EXHIBIT 1

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MEMORANDUM

St. Tammany Parish Drainage District #2 Limits Study

To:
Desmond LeBlanc

Chairman

St. Tammany Parish Drainage District #2

From:
CSRS

Stokka Brown, MS, PE, CFM

Date:
11/27/2024

Introduction

The Chairman of St. Tammany Parish Drainage District #2 procured CSRS in April 2024 to perform a drainage area study for St. Tammany Parish Drainage District #2. The goal of this effort was to identify and confirm areas which flow to the Drainage District #2 Pump Station on East Howze Beach Road near Lake Pontchartrain.

Engineering Analysis

The engineering component of the study comprised three distinct actions:

1. Gather and review publicly available data to preliminarily determine the drainage shed of the Drainage District #2 Pump Station.
2. Conduct a visual inspection in the field to verify observations drawn from publicly available engineering data.
3. Perform conventional engineering survey data collection of stormwater infrastructure where steps 1 and 2 were not sufficient to determine flow directions.

The outcome of these actions was a mapped drainage area limit, a boundary which identifies all areas for which rainfall runoff drains to the Drainage District #2 Pump Station, under normal conditions. The drainage area limit, presented in the attached Figure 1, follows elevated topographic features and the extents of areas wherein subsurface stormwater pipes direct runoff toward the collector streams of the pump station.

Publicly Available Data

To understand the topography of the drainage district and surrounding area, a desktop survey was performed using the most recent topographic data from USGS shown in the attached Figure 2, source noted in Table 1. CSRS identified overland flow paths based on the topographic data and determined locations where further investigation was required. To aid in understanding the subsurface drainage, the St. Tammany Parish Engineering Department provided CSRS with access to grading and drainage plans for developments within and near the current drainage district boundary.

Table 1: Publicly Available Data Sources

Item	Source
Topographic Data	2017 USGS LiDAR DEM: Upper Delta Plain, LA
Drainage/Grading Plans	St Tammany Parish Government - Engineering

Topographic data from the USGS LiDAR Digital Elevation Model (DEM) is high-quality. The “bare earth” processed DEM provides an elevation value for every 1 square meter of land surface. This allowed CSRS to determine the overland flow direction of runoff with confidence for areas with little or no subsurface drainage infrastructure. Google Maps Satellite Imagery and Google Streetview was checked to preliminarily determine the presence of

subsurface drainage systems, indicated by inlets and drainage manholes, later to be confirmed in the field.
The St. Tammany Parish Engineering Department provided CSRS with construction plans for several developments in and near the drainage district. Construction plans, however, did not cover all developed properties in the area. As a result, they were limited in their usefulness for determining flow directions.

Visual Inspection

A site visit was conducted on May 13, 2024, to confirm flow paths and investigate locations that could not be assessed by review of topographic data or construction plans. It was a rainy day, and CSRS was able to verify hydraulic connectivity in areas where pipes or culverts were not locatable in the desktop survey.

Conventional Engineering Survey

After desktop survey and visual inspection in the field, the ultimate drainage outfalls of three locations remained ambiguous due to the presence of subsurface stormwater pipes. These locations could not, therefore, be confidently included nor excluded from the drainage area based on desktop survey and visual inspection. The Chairman, with approval from the Drainage District #2 Board, requested that CSRS perform engineering survey of the stormwater infrastructure in these areas to conclusively determine the outfalls. Survey findings are summarized in Figures 4-6.

Synthesis

From the knowledge gained in review of topographic data, visual inspection, and review of survey data, CSRS drafted the drainage area limit shown in the attached Figure 1 and Figure 2.

Proposed Update to the District Limits

The regulatory limits of St. Tammany Parish Drainage District #2 determine which land parcels are officially within the district. Owners of such parcels are therefore required to pay a tax which contributes to the operation and maintenance of the Drainage District #2 Pump Station and related drainage infrastructure. The Chairman required that the Drainage District #2 limits agree with the drainage area limits as they are today. In other words, the regulatory limits shall only include parcels for which a majority of rainfall runoff drains to the pump station. The Chairman further clarified that if more than 50% of the area of a parcel drains to the pump station, it shall be included in the updated drainage district limits.

To generate linework for the proposed Drainage District #2 limits, CSRS overlayed the completed drainage area limit with tax parcel limits obtained from the St. Tammany Parish GIS Department. The overlapping area of each parcel and the drainage area limits, in other words the area of each parcel which lies within the drainage area limits, was determined. The ratio of the area within to the total area was calculated for each parcel. Parcels with greater than 50% of their area within the drainage area limits were then included in the proposed Drainage District #2 limits, their boundaries colinear. In general, where the drainage area limit passed through public property (along Interstate 10, other parish roadways, etc.), the drainage area boundary was used to draw district limits in the absence of parcel limits. The proposed Drainage District #2 limits are shown in the attached Figure 3.

Conclusion & Recommendations

The drainage area limit reflects current conditions according to the data available for this study. The proposed Drainage District #2 limits incorporate parcels for which at least 50% of parcel area drains to the Drainage District #2 Pump Station. As reliable new information becomes available or as development takes place and infrastructure is built or modified, the drainage area limits of the Drainage District #2 Pump Station should be updated to maintain accuracy.

Attachment A: Supporting Information

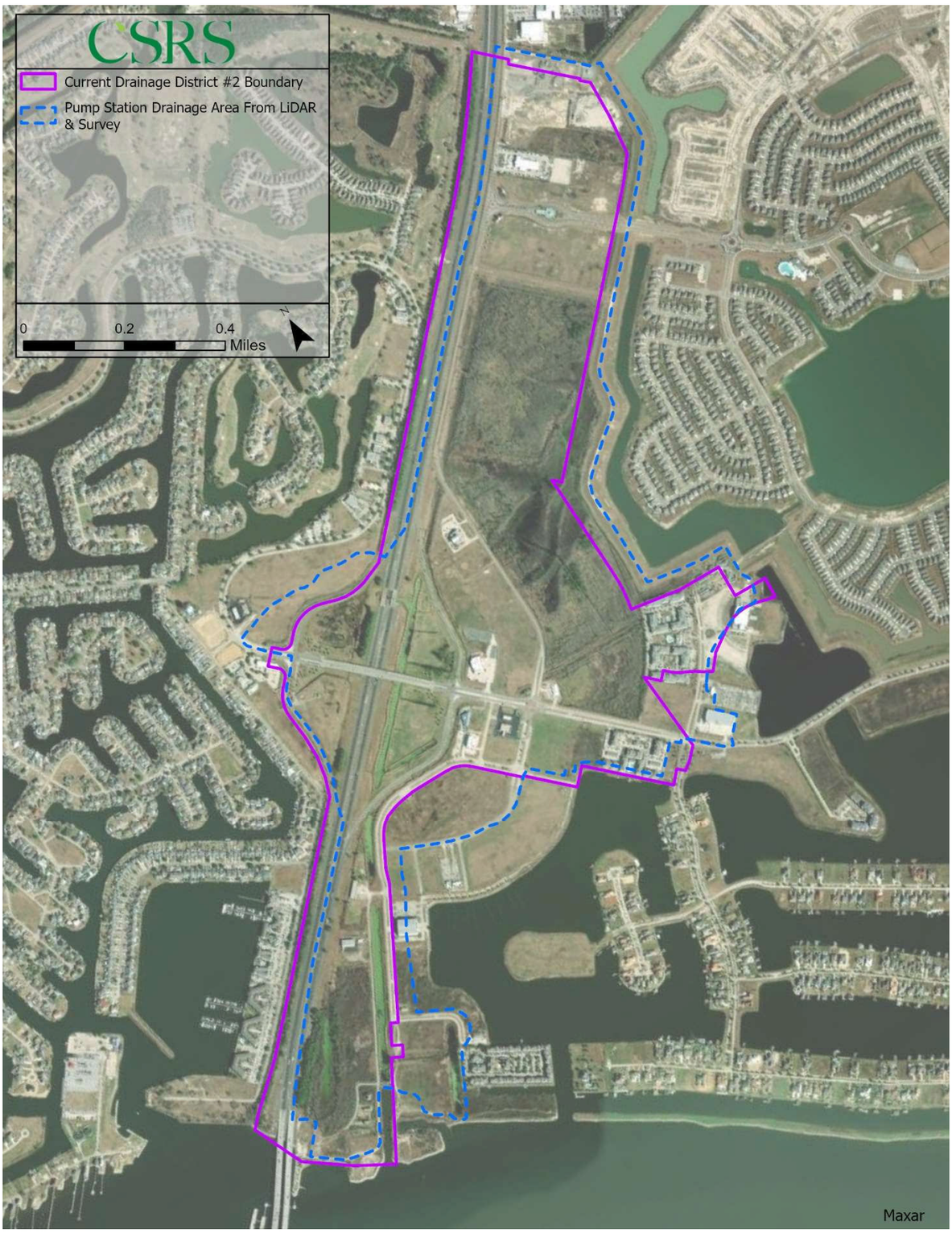

Figure 1: Drainage Area with Current Limits

Figure 2: Drainage Area with LiDAR Topography

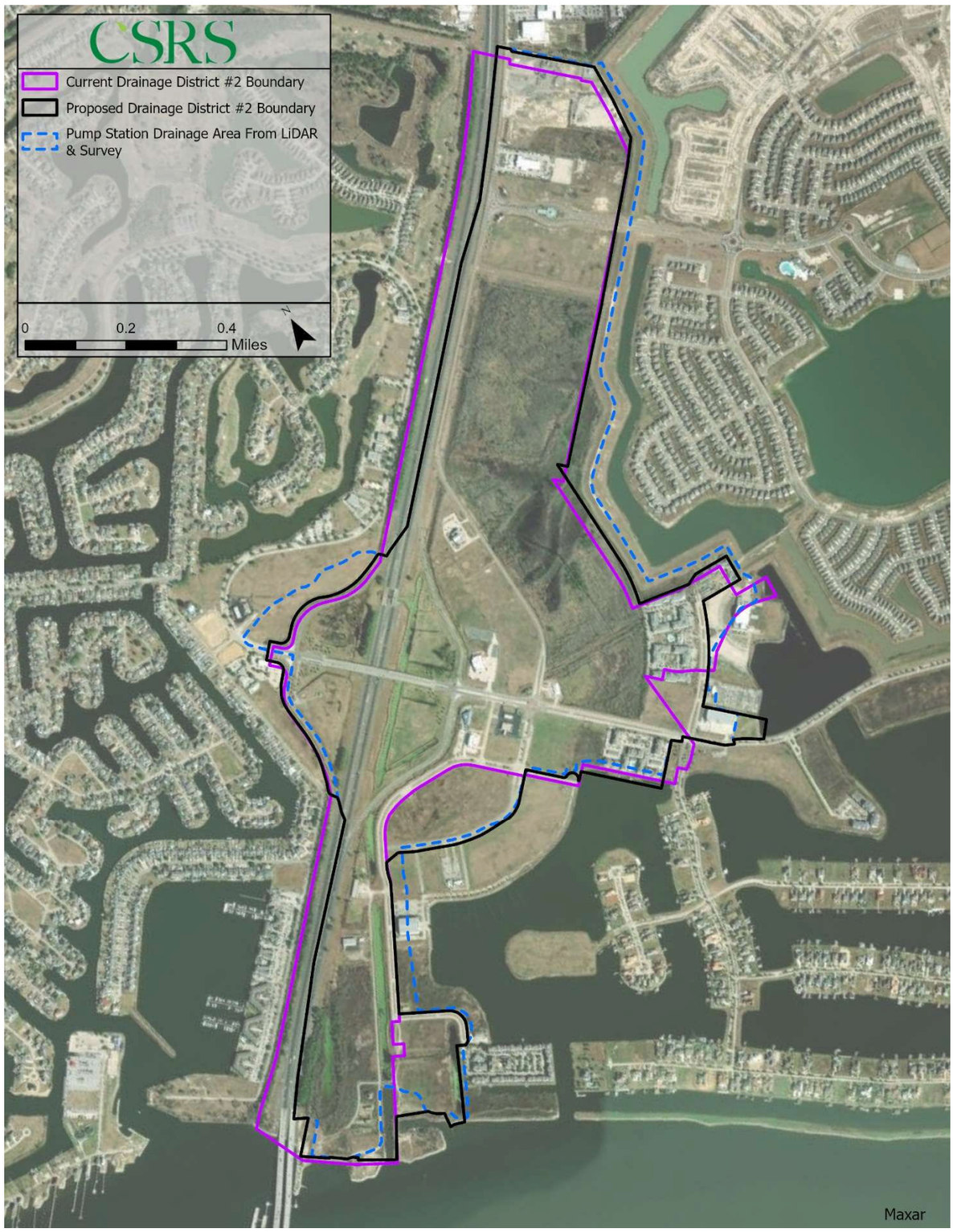

Figure 3: Proposed Limits with Drainage Area and Current Limits

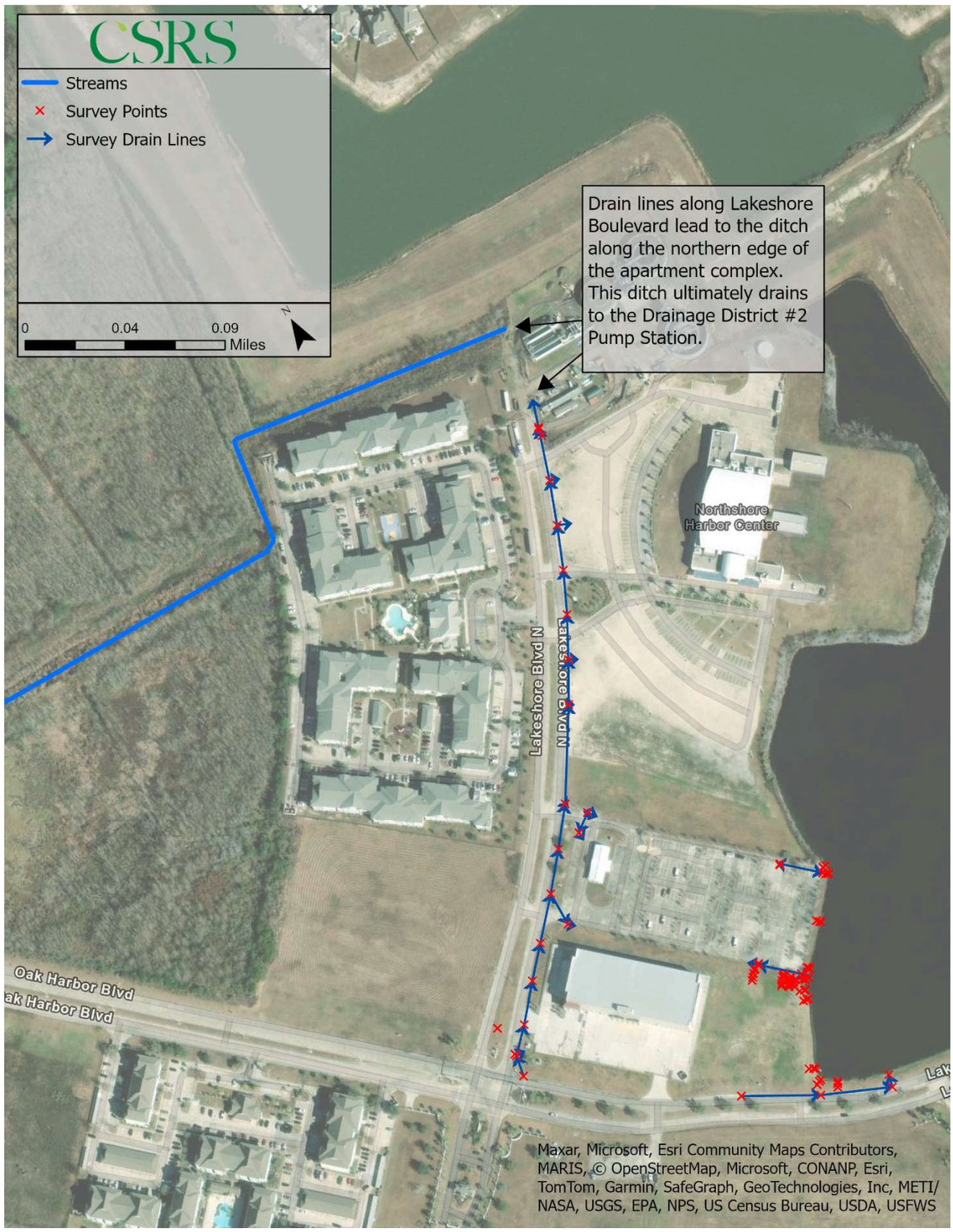

Figure 4: Survey Summary for Lakeshore Boulevard near the Harbor Center

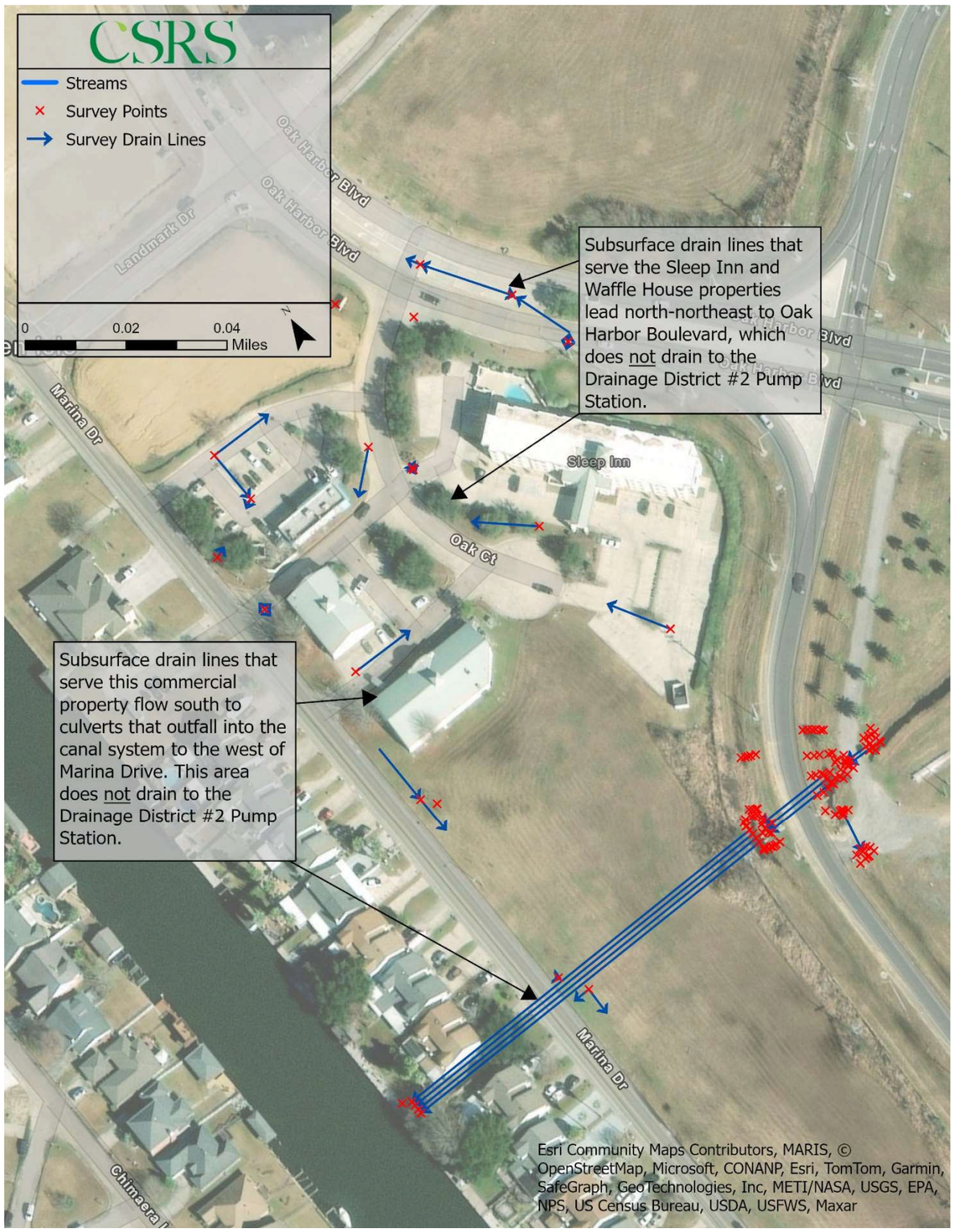

Figure 5: Survey Summary for Properties near the Sleep Inn on Oak Harbor Boulevard

Figure 6: Survey Summary for Villa Du Lac Apartment Homes