>

⁵ GA DCA-hosted Comprehensive Plan. At page 130/192. *See*:

<https://www.dca.ga.gov/sites/default/files/pembrokeci.cmpplnupdt.adopted.pdf>

⁶ *See* <https://savannahga.gov/FAQ.aspx?QID=332> and <https://www.floodsmart.gov/flood-zones-and-maps>

in insurance rates. It is also important to remember that the FEMA flood zones are based on historic rainfall and flooding data. As storm frequency and intensity is expected to increase in the coming decades, the actual risk of flooding will likewise increase, increasing the likelihood and damage from flooding events. As such, ORK urges the City of Pembroke's decision makers to keep these flooding concerns in mind when making these planning decisions and to avoid allowing new structures to be built within the floodplain whenever possible. Specifically, ORK asks that no structures are built in the 100-year floods, especially along Mill Creek and in the proposed commercial area in the southern-most portion of the property.

The developer's failure to show these floodplain locations on the Conceptual Land Use Master Plan obscures the potential impact of the proposed property layout. The commercial area, the northern-most tan-colored lots, the park/amenity, the elementary school pedestrian connection, and the presumed stormwater retention ponds all within the 100-year floodplain. More concerning, both of the ingress/egress access points on Camelia Drive appear to be located in the floodplain. During heavy storms, including hurricanes, these properties, features, and exit points are more likely to flood, leading to property damage and, potentially, blocking access for emergency responders or egress for evacuating residents.

Placing retention ponds within Mill Creek's floodplain also threatens to reduce the effectiveness and efficiency of these stormwater management features. Rising water levels in Mill Creek during intense storms could inundate these ponds, preventing them from processing onsite stormwater. Likewise, the retention pond would not be able to treat and process pollutants carried by stormwater if inundated by Mill Creek flooding. ORK asks the City of Pembroke to require the developers to update its Conceptual Land Use Master Plan to delineate, reconsider the impact of those floodplains, and adjust site layout accordingly. None of these lots, areas, and features should be built in the 100-year floodplain. Pembroke should give specific attention to the ingress/egress access points, the presumed stormwater retention ponds, and the commercial area.

For a clearer representation of the location of floodplains, please refer to **Attachment A** included below, which shows the "Bryan County Informational Map"⁷ and its floodplain locations.

The Conceptual Land Use Development Master Plan poorly represents and fails to sufficiently protect the wetlands present on the property. As shown by the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory⁸ In **Attachment B**, around half of the property contains wetlands, around 73 acres. While the dark green portions of the Master Plan appear to show some of the wetlands' locations, large portions of wetlands are missing. While the USFWS maps show the western-most portions of the property being entirely covered by wetlands, the developer's Master Plan only shows a few, sporadic locations. The multiple residential lots in this portion of the property are likely to require wetlands to be filled. Likewise, the presumed stormwater retention ponds in this western part of the property displace wetlands - replacing their natural pollution and flood control function with artificial features. Further, the eastern portion of the project also appears to require a 3.6 acre wetland to be filled.

⁷ The Bryan County Informational Map is available at:

<https://www.bryancountyga.gov/government/departments-a-g/gis-mapping/interactive-maps>.

⁸ The USFWS National Wetlands Inventory is available at: <https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>.

The City of Pembroke should seek clarification from the developers on the question of wetlands by requiring a separate wetlands plan to be developed. The differences between the Conceptual Land Use Master Plan and the USFWS' maps are concerning on their own. Failing to delineate and enumerate the wetlands present obscures the actual impact that this development will have on the property's existing aquatic features and appears to show the developers lack of sufficient consideration of these wetlands in their planning. To address this apparent oversight, ORK asks the City of Pembroke to require the developers to create a wetlands plan that, at minimum, (1) clearly delineates all of the wetlands present on the property and enumerates the acreage proposed to be filled and preserved, (2) prioritizes and details how the development preserves the wetlands present on the site, (3) adjusts the Master Plan and site layout to avoid wetland fill wherever possible, and (4) mitigates any lost wetlands with on-site mitigation or restoration efforts as close to the site as possible to reduce localized impacts.

For a clear representation of the location of wetlands, please refer to **Attachment B** included below. This USFWS map is corroborated by the "Bryan County Informational Map."

In summary, ORK asks that:

- The City of Pembroke does not allow construction within the 100-year floodplain,
- Specifically, the ingress and egress access points and the stormwater retention points not be built in the 100-year flood plain,
- Careful consideration goes into building within the 500-year floodplain, and
- The City of Pembroke requires the developers to create a wetlands plan that clearly delineates their location, prioritizes wetlands preservation, adjusts the site layout to avoid wetland fill, and mitigates wetland loss.

3. Require Forward-Looking Stormwater Management for Growing Management Demand

On-site stormwater management should be as resilient as possible. As noted above, storms are becoming stronger and more frequent. This, combined with increasing the impervious surface cover on the properties, will increase stormwater management demand in the area. To reduce negative flooding and inundation impacts, the applicants should work to reduce pressure where possible. Reducing impervious surface coverage, constructing retention features well above minimum requirements, and preserving wetlands wherever possible will help to reduce this pressure.

ORK urges the City of Pembroke to require the developers to go beyond the minimum required standards in constructing stormwater management facilities. In such a low-lying area, increased stormwater pressure can quickly lead to flooding issues on the proposed PUD property and onto neighboring properties. And with storms becoming more frequent, previous stormwater processing calculations are less intense than the retention ponds will likely be required to retain and process. To extend the functional lifetime of these retention ponds and to successfully prevent flooding, ORK urges developers and decision makers to go beyond minimum standards in constructing these stormwater features.

Further, The City of Pembroke should take into account historic and future storm frequency and intensity when calculating stormwater demand and retention pond construction. ORK suggests basing management and construction on the 100-year and/or 500-year storms. Like with floods, these estimates are based on the likelihood of these storms occurring. Currently, the Savannah area's 100-year storm would add 10 inches of rain in a 24-hour period, with the 500-year storm raining 20 inches in 24 hours.⁹ In Pembroke, those numbers are 9.6 in and 13.1 in over a 24-hour period for the 100 and 500 year storms.¹⁰ It is important to note that these storms are understood to be smaller than recent data show and future estimates predict, as the current NOAA calculations are based on 2016 data.¹¹ To extend the functional life of these features in protecting the area from flooding, ORK urges the City of Pembroke to require stormwater features to retain 125% of the 100-year storm¹² or 100% of the 500-year storm.

Additionally, impervious surface cover should be reduced as much as possible. These hard surfaces speed up stormwater runoff and prevent absorption into the ground, straining stormwater management facilities and increasing the risk of flooding. As such, Pembroke should require further reduction of impervious surface cover at the development.

In summary, ORK asks that:

- The City of Pembroke ensures resilient construction of stormwater management structures able to process increasing storm intensity and frequency,
- Existing wetlands be preserved to ensure their continued role in natural, cost-free stormwater management,
- Artificial stormwater management structure be built to process either 125% of the 100-year storm or 100% of the 500-year storm, and
- Impervious surface cover be reduced as much as possible to reduce increased stormwater pressure coming from the site.

4. Confirm and Secure Water Supply and Wastewater Treatment Capacity

Both the water supply and wastewater treatment needs of any development in coastal Georgia must carefully consider its long-term impacts, implications, and viability. With existing restrictions on new groundwater withdrawals and large amounts of new housing developments being proposed, the City of Pembroke should make a fully informed decision of the near- and long-term impacts and viability of this housing development in light of the additional strains it will place on groundwater resources. Likewise, wastewater treatment should take a long-term view and embrace a regional approach to respond to the areas anticipated and projected growth.

⁹ See Question 16 at <https://www.savannahga.gov/FAQ.aspx?QID=307>.

¹⁰ NOAA Atlas 14 Point Precipitation Frequency Estimates. Available at: https://hdsc.nws.noaa.gov/pfds/pfds_map_cont.html?bkmrk=ga.

¹¹ See UGA

(<https://site.extension.uga.edu/climate/2020/05/has-the-100-year-storm-changed-over-time-it-may-depend-on-where-you-are/>) and Dudek Consultants (<https://dudek.com/will-your-flood-control-system-work-in-a-100-year-event/>).

¹² 125% of a 9.6 in storm is 12 in.

Any new water withdrawal demand should be carefully considered. Under the Georgia Department of Natural Resources' Coastal Georgia Water & Wastewater Permitting Plan for Managing Salt Water Intrusion (2006 Plan), the City of Pembroke and Bryan County fall in the "Yellow Zone" management area.¹³ The 2006 Plan establishes withdrawal restrictions for this zone that include conservation and reuse considerations as well as a justification of need. Importantly, the 2006 Plan also limits all total permitted withdrawals in the Yellow Zone to approximately 20.3 million gallons per day (MGD). At a recent meeting, the Georgia Environmental Protection Division (GA EPD) noted that in 2022, the average annual permitted withdrawals for the Yellow Zone were 30.114 MGD, with a 2025 scheduled limit of 29.092 MGD. Continued overutilization of the Floridan Aquifer threatens to increase the rate of saltwater intrusion, endangering the region's main drinking water supply.

In light of the region's anticipated growth, demand and strain on the aquifer will only increase if piecemeal permitting is used rather than a methodically considered approach. The City's recent request¹⁴ to increase withdrawals from its Bulloch County-located well is a finite increase to available water supply. The 480,000 gallons per day (gpd) expansion will not be able to serve all of the six proposed PUDs' combined demand of 1,727,000 gpd. The Lucky Joe project alone will demand 135,000 gpd or 28% of the expanded supply. As such, prioritizing water supply to specific projects is an important consideration at this rezoning stage. Property should not be rezoned for PUD use if the specific water supply demand cannot be ensured for the site when accounting for other permitted/promised supply at other projects as well as ensuring the City's expected future needs are met.

ORK urges the City of Pembroke, as well as regional and state decision makers, to take a regional, long-term, and holistic view of the water supply demand issue and develop comprehensive and sustainable solutions that will allow future generations to thrive throughout Georgia's northern coastal region. This should include quickly pursuing alternative, non-groundwater sources of water to offset industrial water demands to preserve groundwater for drinking water and agricultural needs. Likewise, Pembroke must place this and all proposed housing development in context with each project to determine if and how all will be able to have its water supply demand met.

Wastewater treatment must also be considered in the context of the quickly growing area where the Lucky Joe development is proposed. Ultimately, the City of Pembroke should strongly consider and begin pursuing a regional solution to its growing wastewater treatment needs. In its application, the Lucky Joe PUD will require treatment capacity for 0.11 MGD of wastewater. The applicant plans to rely on the City of Pembroke to treat the 110,000 gallons per day (GPD). This single project will use 36% of the City's recent 300,000 GPD expansion. When placed in context with other proposed housing projects' combined wastewater treatment demand of 1,232,000 gpd, the City of Pembroke will not be able to meet all of this wastewater demand. As such, this and any other housing project should not be rezoned, annexed, or permitted until their specific treatment needs are specifically met by existing capacity.

As development continues and available land becomes more scarce, it will be more difficult to site and rely on a scattering of on-site treatment systems to address wastewater treatment capacity needs. The construction and operation of the nearby North Bryan Water Reclamation Facility presents an opportunity to address long-term

¹³ Georgia Department of Natural Resources. "Coastal Georgia Water & Wastewater Permitting Plan for Managing Salt Water Intrusion" (2006 Plan). June 2006. Available at:

https://www1.gadnr.org/cws/Documents/saltwater_management_plan_june2006.pdf

¹⁴ EPD issued a notice on June 27, 2024 for expansion of Permit No. 016-0009.

wastewater treatment capacity needs in Pembroke and North Bryan County as a whole. Further, on-site septic, land application systems, and “package” treatment plants¹⁵ all present expensive and long-term maintenance concerns for relatively small amounts of treatment capacity. Likewise, these options also create potential long-term water quality and pollution concerns. With such a high percentage of the land being within floodplains and so close in proximity to Mill Creek, septic systems are especially not a good option. ORK urges the City of Pembroke, along with other city, municipal, county, and state decision makers to take a regional view and approach to addressing growing treatment demands ahead of anticipated growth. Further, ORK urges the City of Pembroke to avoid any reliance on septic systems or package plants to meet treatment demand in order to avoid future remediation for failing or aged-out systems.

In summary, ORK asks that:

- The City of Pembroke confirms its ability to meet increased water demand for this project as well as future growth,
- The City of Pembroke confirms its ability to meet increased wastewater treatment demand, especially considering the limited capacity available after expansion,
- No project is rezoned, annexed, or permitted to begin construction until the project-specific water supply and wastewater demand are specifically allocated in the context of other projects, and
- Septic, land application systems, and “package” plants and other on-site wastewater treatment be avoided wherever possible and that regionalization of wastewater treatment be pursued to increase capacity.

5. Thoughtfully Preserve Wetlands, Natural Areas, and Green Space

In developing the Lucky Joe PUD, specific attention should be given to protecting and preserving the area's critical natural resources. The development should thoughtfully preserve the large amount of spaces designated as Areas of Significant Natural Resources in order to maximize these areas' positive benefits on the region and its residents through preserving its rural character, recreational activities, flood control, and ecological integrity. Likewise, Mill Creek's presence as the northern border of the property should receive special attention. ORK asks the developers to proactively plan its open space, green space, and recreational areas.

While thoughtful open space, green space, and recreational areas can take many forms, ORK offers these suggestions for planning purposes. First, the existing wetlands and floodplains should be maintained and preserved for the reasons mentioned above. Second, other existing natural features, such as Mill Creek, should be maintained, highlighted, and be the starting point for further development. Third, trees should be preserved and any cutting or clearing should be avoided. Finally, ORK suggests wherever possible that these open and green spaces are as contiguous as possible, avoiding a patchwork of smaller, less beneficial space.

Thank you in advance for your time and consideration; please let me know if you have any questions:

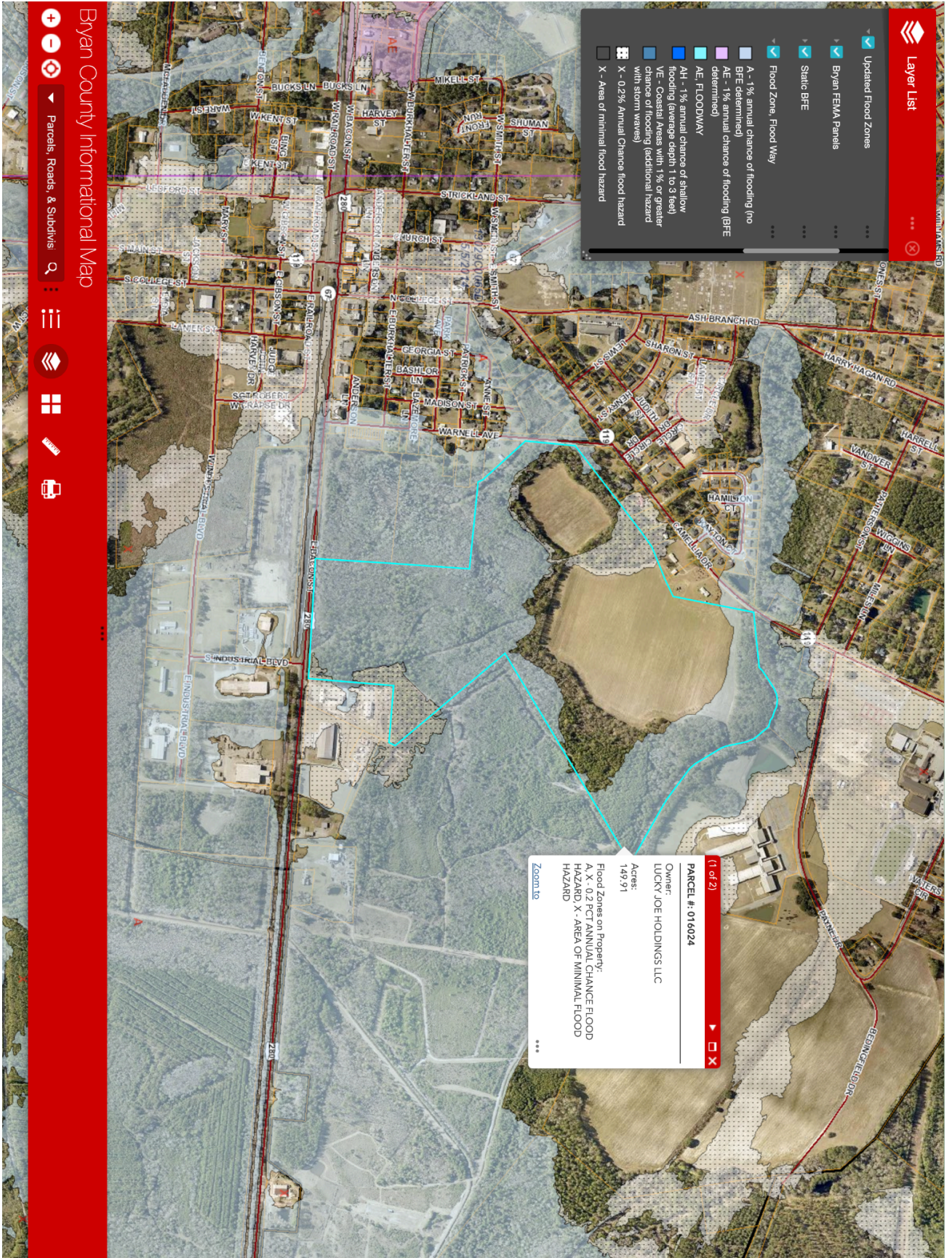
ben@ogeecheeriverkeeper.org.

¹⁵ EPA. “Wastewater Technology Fact Sheet - Package Plants.” Sept. 2000. Available at: https://www3.epa.gov/npdes/pubs/package_plant.pdf

Ben Kirsch, Legal Director
Ogeechee Riverkeeper

Attachment A

U.S. Fish and Wildlife Service's
National Wetlands Inventory
for the
Lucky Joe PUD Site



Attachment B

U.S. Fish and Wildlife Service's
National Wetlands Inventory
for the
Lucky Joe PUD Site

(Note: Highlighted site dimensions and delineation is a rough estimate)

