Historical Data Review of Oso Bay and Oso Creek

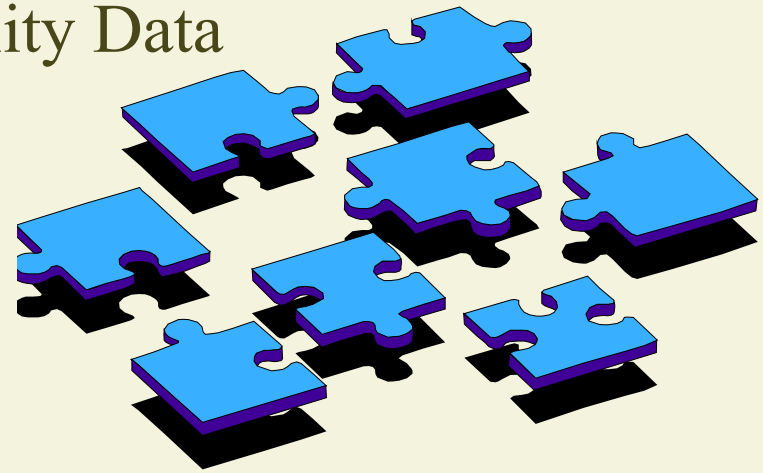
Sandra A. Alvarado, Project Manager

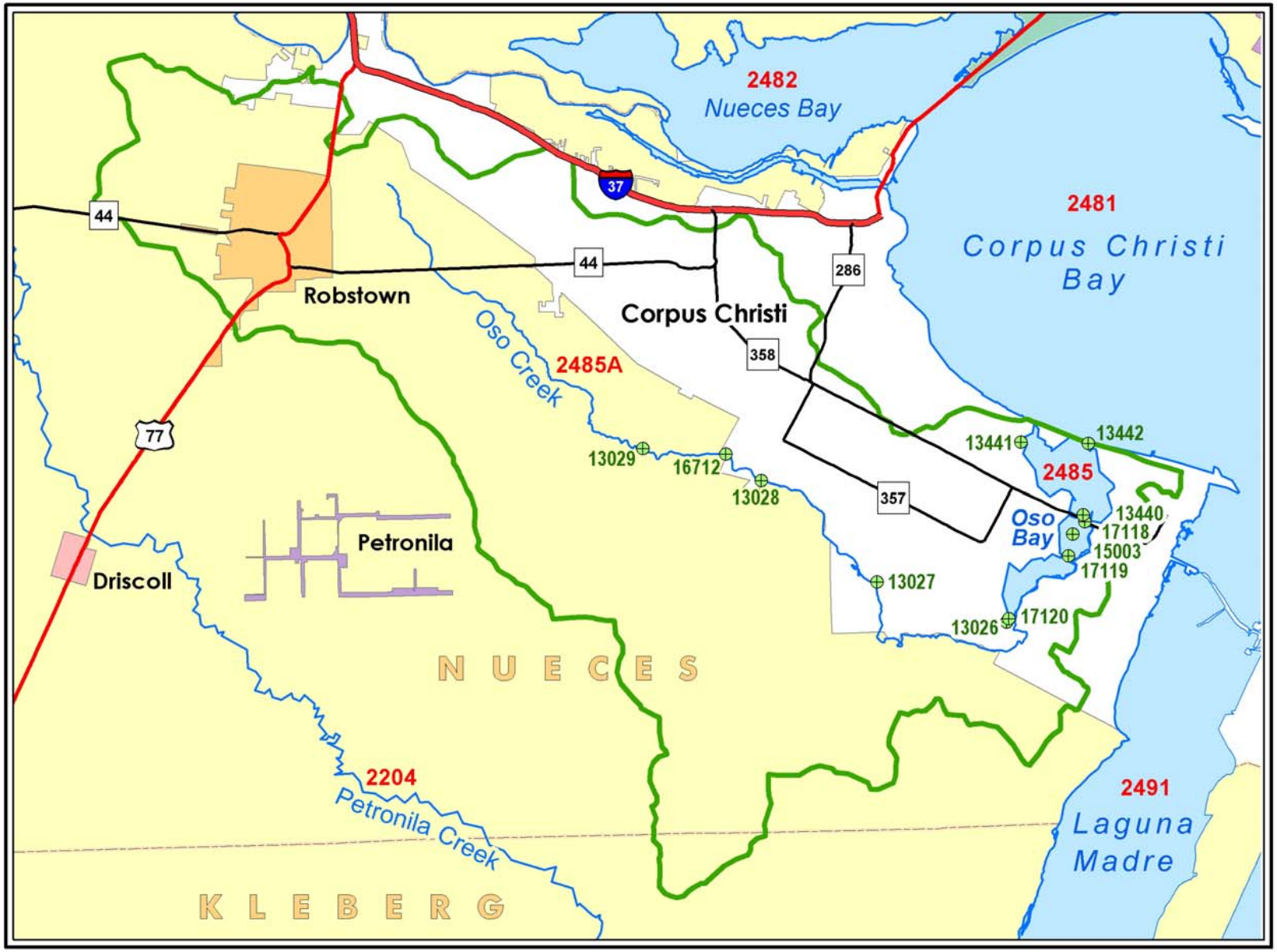
Total Maximum Daily Load Program

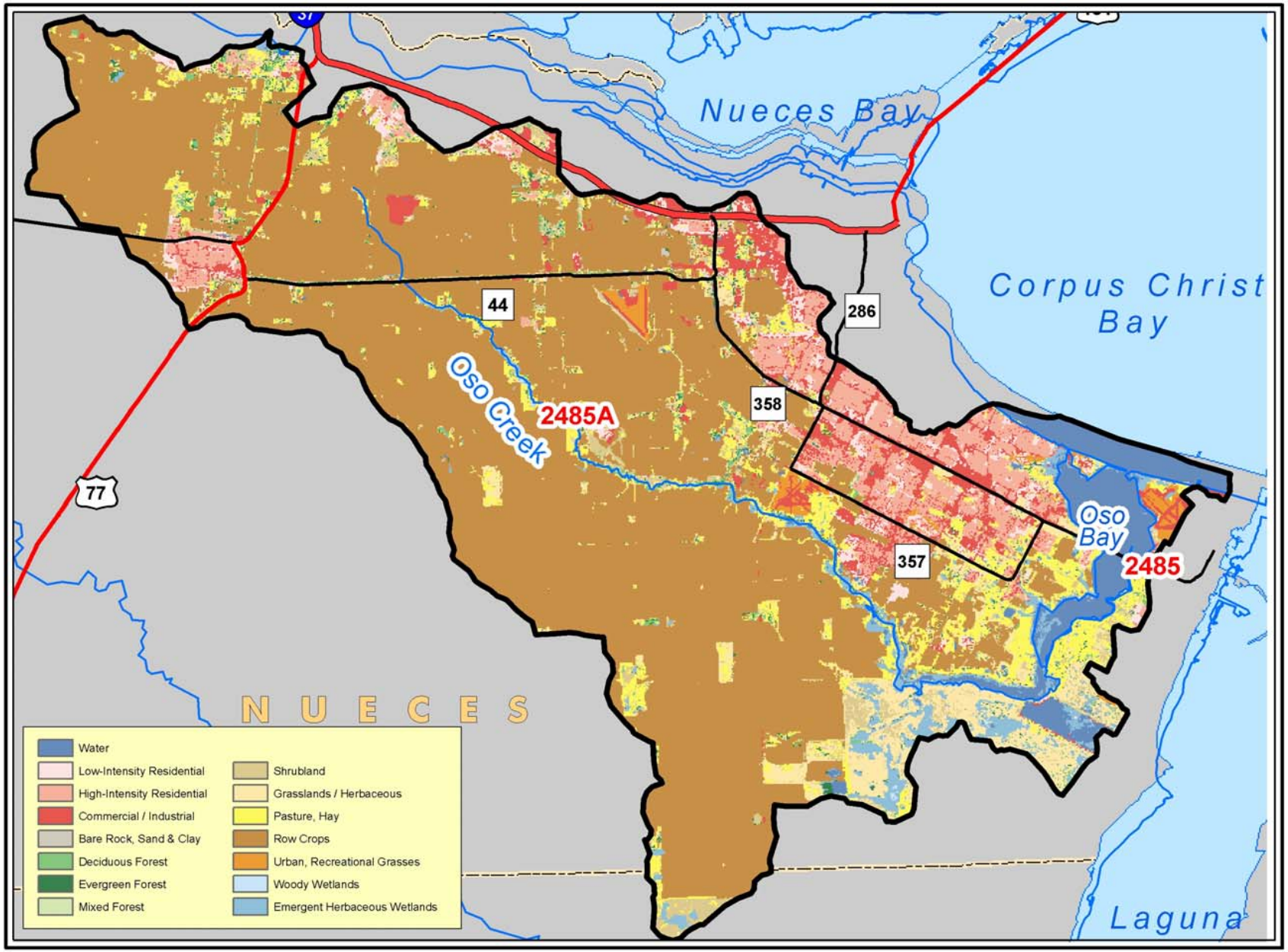
Texas Commission on Environmental Quality

Overview

- Site Description
- Water Quality Standards
- Permitted Dischargers
- Review Previous Studies
- Review Water Quality Data
- Conclusions




2482
Nueces Bay
2481
Corpus Christi Bay
37
44
44
286
Robstown
Corpus Christi
Oso Creek
2485A
358
77
13029
16712
13028
13441
13442
2485
357
Oso Bay
13440
17118
15003
17119
Petronila
Driscoll
13027
13026
17120
N U E C E S
2204
Petronila Creek
2491
Laguna Madre
K L E B E R G

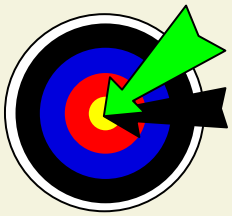

Nueces Bay
Corpus Christi Bay
Oso Bay
Oso Creek
2485A
2485
44
286
358
357
77
37
N U E C E S
Laguna
Water
Low-Intensity Residential
High-Intensity Residential
Commercial / Industrial
Bare Rock, Sand & Clay
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrubland
Grasslands / Herbaceous
Pasture, Hay
Row Crops
Urban, Recreational Grasses
Woody Wetlands
Emergent Herbaceous Wetlands

Oso Watershed Land Uses

Land Use Types	Percent
Planted/Cultivated	67.8
Urban Development	13.8
Grasslands	5.2
Water	4.5
Shrubland	3.8
Wetlands	2.8
Forested Upland	2.0
Barren	0.2

Water Quality Standard

- Indicator for the contact recreation use in saltwater is Enterococci
- Contact Recreation
  - Geometric mean (GM): 35 cfu/100 ml
  - Single sample (SS): 89 cfu/100ml (Incorrect)
- Proposed triennial WQS revisions for SS criteria:
  - 158 cfu/100 ml for <u>moderate</u> recreation use (i. e. away from swimming beaches)
  - 104 cfu/100 ml for <u>high</u> recreation use (i.e. within 1,000 feet of shore in swimming beach areas)



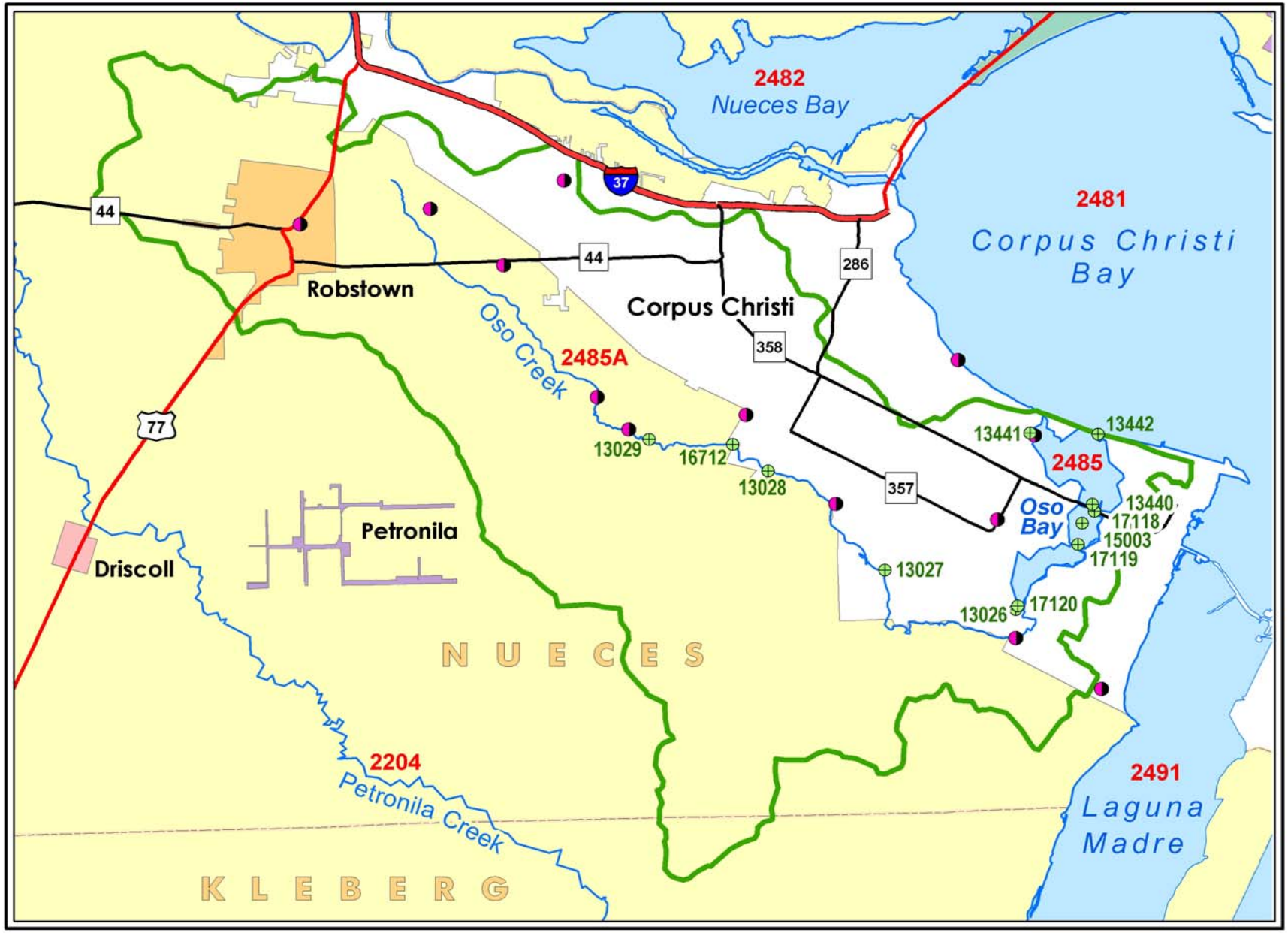
Water Quality Standard

- Assessment criteria
  - Fully supporting if geometric mean < criterion <u>and</u> 25% of time or less, concentrations are < single sample criterion.
  - Not supporting if geometric mean > standard, <u>or</u> if concentrations are > single sample standard more than 25% of time.

Permitted Dischargers

- Total of 10 permitted dischargers
  - 6 major dischargers (> 1MGD)
  - 4 minor dischargers (< 1MGD)
- Major dischargers
  - 2 industrial
  - 4 municipal
- Minor dischargers
  - 1 industrial
  - 3 municipal

Permitted Discharger	Permit No.	Permitted Daily Avg. Flow (MGD)
American Electric and Power Barney Davis Power Station	01490-000	540
City of Corpus Christi Oso WWTP	10401-004	16.2
City of Corpus Christi Greenwood WWTP	10401-003	8.0
Texas A&M University CBI La Coss Facility	03646-000	5.04
City of Robstown	10261-001	2.4
Equistar Chemical LP Corpus Christi Plant	02075-003	2.0
Tennessee Pipeline Construction Co. Cuddihy Airfield WWTP	14228-001	0.06
Corpus Christi Peoples Baptist Church Roloff WWTP	11134-001	0.02
Texas A&M University Agriculture Research Ext.	11345-001	0.0015
City of Corpus Christi Storm Water	04200-000	NA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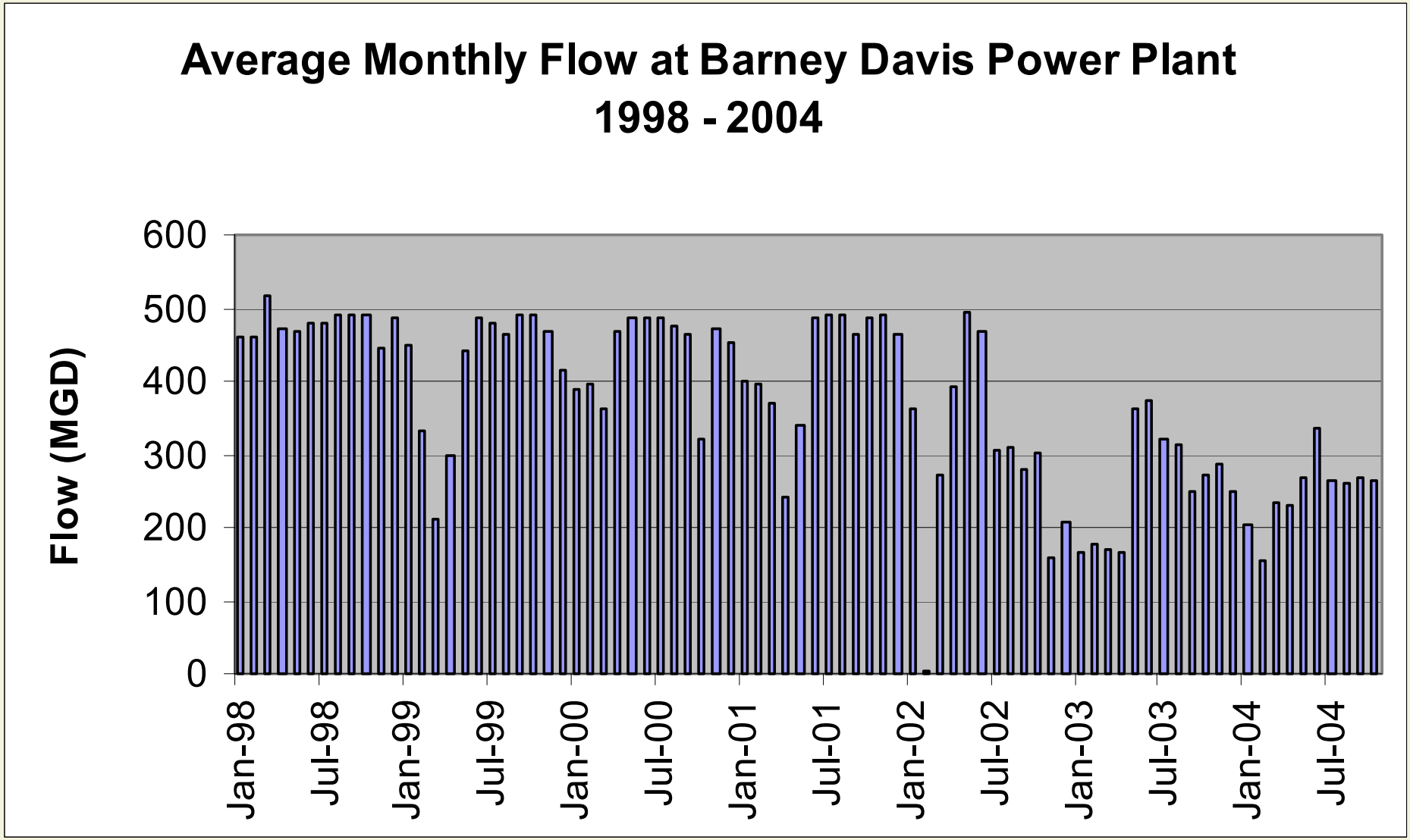
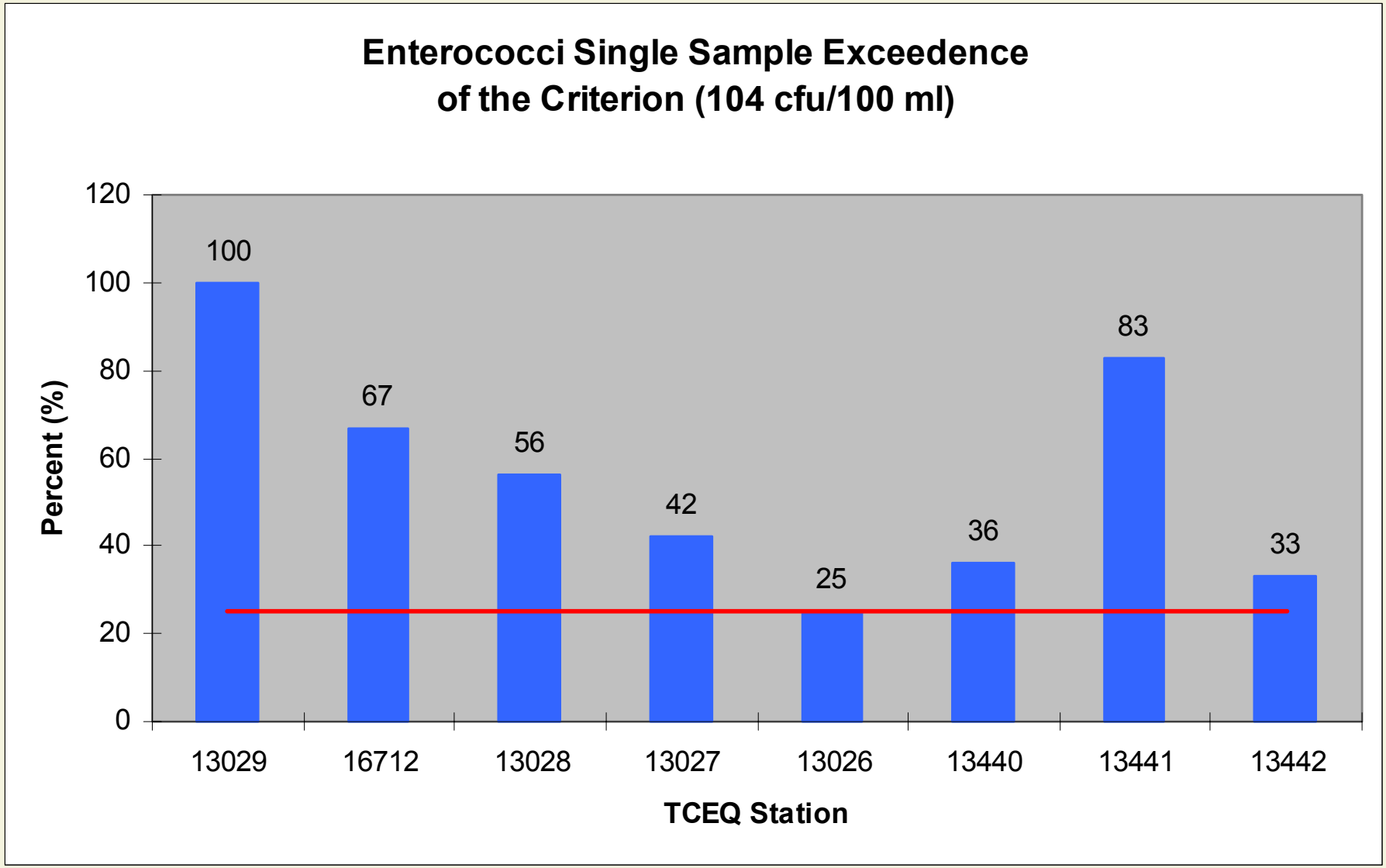

Average Monthly Flow at Barney Davis Power Plant
1998 - 2004
Flow (MGD)
600
500
400
300
200
100
0
Jan-98
Jul-98
Jan-99
Jul-99
Jan-00
Jul-00
Jan-01
Jul-01
Jan-02
Jul-02
Jan-03
Jul-03
Jan-04
Jul-04

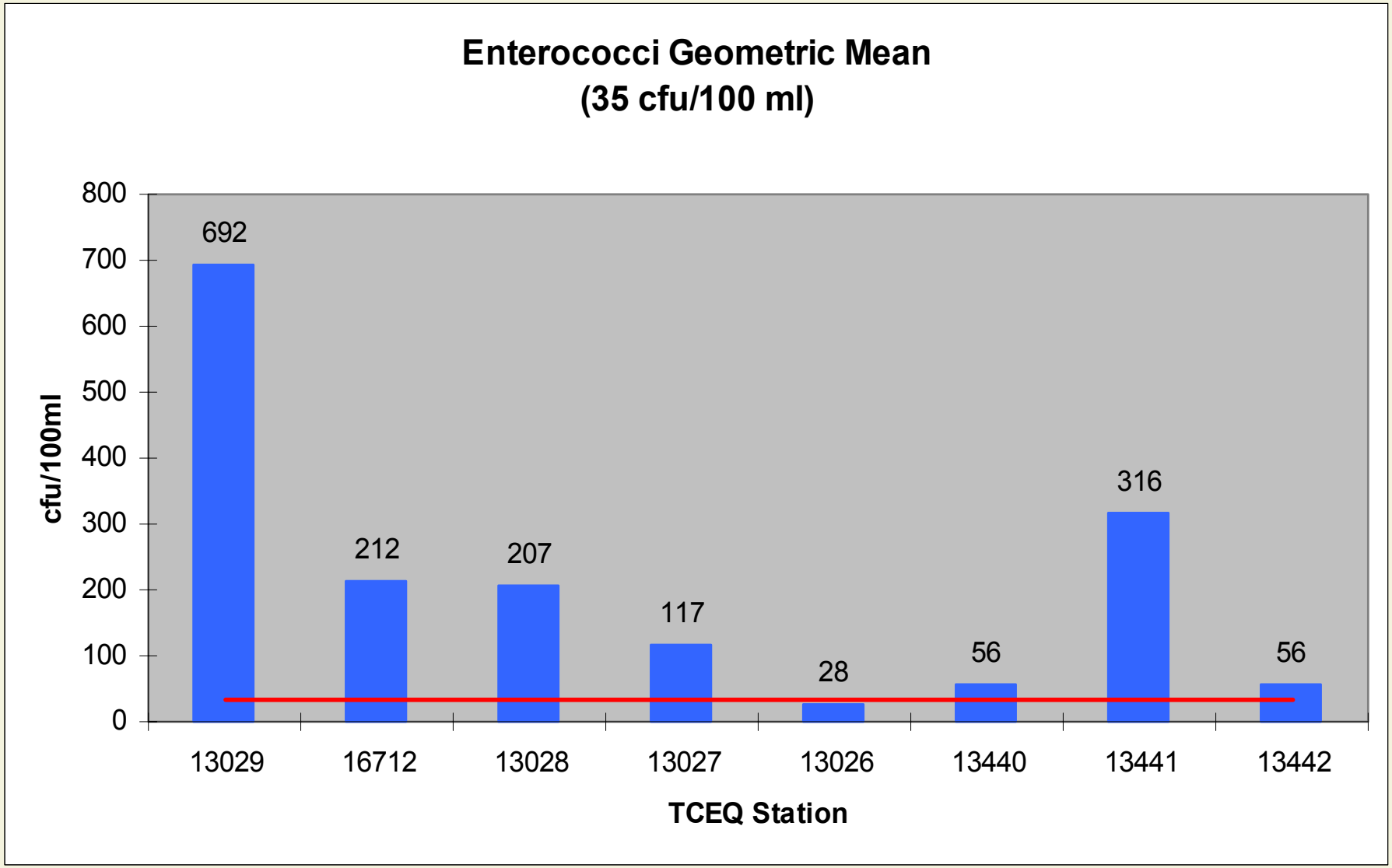
Previous Oso Bay/Creek Studies

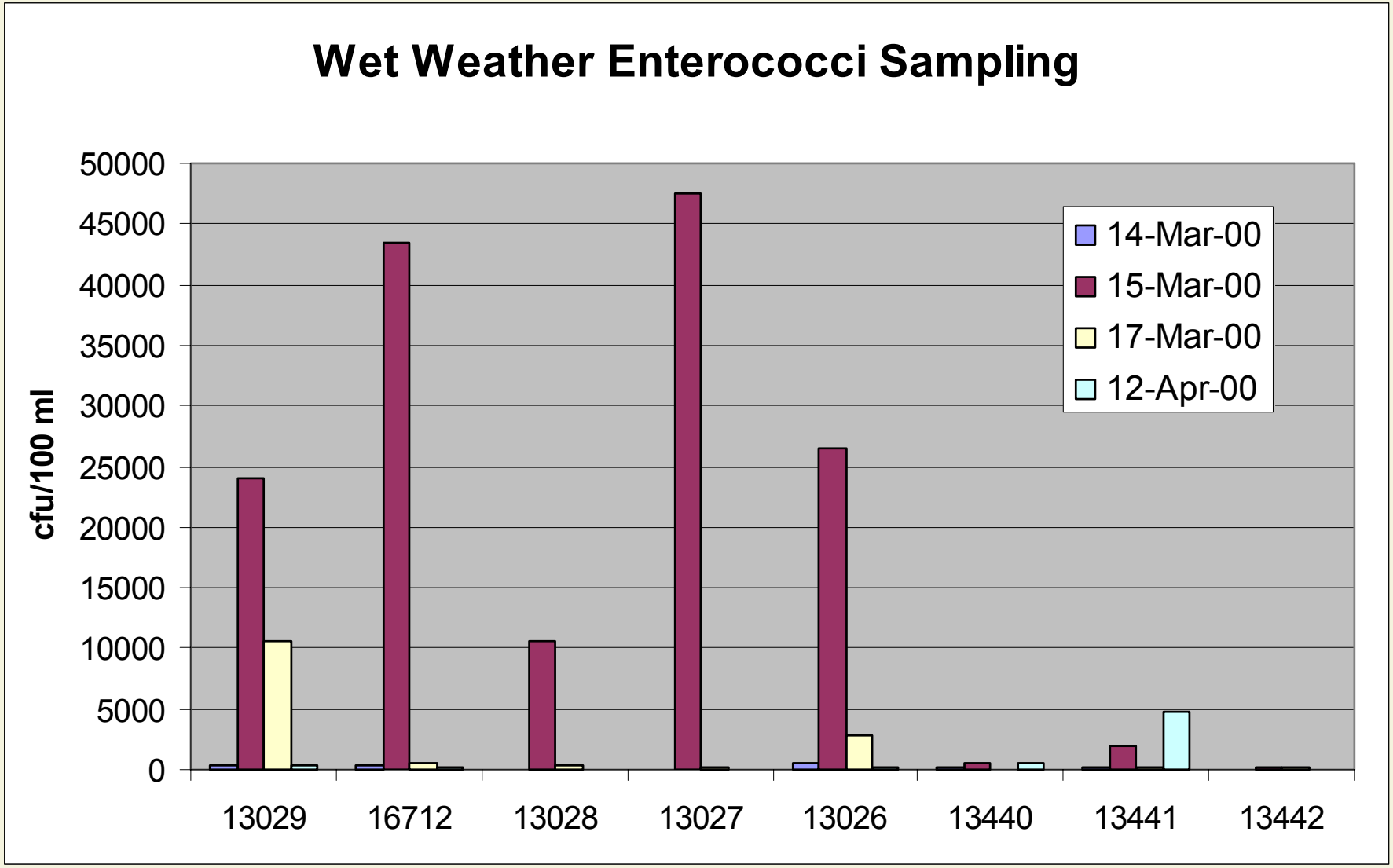
- Mott and Lehman, 2001, 2002
- Nicolau, 2001
- Heilman, Mott and Nicolau, 2000
- Fisher, 1996
- Withers and Chapman, 1993
- Jennings, Bowman and Trebatoski, 1992

Review of Enterococci Data

- TCEQ TRACS Data
  - TCEQ Region
  - Clean Rivers Program/Nueces River Authority
  - TMDL Program/Center for Coastal Studies
- Period of Record
  - 1999 – 2004
- Frequency of Data Collection
  - Quarterly (Stations 13028 and 13440)
  - Monthly (Oct 1999-Sep 2000)


Enterococci Single Sample Exceedence
of the Criterion (104 cfu/100 ml)
Percent (%)
120
100
80
60
40
20
0
100
67
56
42
25
36
83
33
13029
16712
13028
13027
13026
13440
13441
13442
TCEQ Station


Enterococci Geometric Mean
(35 cfu/100 ml)
cfu/100ml
800
700
600
500
400
300
200
100
0
692
212
207
117
28
56
316
56
13029
16712
13028
13027
13026
13440
13441
13442
TCEQ Station


Wet Weather Enterococci Sampling
cfu/100 ml
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
14-Mar-00
15-Mar-00
17-Mar-00
12-Apr-00
13029
16712
13028
13027
13026
13440
13441
13442

Conclusions

- Bacteria impairment and 303d listing is verified with existing data
- A TMDL is necessary
- Watershed model necessary to aid with TMDL development and implementation
- Intensive monitoring necessary to identify bacteria sources and support watershed model
- Stakeholder group necessary to advise with TMDL development and implementation
- Coordination with other on-going projects in the Oso Creek/Oso Bay watershed

Next Steps

- Contract with CCS initiated
- Work order/plan established (Nov. 2004 – Aug. 2005)
- Tasks:
  - Project administration
  - Public participation
  - Sampling plan development
  - Quality management program
  - Microbiological analyses
  - Data collection and management
  - Model development
  - Report preparation

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