

Preliminary Comparison of Diversion Data & OpenET

Patrick Neu, P.E.

MBK Engineers

PRELIMINARY!

Background / Timeline

- 2016 - Consortium formed to test various types of flow meters and measurement equipment
- 2017 - MWD meter installations begin
- 2020 – Development of OpenET for use by water right holders to report annual diversions under pertinent water rights

Purpose

Identify any correlation or common trends relating water consumption measured by OpenET to diversions of water for irrigation

Why OpenET Consumption \neq Diversions

- OpenET Value: Measurement of the volume of water consumptively used through evapotranspiration of crops, soils, and open water

Vs.

- Diversions: Actual volume of water removed from the source

Complicating Factors

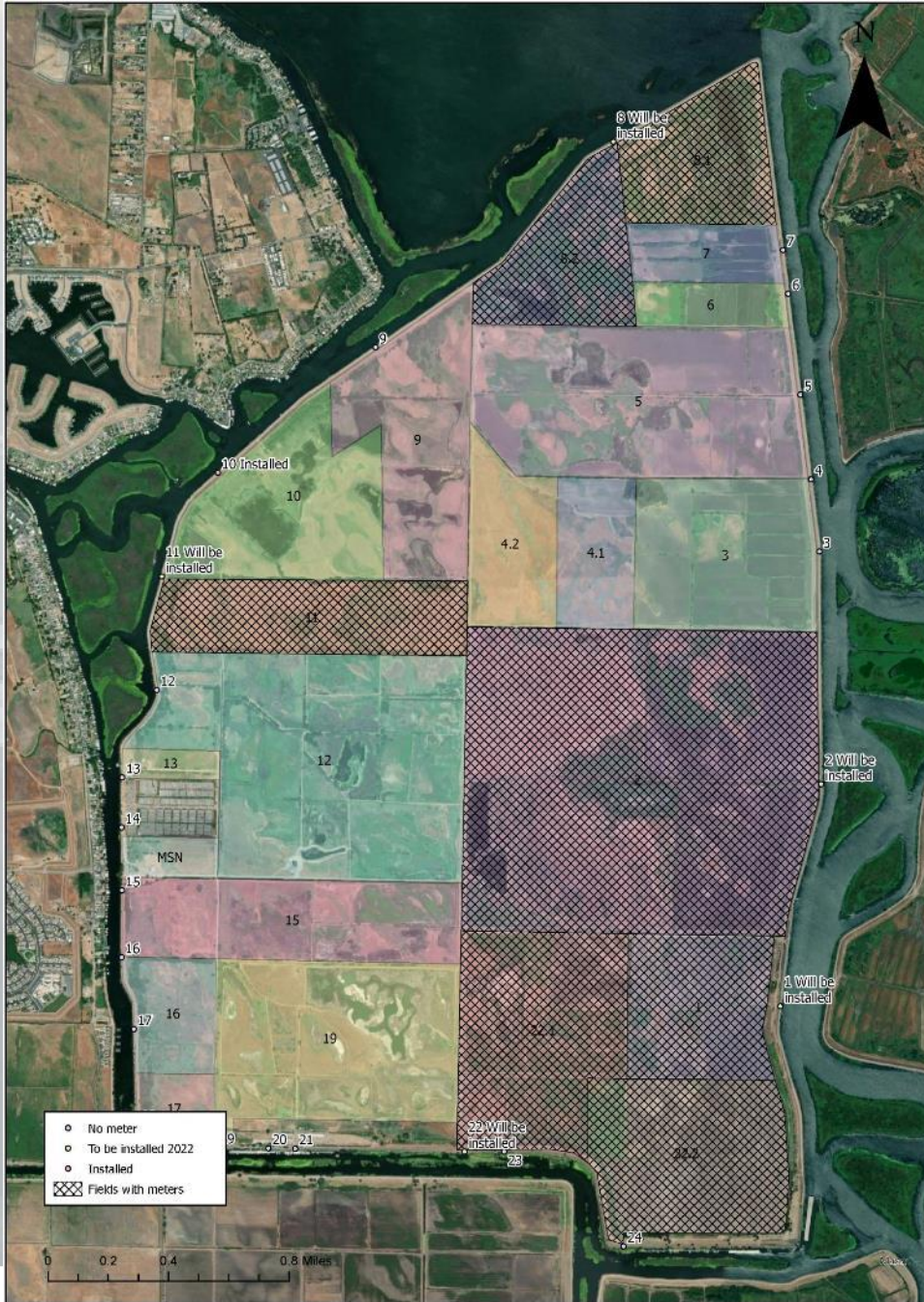
- Irrigation Practices
 - Flood vs. Drip vs. Sprinkler
 - Continually changing conveyance systems (fields served by different siphons from year to year)
- Soil Types & Field Conditions
 - Elevation
 - Transmissivity
- Crops
 - Relatively consistent for MWD Islands
- Diversions for non-consumptive use
 - Habitat
 - Salt Leaching
 - Pre-Irrigation

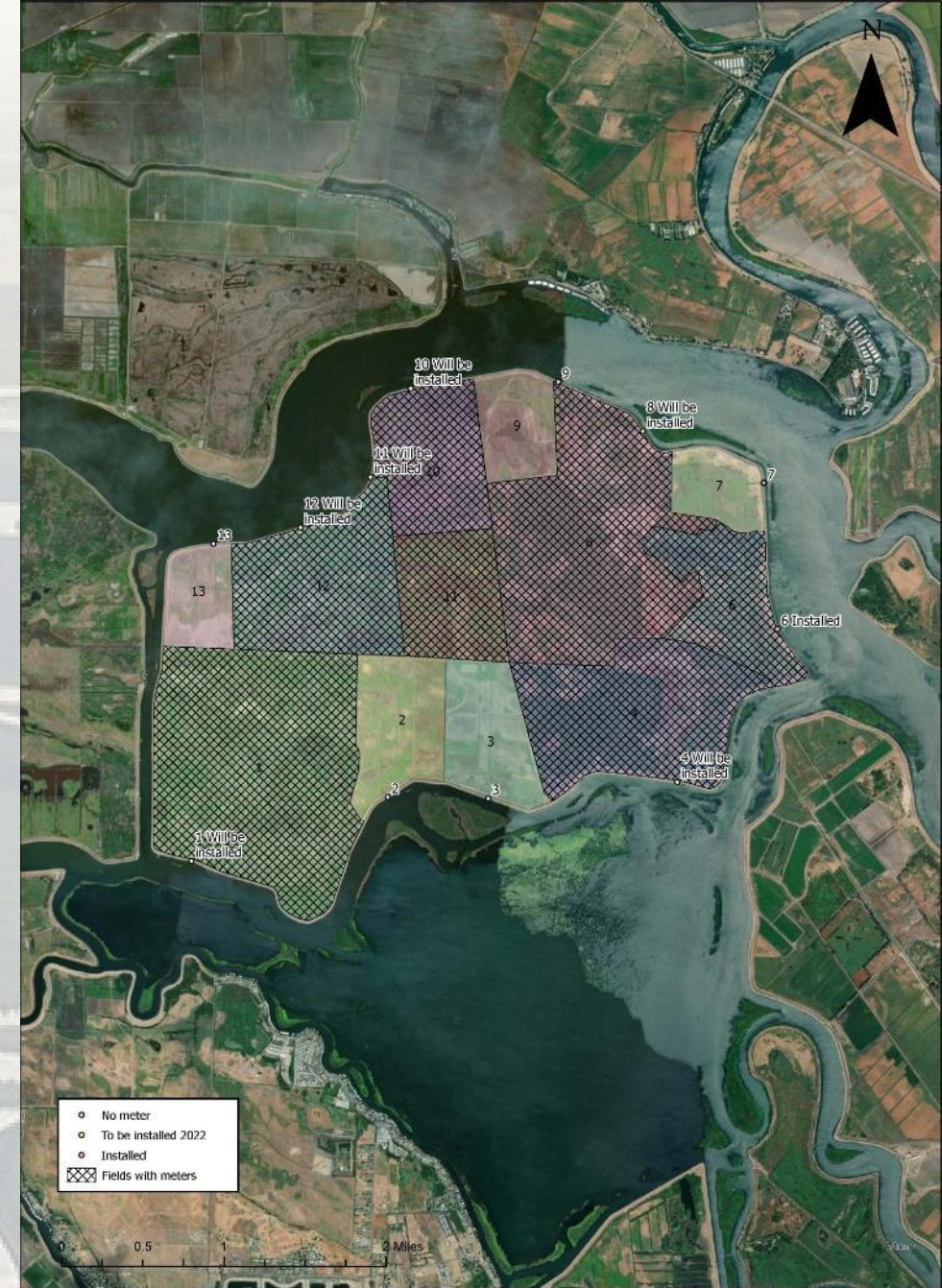
Technical Components

- Location
 - Diversions occur at numerous locations around Delta islands
 - Diversions occur at the Point of Diversion (metered) but are consumed within the Place of Use (OpenET)
- Quantity
 - Total volume vs. instantaneous volume
- Timing
 - Diversions are periodic and infrequent
 - Evapotranspiration occurs continuously year round

Location

- Work with irrigators to develop maps of how each field is irrigated
- Associate Place of Use with Point of Diversion
- Identify crop types and acreages served by individual siphons
- Produce summary maps to develop correlations from





Quantity

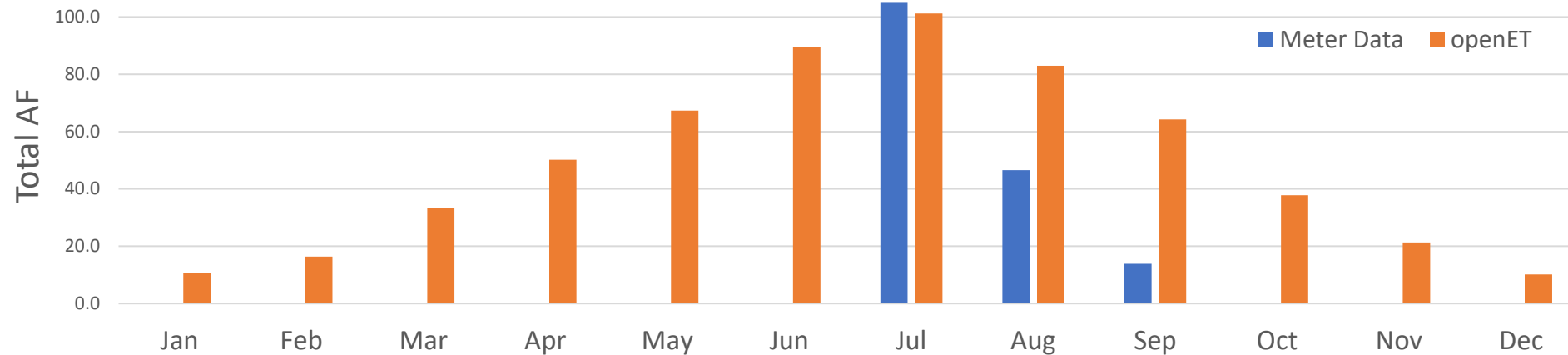
Annual Volume

Siphon	Year	Diversions (AF)	OpenET (AF)
Bouldin-2	2019	165	584
Bacon-24	2020	897	280
	2021	555	339
Bacon-25	2018	0	240
	2019	0	256

Irrigation Volume (excluding winter diversions for flooding, salt leaching, etc)

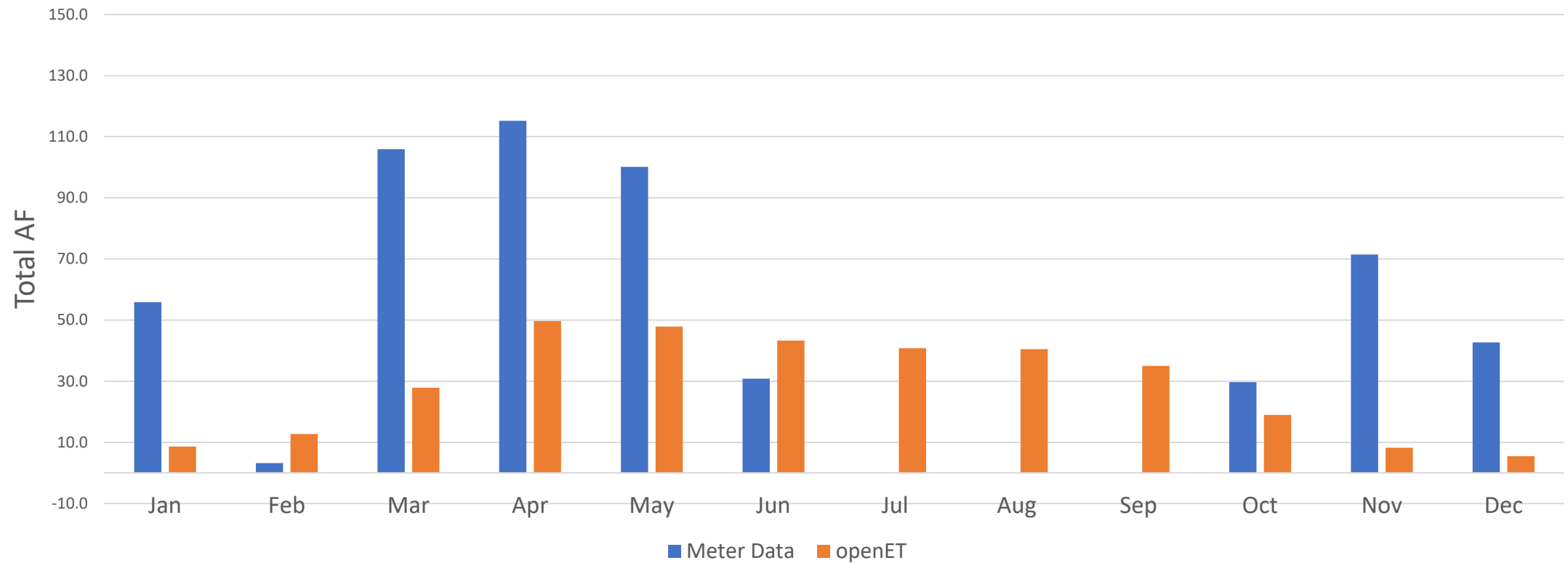
Siphon	Year	Diversions (AF)	OpenET (AF)
Bouldin-2	2019	165	542
Bacon-24	2020	839	262
	2021	385	317
Bacon-25	2018	0	217
	2019	0	237

Bouldin Siphon No. 2 - 2019



Quantity

Bacon Siphon No. 24 - 2021



Timing

Diversion Data

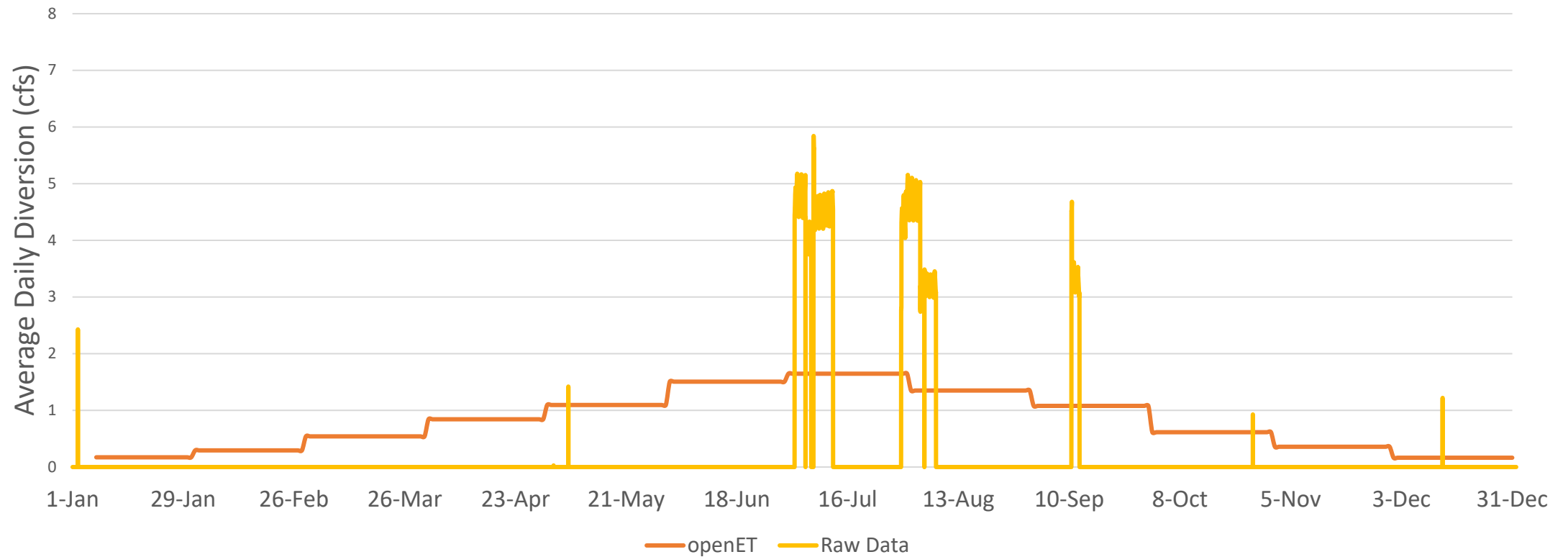
- Recorded by data logger
- (Ranges from 1-minute to 1-hour intervals)
- Recorded in incremental volumetric and instantaneous flow rate readings

OpenET

- Provided in monthly volume

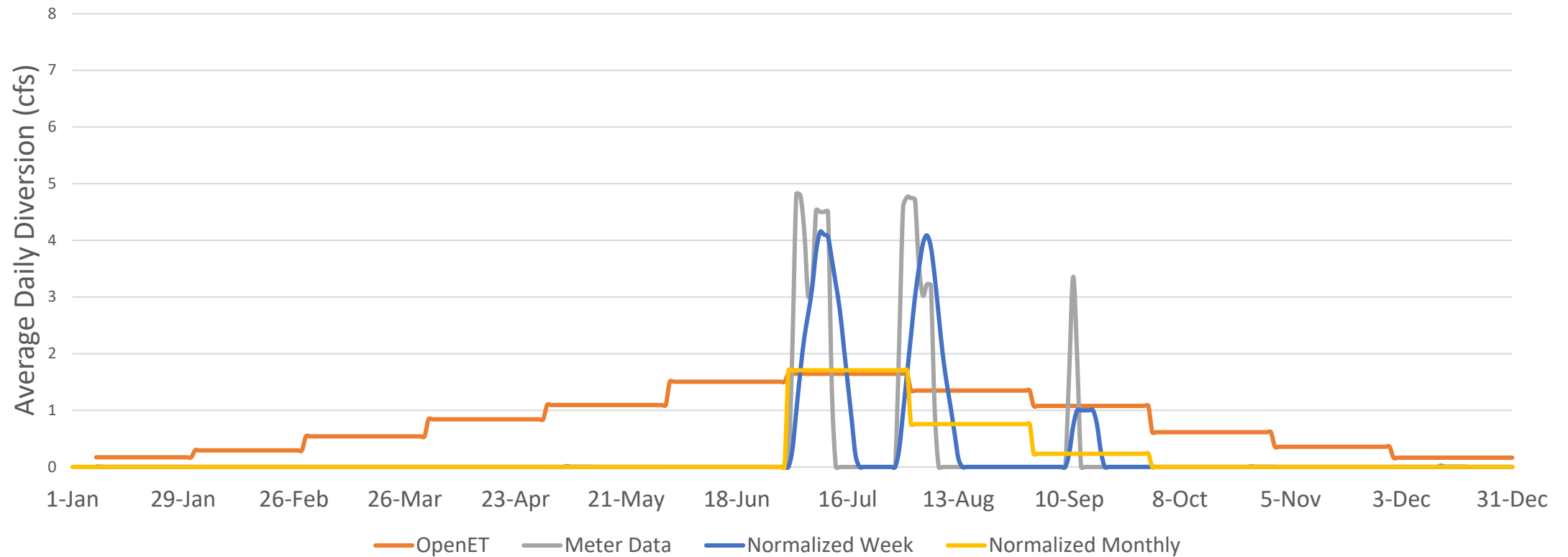
Non-Normalized Data

Bouldin Siphon No. 2 - 2019

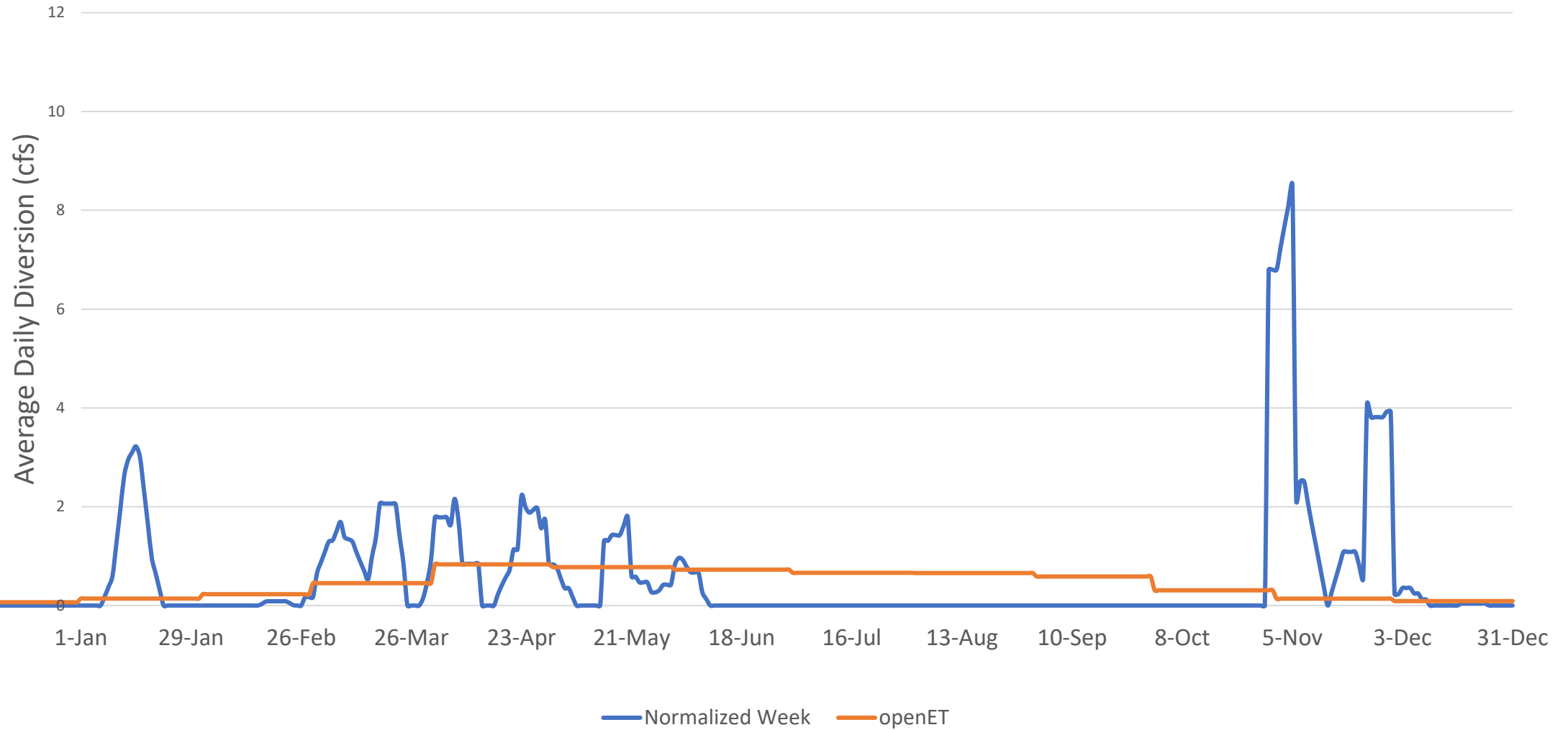


Normalized Data

Bouldin Siphon No. 2 - 2019



Bacon Siphon No. 24 - 2021



Next Steps

- Currently analyzing a limited data set
 - Continue analysis as more meters are installed
- Work with OpenET to obtain better quality data sets
 - Currently downloading data using manual polygons using online feature
- Prepare report summarizing findings over multi-year period