Friends of Spanaway Lake

Established 2017

FOSL

Public Discussion to begin discussion of A Lake Management District

Meeting Agenda

1. Identifying the Lake Problems [Eliz] / Brief Science Update [Sandy]
2. FOSL Actions to date [Ed]
3. Reasons for a Lake Management District (LMD) [Ed]
4. Timeline for LMD/ Other funding sources [Sandy]
5. Budget for LMD/ Estimated Costs [Sandy]
6. Frequently Asked Questions – the board

Spanaway Lake…our shared responsibility

Our Lake

The Reality of the Lake - Elizabeth

- Even though the lake appears to be clean & pristine most of the year, Spanaway Lake is in **TROUBLE!**
  - PHOSPHORUS OVERLOAD
  - TOXIC ALGAE (Cyanobacteria) =Hazardous Algal Blooms [HAB]
  - INVASIVE PLANTS
  - LOW OXYGEN

Toxic Algae

Toxic algae blooms are found throughout the lake

TOXIC ALGAE [CYANOBACTERIA] BLOOMS can look like pea soup as it floats on the water surface

Invasive Plant Growth- Increasing amounts of plants are growing from the bottom of our lake and reaching to the water's surface

Invasive Plants and Toxic Algae

So …. WHAT ARE THE BIGGEST PROBLEMS TO BE SOLVED?

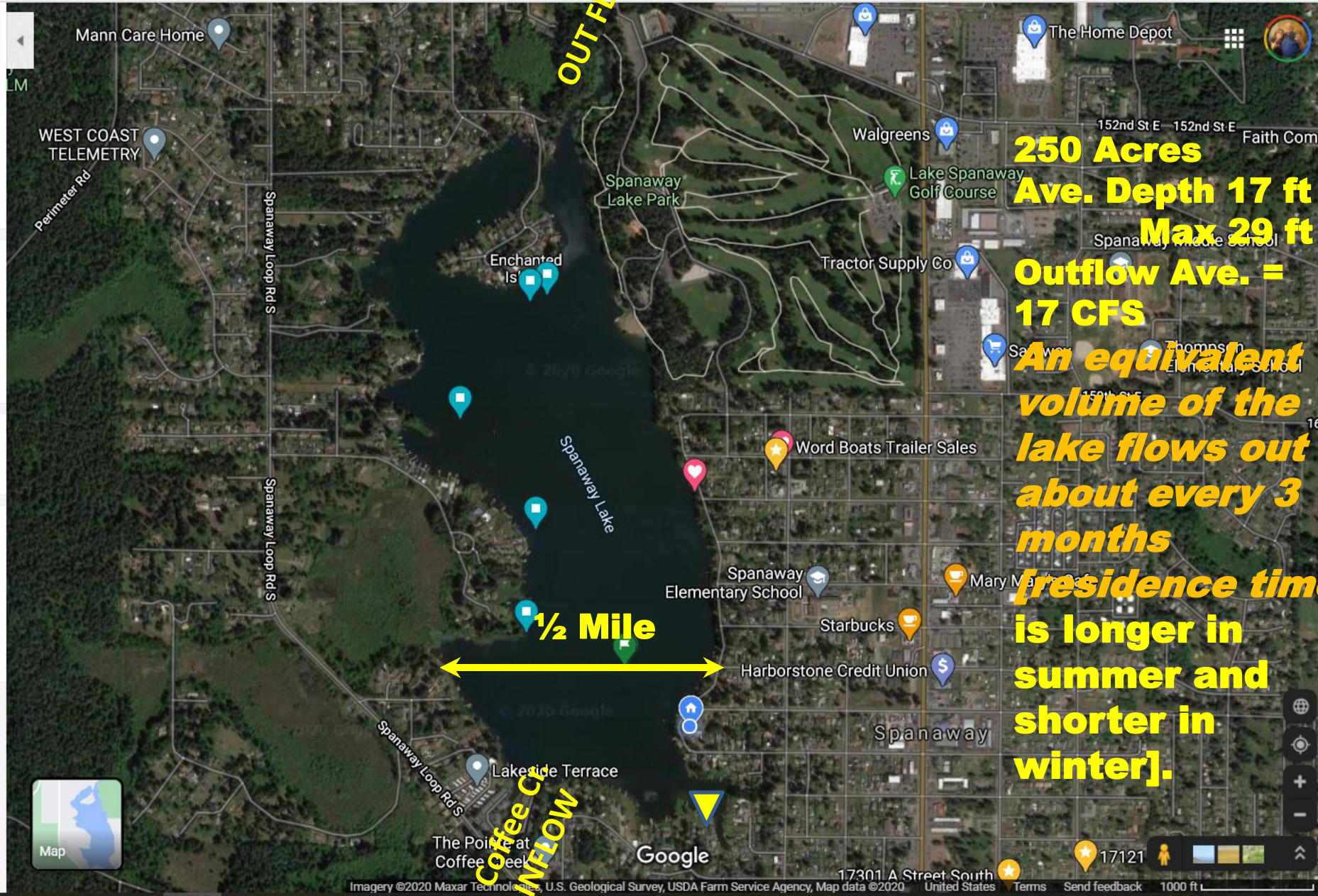
1. Toxic algae blooms
2. Nuisance aquatic plant growth
3. High Phosphorus causing 1 & 2

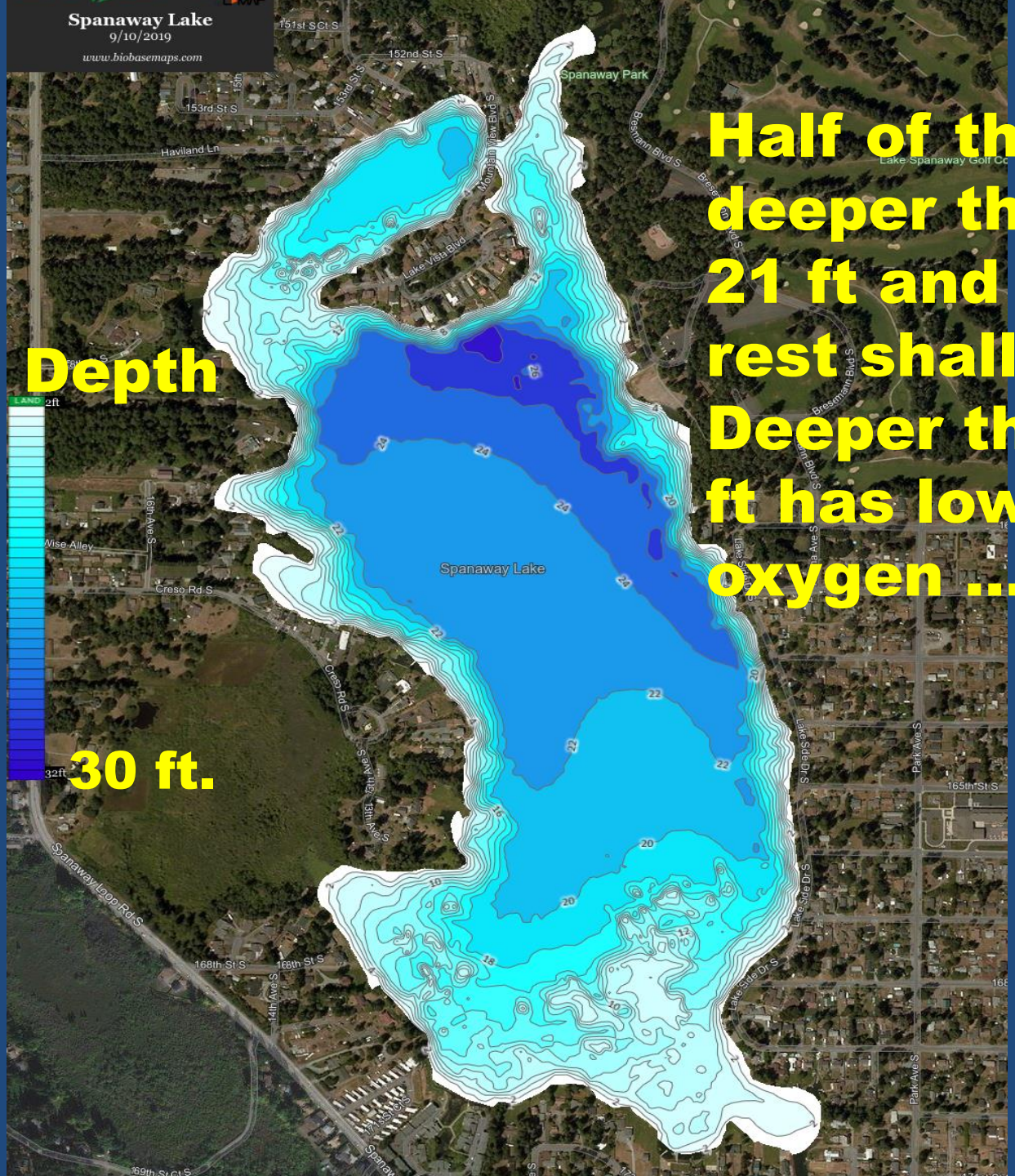
LAKE CLOSURE TO ALL USES 8-22 TO 11-5-19 & July 2020 plus looks worst Fall 2020

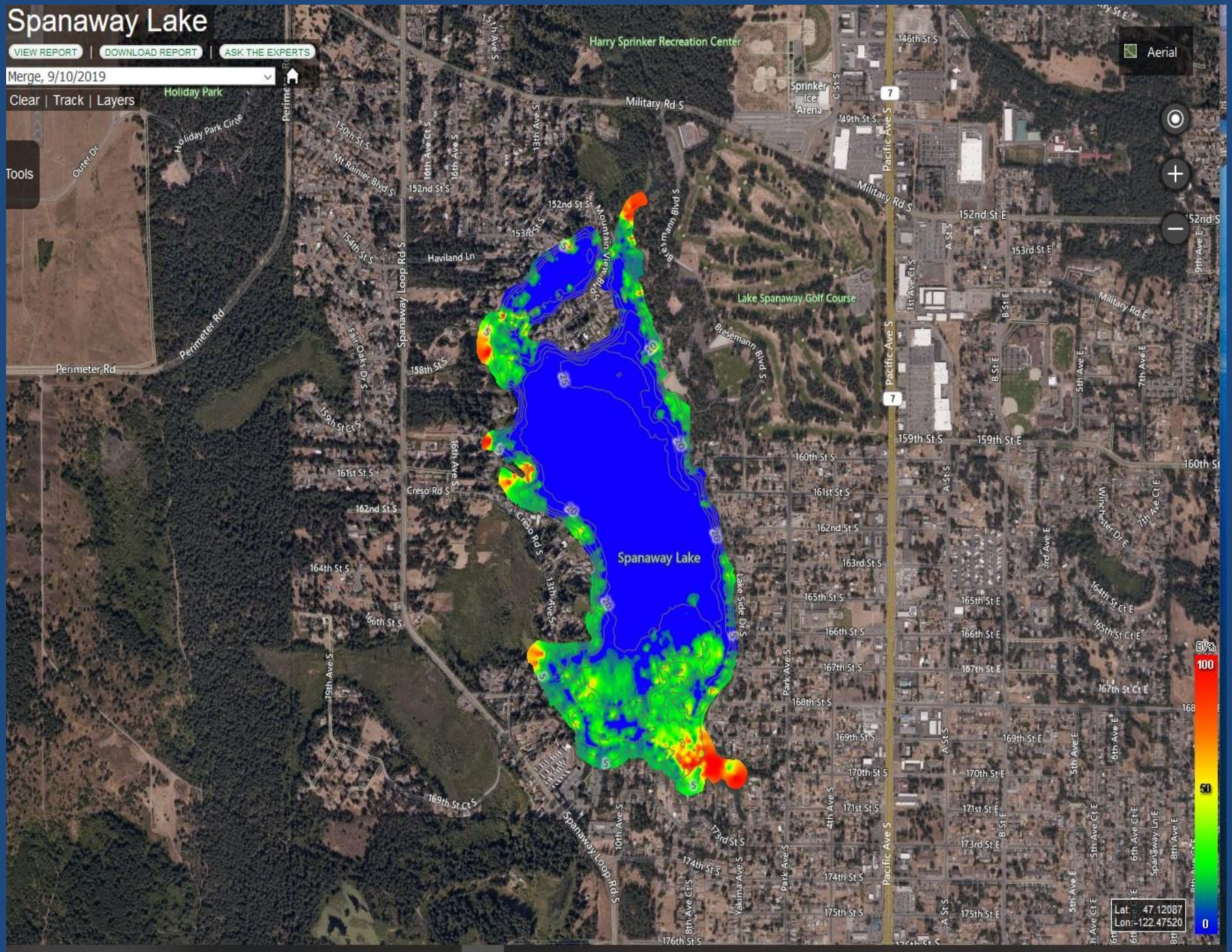
September Hydro races canceled.

Brief Science Update - Sandy

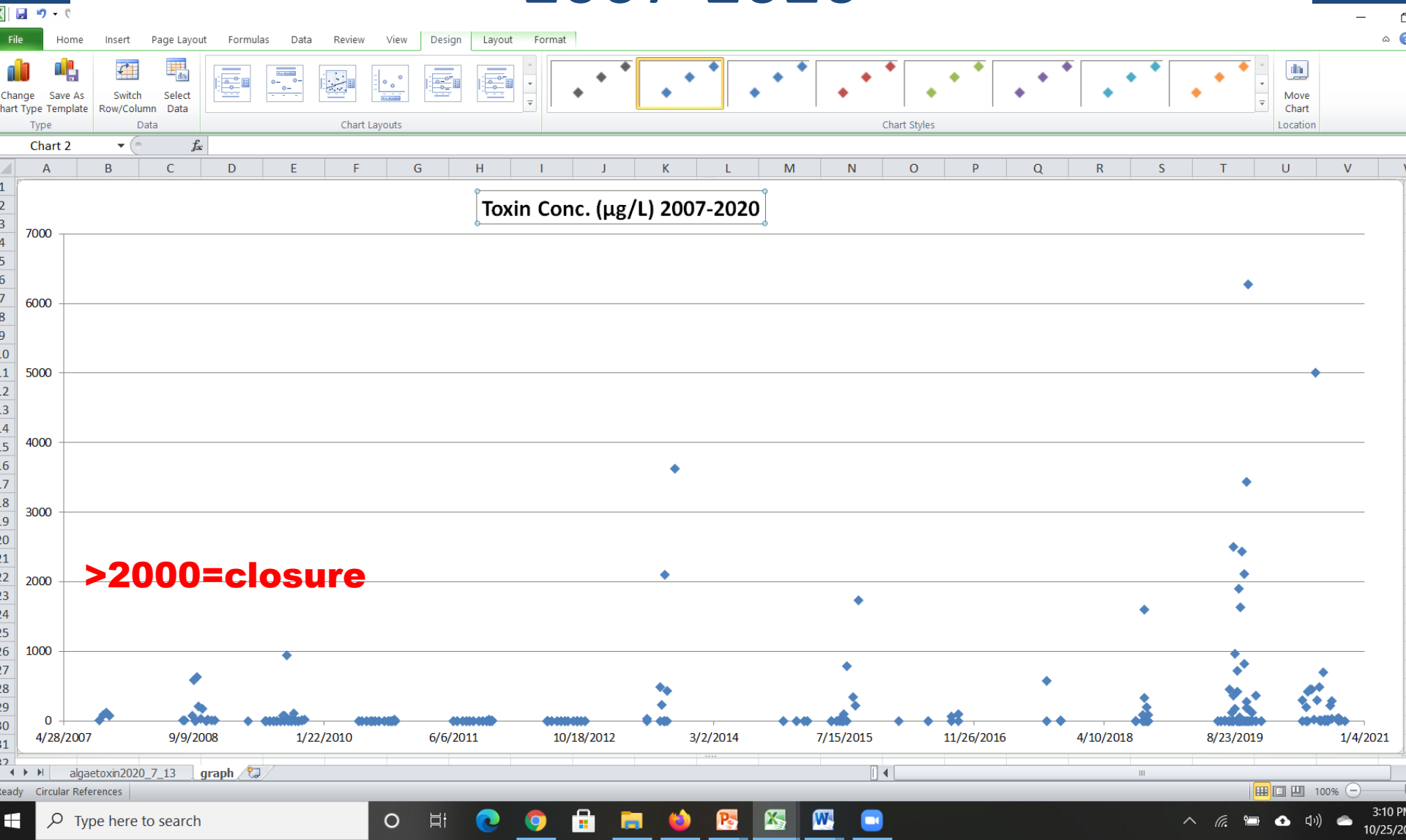
- Will cover parts of:
- Brown & Caldwell B & C] 2016 cost of $400K
- Jeff Tepper, Univ. of Puget Sound, working on Spanaway Lake over 10 years with different Students, including Jack Lindauer, joint article refuting part of
- Shuhui Dunn, Pierce Co. Scientist in Surface Water Management
- Sandy and other FOSL members research


OUT FLOW
Mann Care Home
The Home Depot
WEST COAST TELEMETRY
Walgreens
Lake Spanaway Golf Course
Spanaway Lake Park
Perimeter Rd
Spanaway Loop Rd S
Enchanted Is
Tractor Supply Co
Word Boats Trailer Sales
Spanaway Lake
Spanaway Elementary School
Starbucks
Harborstone Credit Union
½ Mile
Spanaway
Lakeside Terrace
Coffee Cr
INFLOW
Google
17121
250 Acres
Ave. Depth 17 ft
Max 29 ft
Outflow Ave. = 17 CFS
An equivalent volume of the lake flows out about every 3 months [residence time is longer in summer and shorter in winter].


Spanaway Lake
9/10/2019
www.biobasemaps.com
Depth
LAND
2ft
32ft
30 ft.
Half of the lake deeper than 15-21 ft and the rest shallower. Deeper than 15 ft has low oxygen … later
Spanaway Lake
Spanaway Park
Lake Spanaway Golf Co
151st St Ct S
152nd St S
153rd St S
Haviland Ln
Mountain View Blvd S
Lake Vista Blvd
Bresemann Blvd S
Wise Alley
16th Ave S
Creso Rd S
Lake Side Dr S
Park Ave S
165th St S
Spanaway Loop Rd S
168th St S
14th Ave S
13th Ave S


Spanaway Lake
VIEW REPORT
DOWNLOAD REPORT
ASK THE EXPERTS
Merge, 9/10/2019
Clear | Track | Layers
Tools
Aerial
Harry Sprinker Recreation Center
Sprinker Ice Arena
Holiday Park
Holiday Park Circle
Outer Dr
Perimeter Rd
Military Rd S
Pacific Ave S
Mt Rainier Blvd S
Spanaway Loop Rd S
Haviland Ln
Mountain View Blvd S
Bresemann Blvd S
Lake Spanaway Golf Course
Fair Oaks Dr S
Creso Rd S
Lake Side Dr S
Spanaway Lake
Military Rd E
Pacific Ave S
Lat: 47.12087
Lon: -122.47520
BV%
100
50
0

Toxic Algae Trends-Spanaway Lake 2007-2020



WHAT ARE THE CAUSES?

1. Phosphate [P] & Nitrate Pollution Of Groundwater Flowing In from 1000+ septics South & East of the lake
2. P Is The Controlling Nutrient for Algae And Plant Growth
3. The Buildup Of Phosphate Rich Sediment From Dead Plants On Its Once Gravel Lakebed

SOURCES OF SPANAWAY LAKE INFLOW – PER Brown & Caldwell, 2016

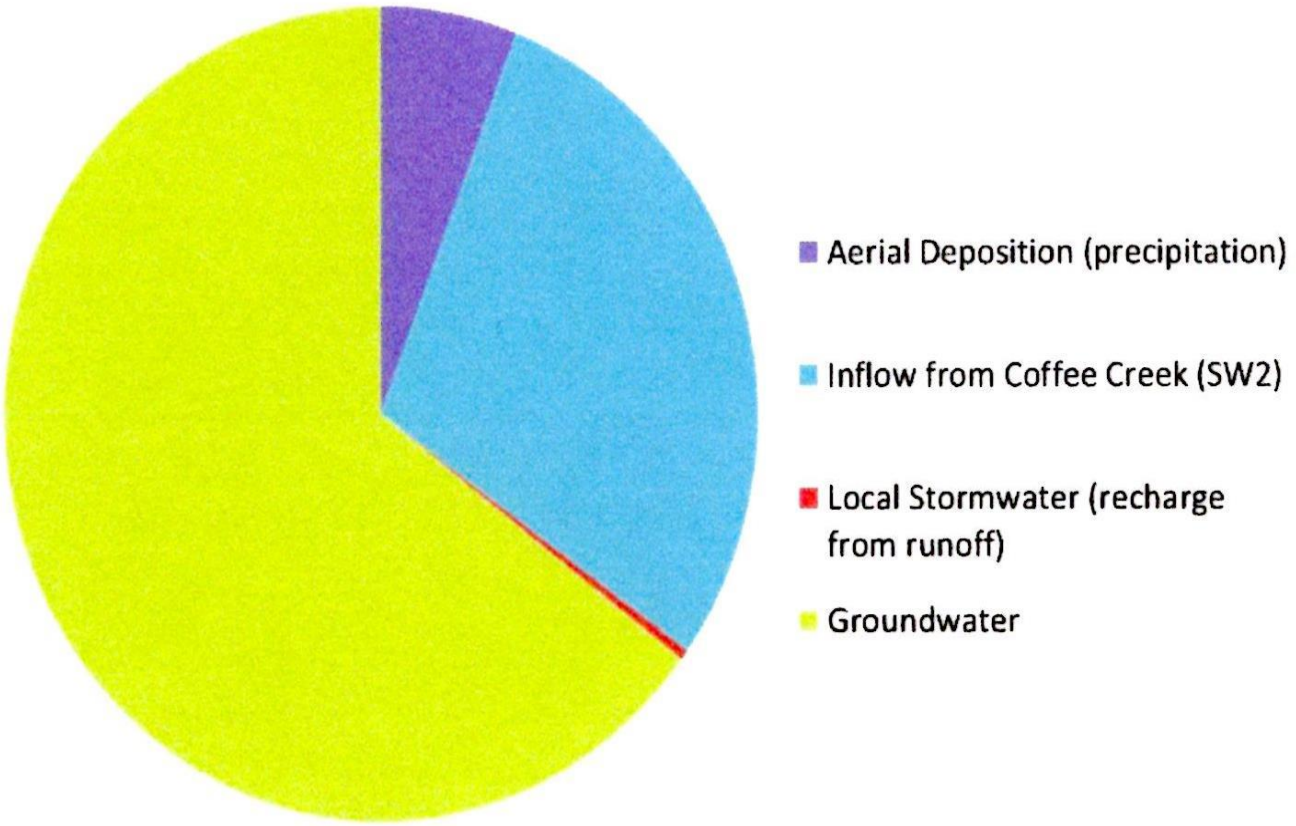


Figure 1. Distribution of inflow to Spanaway Lake

SOURCES OF Phosphate

1. Ground Water Inflow [from > 1000 Septics & Storm Flow Basins]
2. Release From Bed Sediments
3. Coffee Creek [with Iron that helps]
4. Aerial Deposition And Storm Water Tiny Amounts

Unusual things about Spanaway Lake

- The volume of surface flow in and out whereas many lakes in Pierce county have most or all inflow and outflow from and to ground water, except Steilacoom

- High inflow of Iron from Marshland on JBLM through “Coffee Creek” [for over 100 years] makes creek look cloudy and has limited effects of Phosphate from bottom sediments
- Most similar to Lake Steilacom, but not much like American, which is bigger, deeper and few septics.

IRON FROM “COFFEE” CREEK MARSH

Ground Water Flow Goes From SE To NW

1/3 Of The Drainage Basin [green] Is In Undeveloped Forested Parts Of Joint Base Lewis McCord

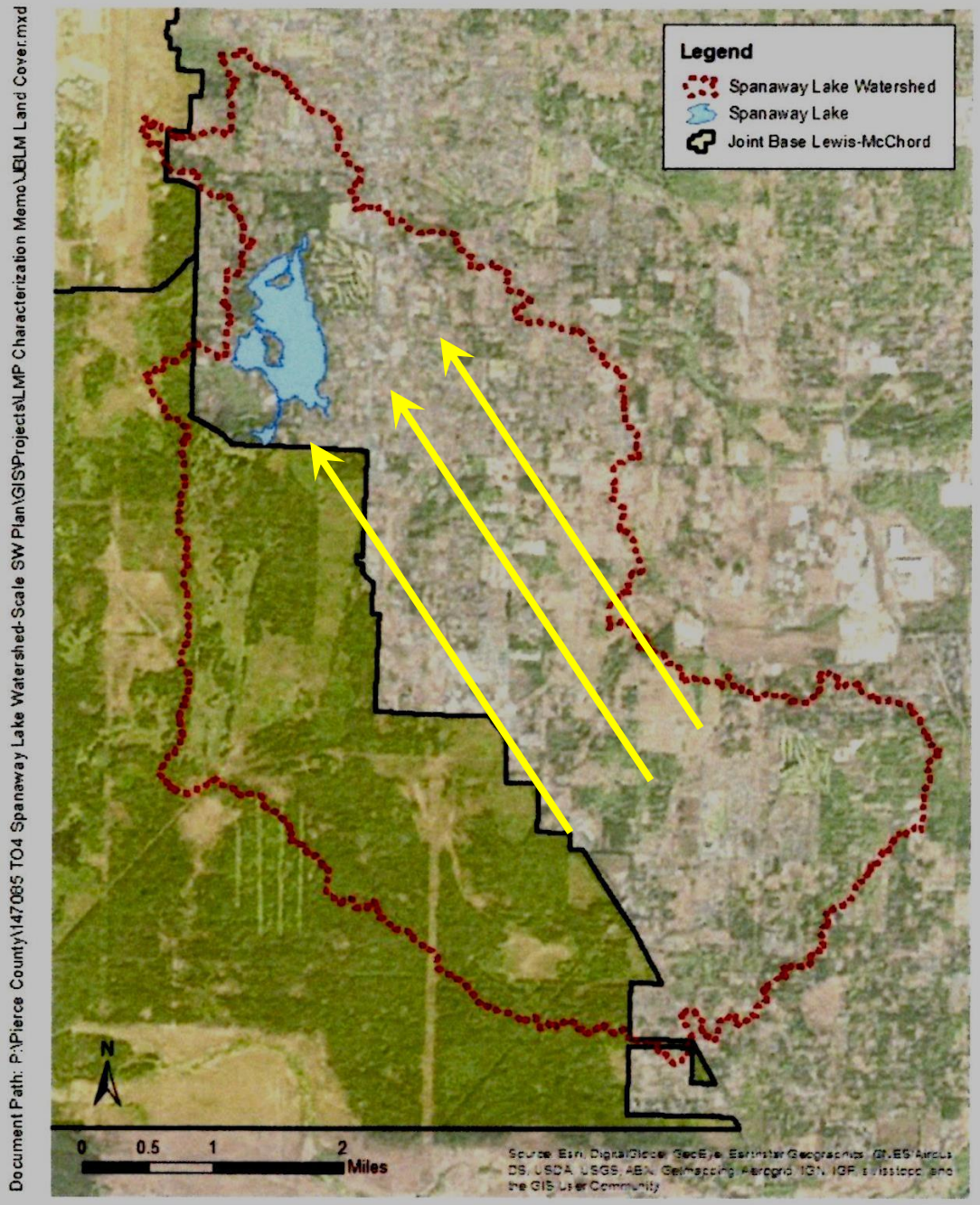
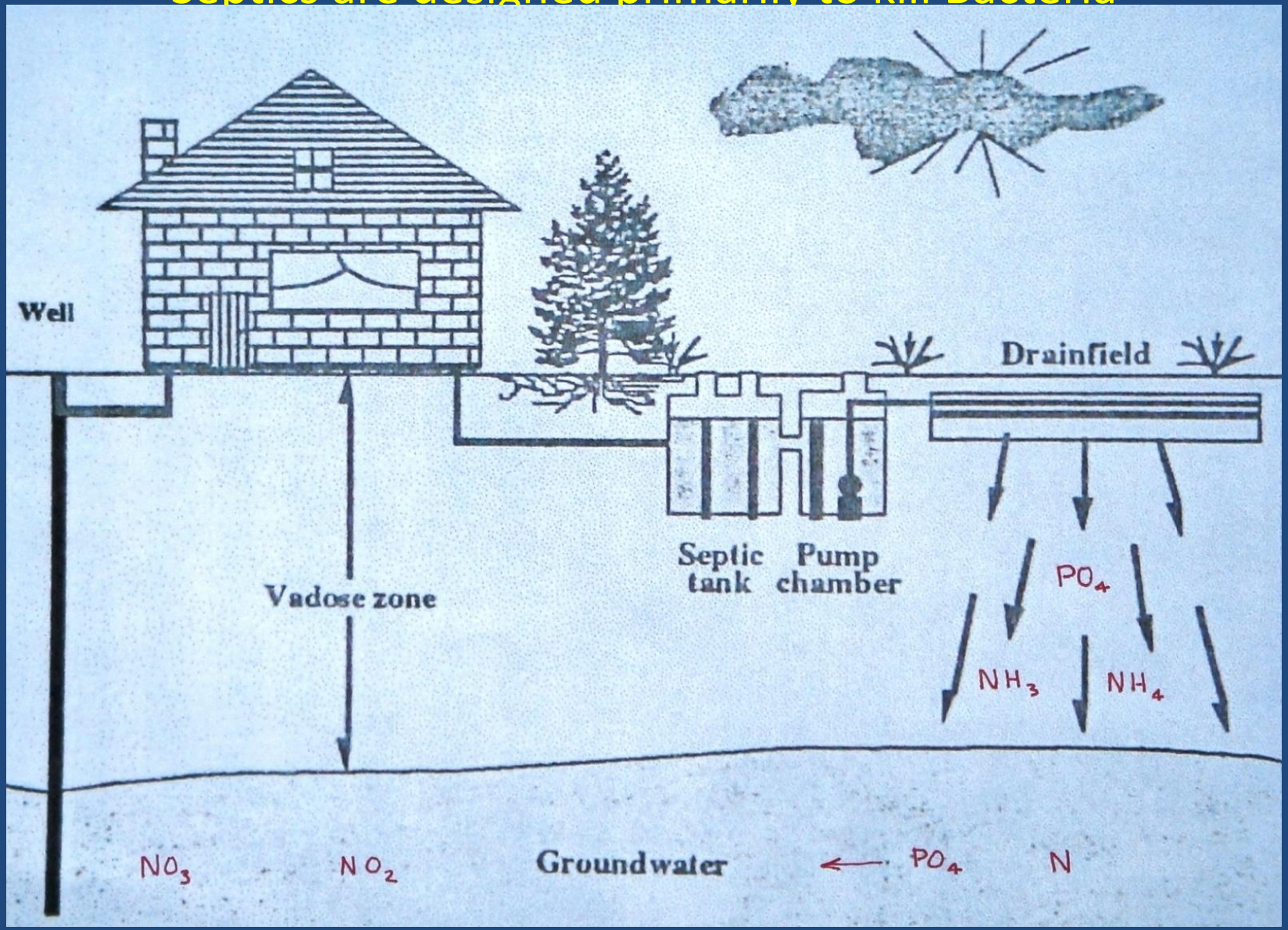


Figure 4. Satellite imagery of Spanaway Lake watershed

PRIMARY P & N from properly working septic tanks to GROUNDWATER FLOWING TO SPANAWAY LAKE

Septics are designed primarily to kill Bacteria



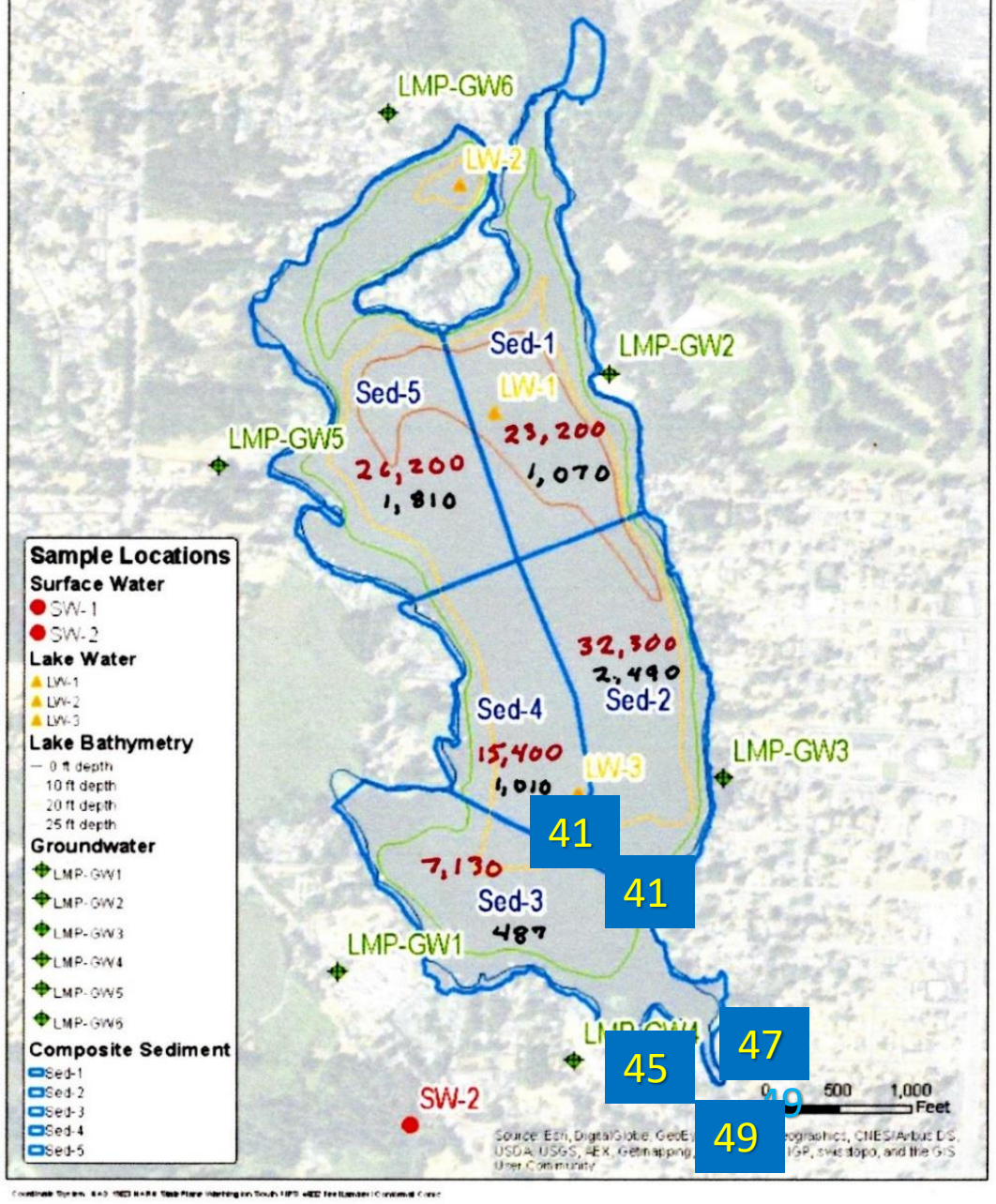


Figure 6. Spanaway LMP monitoring locations

Brown AND Caldwell

Brown & Caldwell study sampling sites – wells {GW} and streams {red-SW}

Temperatures measured 1-19-20 by Ed & Sandy: GW is 49-50 deg. ALL YEAR

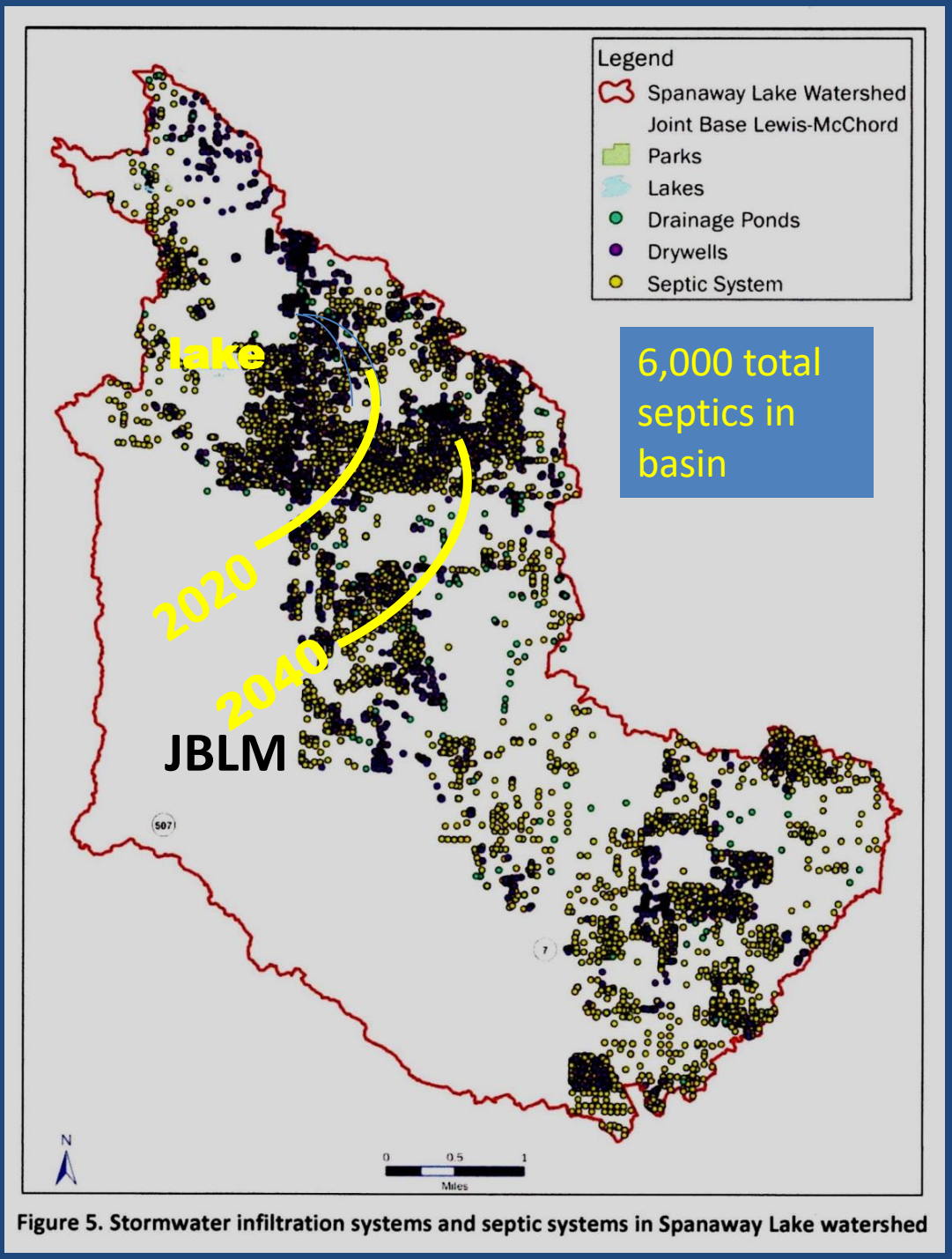
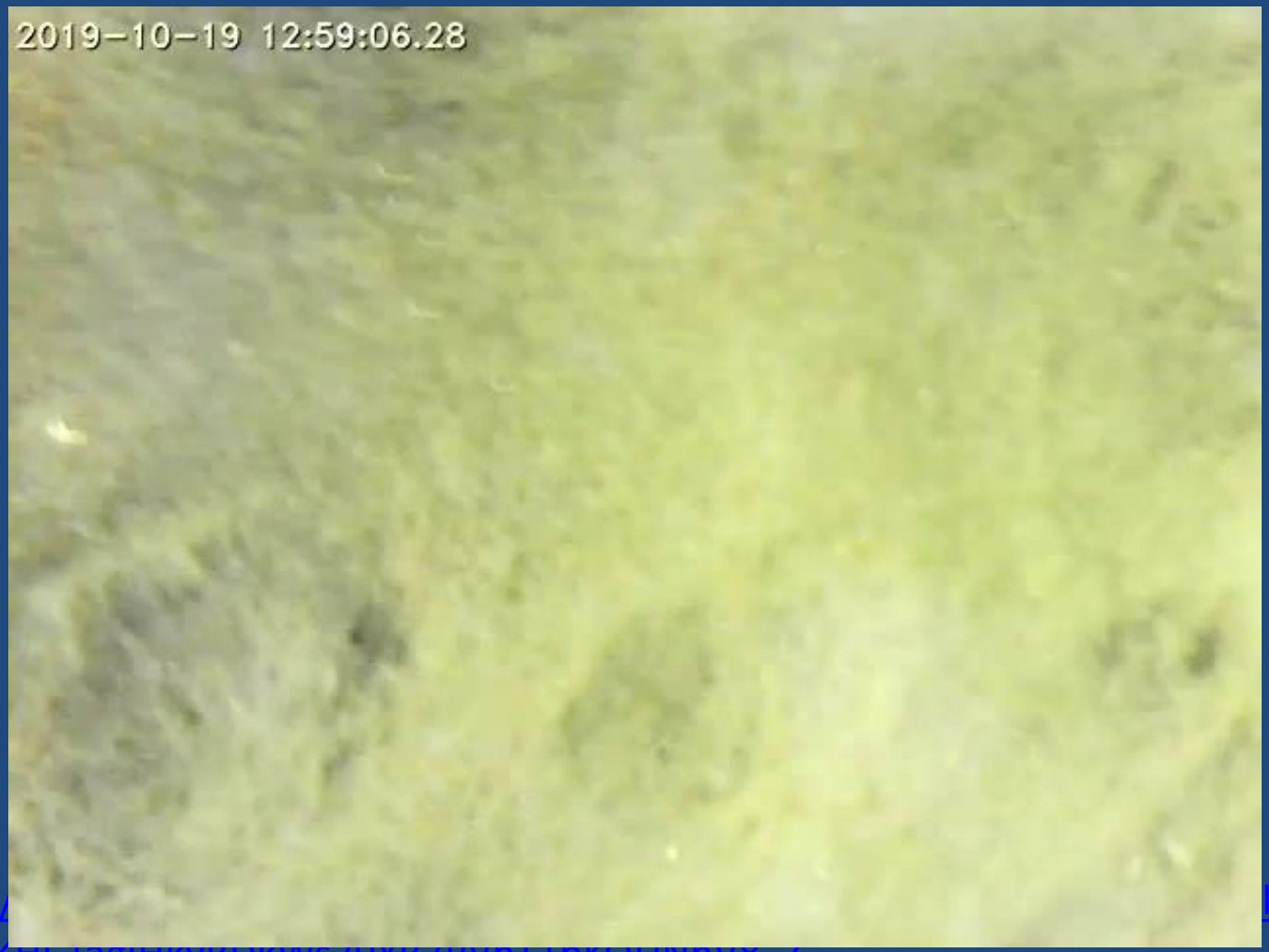


Figure 5. Stormwater infiltration systems and septic systems in Spanaway Lake watershed

About 1000-1500 Home Septic Tanks Flow Have Reached The Lake In The Last 40-50 Years And #s Will Increase More Rapidly Due To An Increasing Radius Of Properties Whose Septic Water Will Reach The Lake.

Only 160 Homes Are On The Lake

Spanaway Lake Ground Water Vent Sand Boil video



https://youtu.be/tWB9ekKa_ao

FOSL Mission Statement - Ed

- We are a non-profit (501C3) community organization of local citizens…property owners, park visitors, & interested parties dedicated to:
  - Preservation of water quality
  - Enhancement of fish & wildlife habitat
  - Protection from environmental hazards
  - Education, preservation & protection of property and property rights

  These objectives for the continued VITALITY of Spanaway Lake will be attained by a combination of citizen engagement & the support of local & state government & other appropriate agencies.

FOSL History & Status

- In 3 years, FOSL has received 7.5k in direct grants for operations and 16K in donations. FOSL has 15k left
- FOSL has spent about 17k of 25k state legislation appropriation on the Aquatic Plant Management Plan
- FOSL was to receive 150k apropriation from the State but COVID issues cancelled this $$ along with 150 others.
- Could not get fiscal agent partner to get $50k grant from Ecology
- A Lake Management District (LMD) would allow Increased opportunity for state and other grants in the future.
- Treatment costs are far above what resources FOSL has

Reasons for LMD 1

- Ability to obtain government funds and grants are greatly increased
- Funds obtained will go directly to LMD and be available as soon as they are received not filtered through a County agency
- Other lakes with LMD's have had good success in lake restoration
- Lakeshore owners retain local control and can choose the treatment options that are the most cost effective & environmentally safe

Reasons for LMD 2

- An LMD would give us more clout with state and local agencies and give us more power in negotiation
- Pierce County has been very good with talking to us and helping where they feel they can but is unwilling to devote any money or resources to our cause in our current 501C3 status

Reasons for LMD

1. Ability to obtain government funds and grants are greatly increased
2. Other lakes with LMD's have had good success in lake restoration
3. Additional public and private funding ?????

Timeline of the LMD - Sandy

1. Board approval and hiring of LMD experienced attorney Russell Knight of Smith-Alling and Informed Land Surveyor Co. Both can be paid for by existing grant.
2. Approval - Winter 2020 - 2021
3. Receive grants spring 2021 from Ecology and Pierce CD for treatment 2021-2022
4. Start taxes spring 2022
5. LMD funds available for treatment 2023, **nearly 3 years from NOW!**
6. LMD annually resets appropriate tax rate <=$8/ft

WHO May Be RESPONSIBLE FOR Correcting SPANAWAY LAKE'S NUTRIENT PROBLEM?

- Lake front owners? We benefit most [and were the 1st polluters, but now we are in the minority]
- Park users who would also benefit from better quality
- Septic System Owners? >1000 Septics caused most of the problem [only 160 lots on lake] & up to 5K more septics
- Pierce County Parks [owns 17% of shoreline & $revenue]
- WA Department Of Ecology – State Water Quality
- Tacoma Pierce County Health Department? Tasked with Control of Septics
- Pierce County Storm Water Management? Storm basins…
- WA Department Of Natural Resources? [Owner of lakes]

Budget for LMD / Treatment Options

Tools and their costs:

- Nuisance Invasive Plant Herbicide $32K [160 properties x $200]
- Algaecide Treatment $65-130K each time [quote from NW Aquatics - 1/2 Lake Steilacoom budget for this]
- Phoslock applied to strip P from water column, eg. Kitsap Lake $125K ea. time
- Iron applied to strip P from water column & sit on SE sides intercepting incoming GW $40-65k
- Mechanical removal of invasive plants--Harvester can ONLY do ½ acre per day with several dump trucks

Other sources of funds

- 150k from state budget thru Sen. Conway
- Boat trailer $3 fee from state to apply for up to $75k per 2 years for invasive plants 3:1
- Conservation District Green Grants applied for $25k + $10K this year
- State Dept. Ecology Algae control grant $50k Matched 3:1 important because FOSL donations are multiplied by 3
- Matching Funds Need LMD $
- Sponsor donations & Amazon Smile -- THANK YOU

Front Footage Assessment

1. Voluntary sponsorship and grants was Limited
2. Cost of treatment est. $100-200K to include:
    1. Aquatic Plant Control
    2. Phosphorus reduction / Algae treatment
3. Treatment cost per year ($200K) / Lake front footage (25K ft) = $4-8 per foot depends on grants.
4. County has 17% of lake frontage and will pay that share.
5. We have applied for grants etc. to reduce cost

Q & A session - FAQ

- How we are trying to get county to pay:
  - Frontage share plus
  - Add park user fees for treatment
- Why only lakefront owners in LMD
- Why so costly – see budget

Frequently Asked Questions (FAQ)-1

- Why only lakefront owners paying? Who else will pay?
  We all have a vested interest in the lake. We want to be able to use and enjoy it year round. We understand that our taxes are already high, but our property values could lower if the lake becomes worse.
  - ***We expect the county to contribute for the 17% of lake front they occupy at least at the same rate if not more because they are the only Lakefront owner making money on the lake. We are also asking them to collect more in park user fees to pay for treatment.***
- Who Controls the use of the taxes collected for what?
  Per state law, t**he funds could only be used for improving the lake. An advisory committee of lakefront owners would recommend to the county what the needs are and how to address them.**

Frequently Asked Questions (FAQ)-2

- Timeline for the LMD and its annual taxation ?***Even if we set up the LMD up now the first tax would not be assessed until Spring of 2022 and funds would not be released for treatment until 2023.***

- Sunset or Re-authorization of the LMD in 5-10 years?
  It m***ay take time to see results… The 1st impact may be only to freeze the growth of the problems, rather than seeing a dramatic and consistent decrease. Weather factors could affect the results as well, so it is advisable to implement the LMD for a minimum of 5 years, American Lake picked 10. The amount assessed will be revisited yearly and adjusted down when it can be either through other sources of funds or more efficient control of water quality***

The End

FOSL =Friends of SpanawayLake.org

FriendsofSpanawayLake@gmail.com

253-218-1242

Facebook.com/SpanawayLake