Petronila & San Fernando Creeks WPP:
## *Urban/Stormwater Workgroup*

*Texas Water Resources Institute*
April 29, 2021

Meeting Outline

- Present and discuss initial estimates of population and pets in the watershed.

- Introduce the SELECT model as a tool to help identify priority areas for management recommendations

- Discuss potential Urban and Stormwater related management measures

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TEXAS A&M
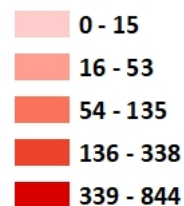AGRILIFE
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Petronila & San Fernando Creek
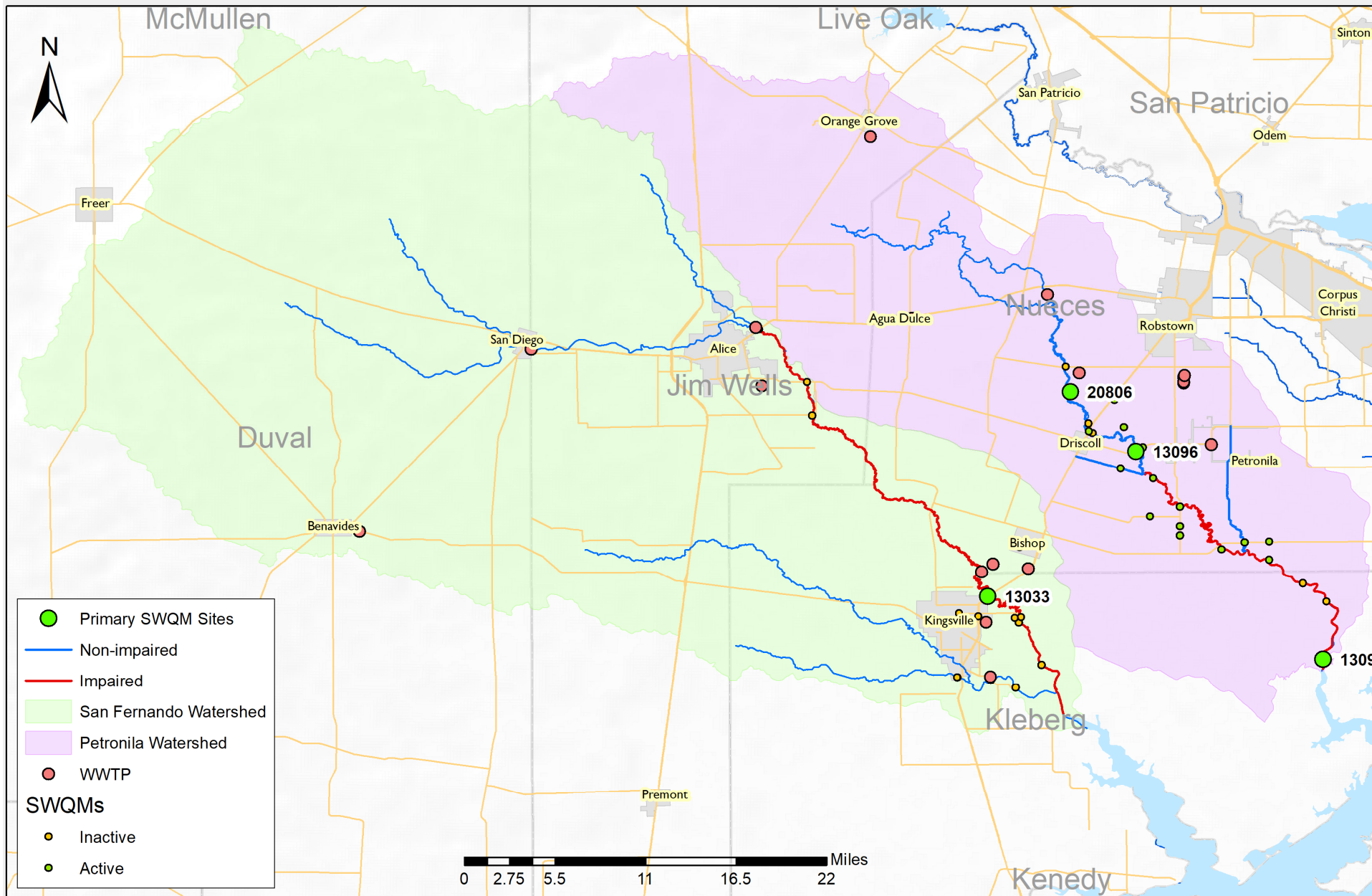
2010 Census Block

- Highest population density – City of Kingsville and Alice

- Watershed population – 83,846
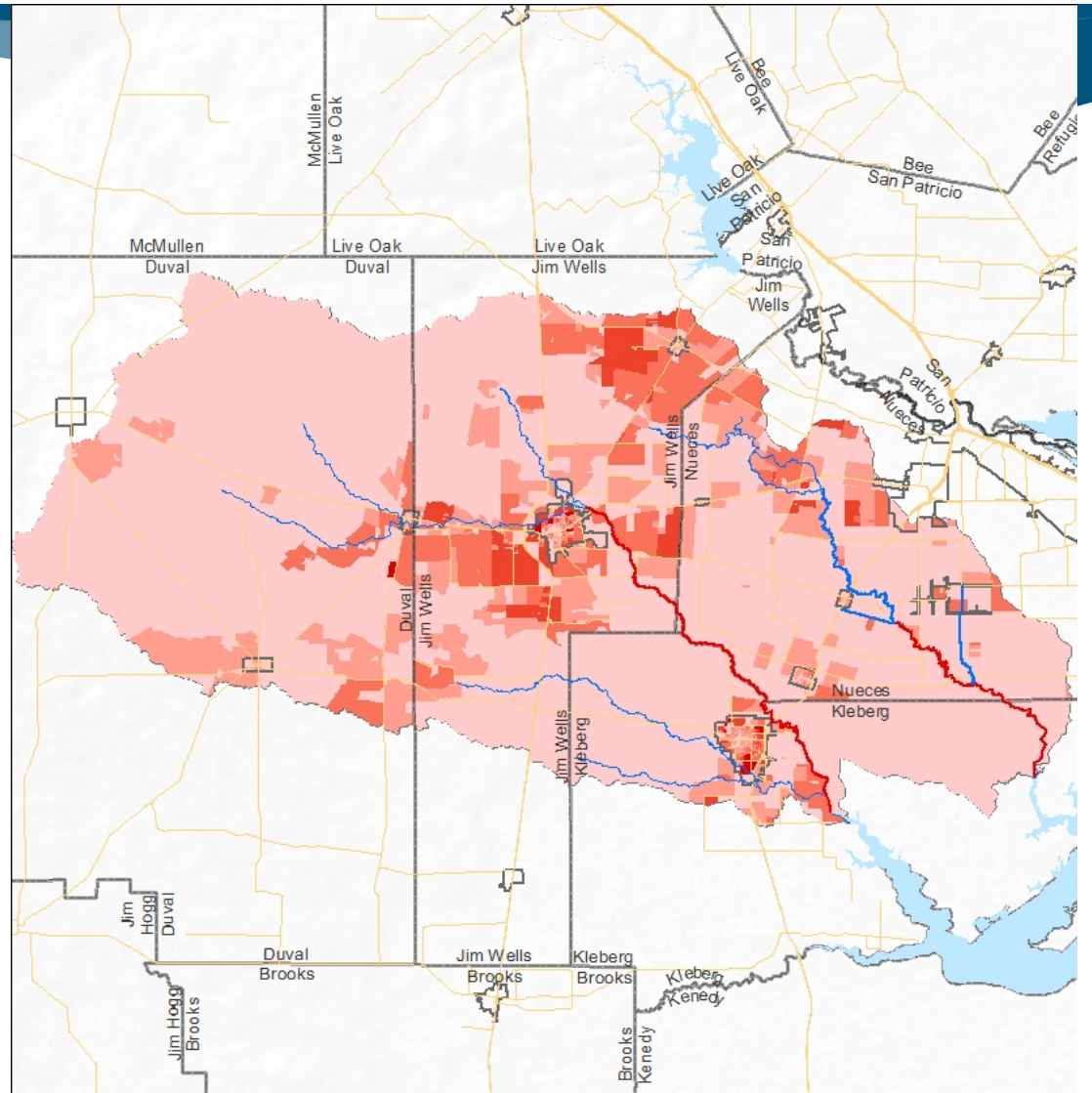
2010 Census Block Population

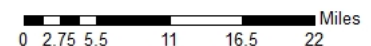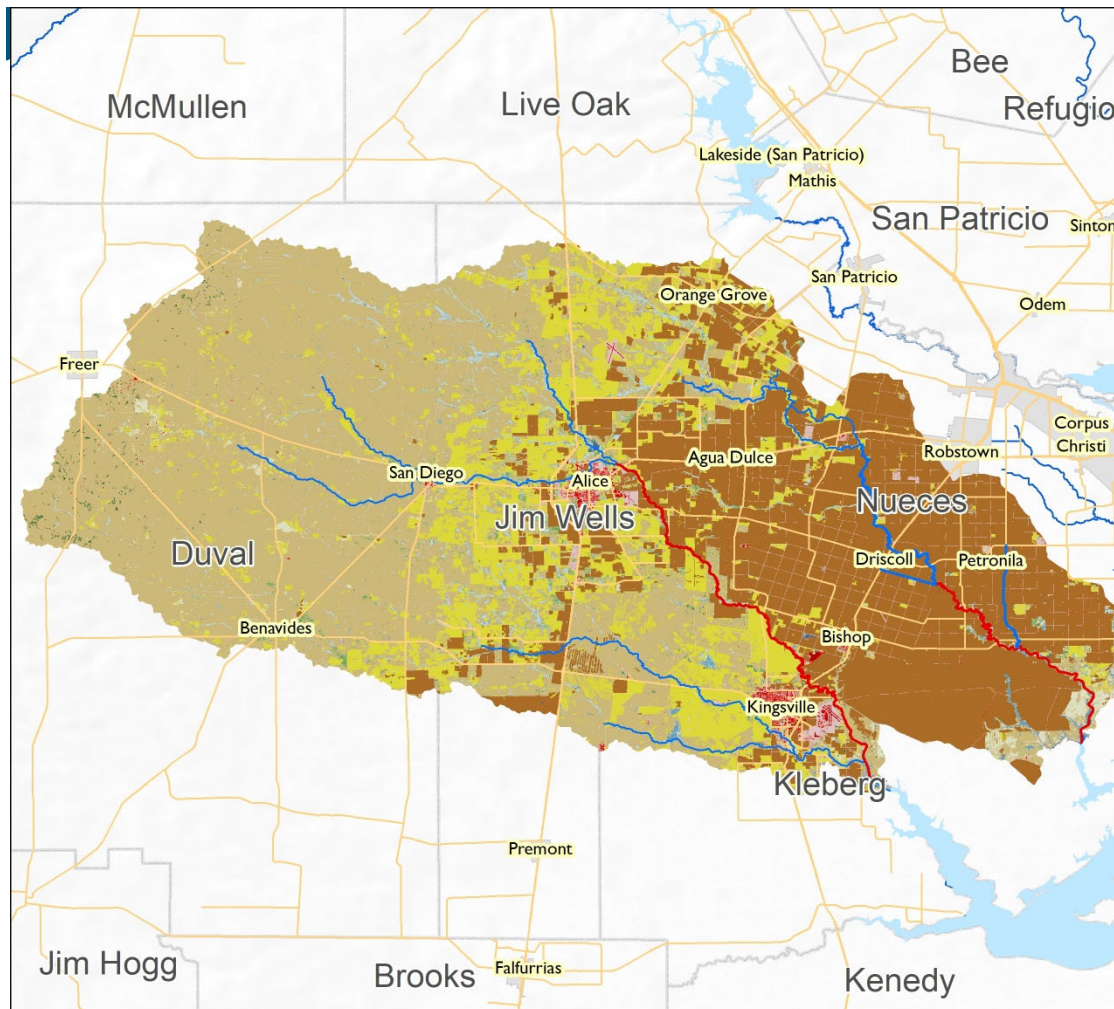|	
	0 - 15
	16 - 53
	54 - 135
	136 - 338
	339 - 844

Petronila & San Fernando Creek

Sources:
Population - US Census Bureau
Stream Segments - TCEQ
Counties, Cities, Roads - TNRIS

N

Miles
0 2.75 5.5   11   16.5   22

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Land Use and Land Cover

- ⊙ Hay/Pasture: 15.6%
- ⊙ Shrub/Scrub: 45.1%
- ⊙ Developed Land: 4.1%
- ⊙ Cropland: 29.7%
- ⊙ Forest: 1.4%
- ⊙ Herbaceous: 1.2%
- ⊙ Wetlands: 2.4%
- ⊙ Barren Land: 0.3 %
- ⊙ Open Water 0.1%

Land Cover / Land Use

Open Water
Developed, Open Space
Developed, Low Intensity
Developed, Medium Intensity
Developed, High Intensity
Barren Land (Rock/Sand/Clay)
Deciduous Forest
Evergreen Forest

Mixed Forest
Shrub/Scrub
Grassland/Herbacious
Pasture/Hay
Cultivated Crops
Woody Wetlands
Emergent Herbacious Wetlands

Petronila & San Fernando Creek

Sources:
Land Use - NLCD
Stream Segments - TCEQ
Counties, Cities, Roads - TNRIS

Miles
0   3.75 7.5   15   22.5   30

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Dog/Cat Estimates

County	Households	Cat	Dog
Duval	3,339	1,855	1,159
Jim Wells	13,660	7,589	4,743
Kleberg	11,091	6,162	3,851
Nueces	4,830	2,683	1,677
Total	**32,920**	**18,289**	**11,431**

Households from 2010 Census block data. Dog and cat count uses the average number owned per household provided by the American Veterinary Medical Association: 2017-2018 U.S. Pet Ownership Demographics Sourcebook

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Estimating Potential *E. coli* Loads

Spatially Explicit Load Enrichment Calculation Tool (SELECT)

Characterizes *E. coli* sources based on spatial factors

- Land use
- Soil
- Source population density

Input Data:

- Land use/land cover data updated
- Watersheds delineated
- Source info (animal numbers, OSSFs, wildlife, WWTFs, etc.)
- Data layers used in SELECT:

  - Land use
  - Hydrography (stream network)
  - Urban areas
  - Watershed boundary
  - County boundary
  - Soils

Dogs Potential E.coli Load CFU/day
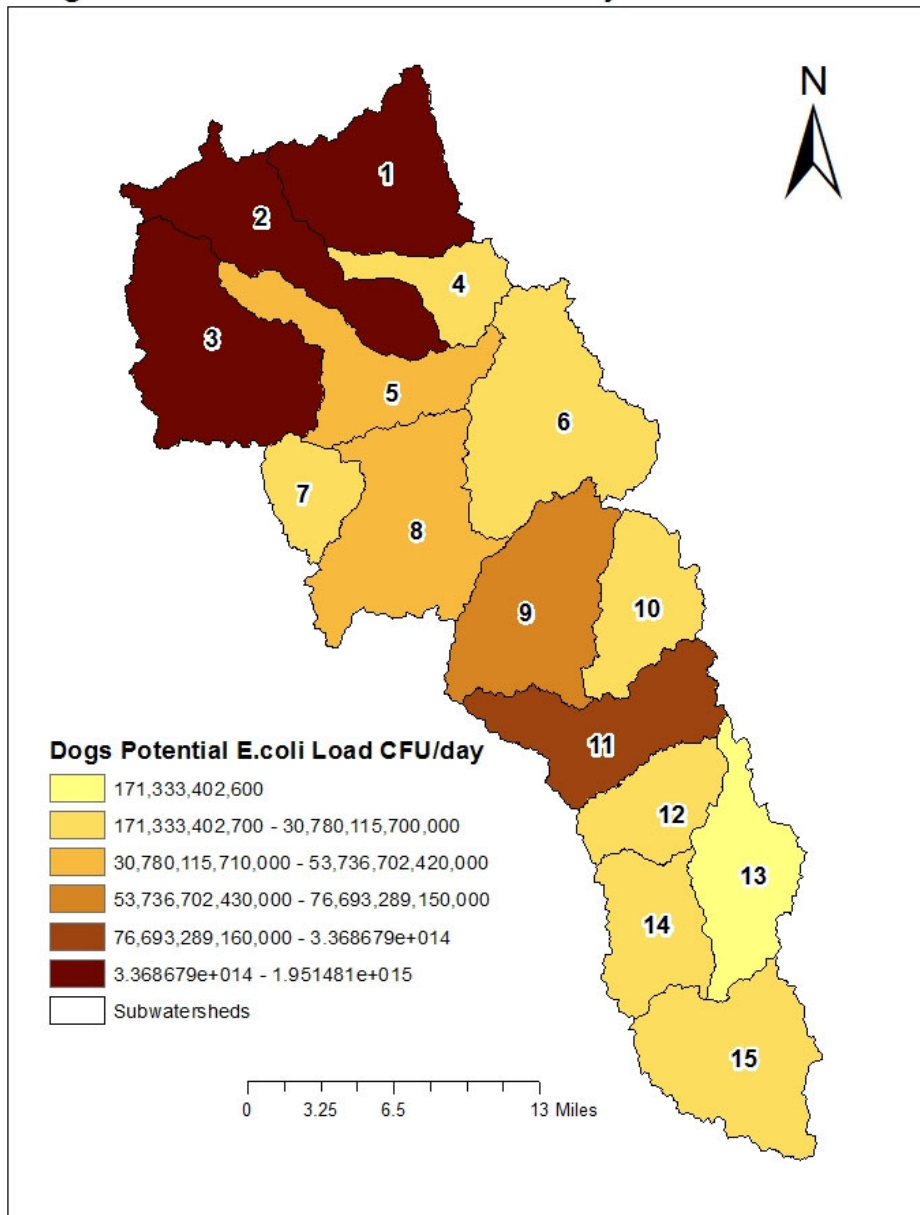
Mid and Lower Cibolo Creek Watershed

E. coli Loads: Dogs

Estimated Population: 45,480

Assumed 0.58 dogs per household

E. coli Load
5.0×10^9 CFU/animal/day

Dogs Potential E.coli Load CFU/day

	Value
	171,333,402,600
	171,333,402,700 – 30,780,115,700,000
	30,780,115,710,000 – 53,736,702,420,000
	53,736,702,430,000 – 76,693,289,150,000
	76,693,289,160,000 – 3.368679e+014
	3.368679e+014 – 1.951481e+015
	Subwatersheds

What Do SELECT Results Tell Us?

- Results demonstrate a 'worst-case' *E. coli* loading scenario

- Shows relative 'potential' for *E. coli* loading from smaller subbasins within the larger watershed

- Information can help prioritize where management practices are recommended for implementation

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Questions about SELECT?

- Any questions about SELECT?
  - What it does?
  - How it is used?
  - What it tells us?

Next Steps:

- Will run SELECT model to help prioritize management recommendations
- Will show by watershed (Petronila and San Fernando)
- Present outputs and next meeting

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Potential Management Measures

Potential Management Measures	Description
Install stormwater BMP demonstration projects	Install xx number of stormwater BMP demonstration projects (rainbarrels, rain gardens, pervious pavement, etc.) with signage to reduce/treat stormwater runoff and educate citizens
Riparian habitat restoration	Identify priority areas for riparian habitat restoration and secure funding for restoration projects
Green stormwater infrastructure workshops	Workshops to educate citizens on stormwater best management practices they can implement on their own property (rain barrels, rain gardens, nutrient/fertilizer management, native plant landscaping, etc.)
Pet waste management	Expand pet waste station availability in public areas, expand education efforts to pick up after pets
Stormdrain signage	Stencil/mark stormdrains with artwork to indicate that they drain to Petronila and San Fernando Creeks
Stream clean up events	Hold clean up events to educate citizens about Petronila and San Fernando Creeks and increase stewardship
Volunteer water-quality monitoring	Implement and expand volunteer stream water quality monitoring in the watershed
Hazardous Waste Collection Events	

Management Recommendations will be major topic of discussion at next meeting

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Discussion Questions

- Do you know of any areas that are quickly developing we should be aware of?

- Is illegal dumping a big issue in the watershed?

- Are there pet waste stations in parks and public spaces currently?

- What types of green stormwater infrastructure projects are you interested in or planning to implement in the watershed? Would there be interested in demonstrations events?

Questions?

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