2018 SWQC REPORT DPA Spring Meeting

Mike Lowery, SWQC
April 29, 2018

Where are we in the TIME LINE?
2nd season after 2016 herbicide treatment.

- WE HAVE NOT SURVEYED YET, but…

- We've seen usual spring algae in places.
- We expect more hand pulling will be needed.
- We expect tapegrass to re-emerge.

Perhaps the swans will keep the geese away?

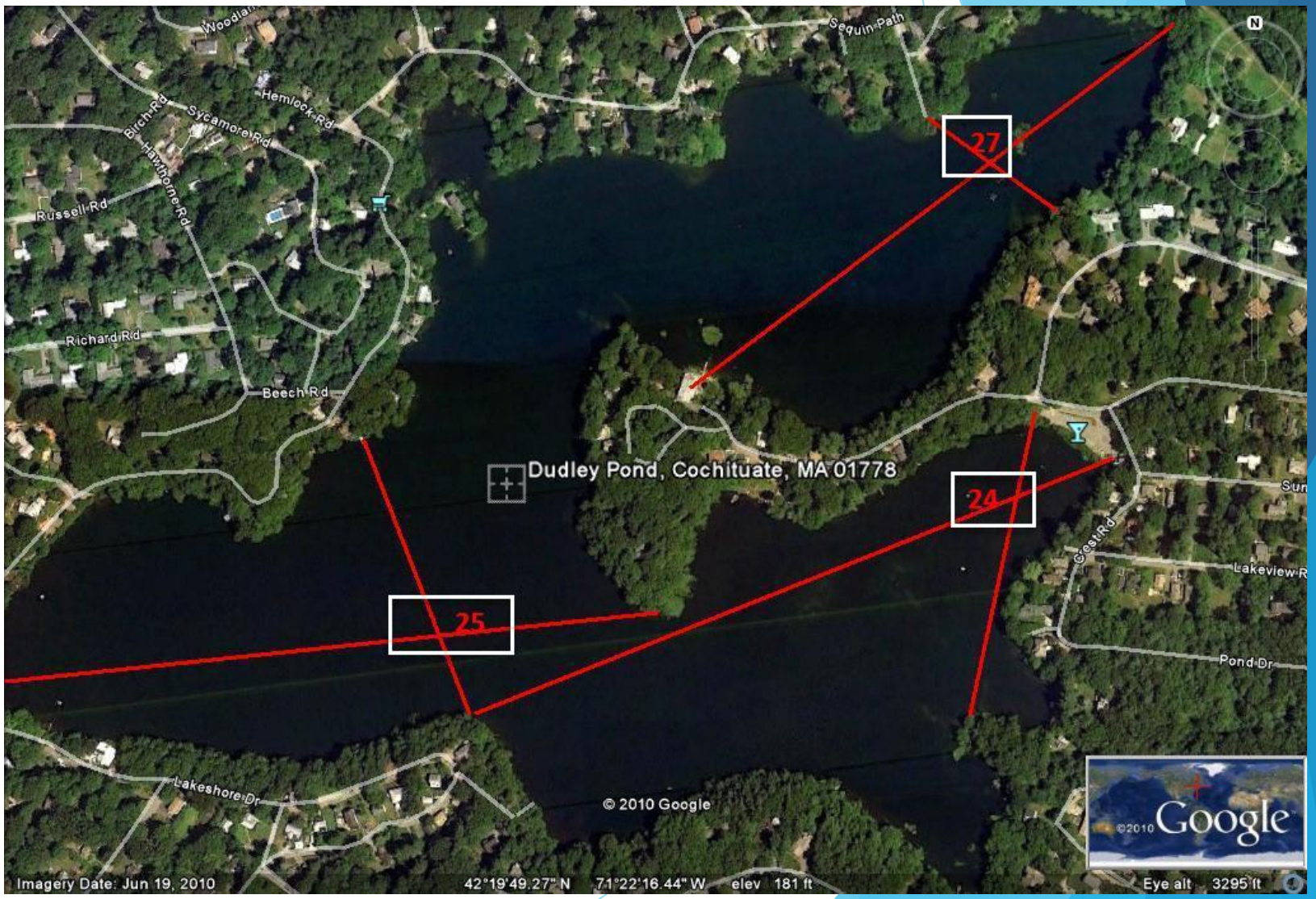
Good news from the Spring SWQC Dudley Pond Water Quality Sampling

- For the last 8 years, SWQC has done water quality sampling and analysis:
  - THREE PLACES
  - THREE DEPTHS
  - THREE TIMES/YEAR – Early Spring, Midsummer, Late Fall
  - Chemistry data from samples taken to an analytical lab and Physical data from our YSI multi-meter
  - Data are combined to give an overall measure of lake health: "Carlson Trophic State Index" - a measure of lake eutrophication
  - This spring the pond had the best 'TSI' in the last eight years!

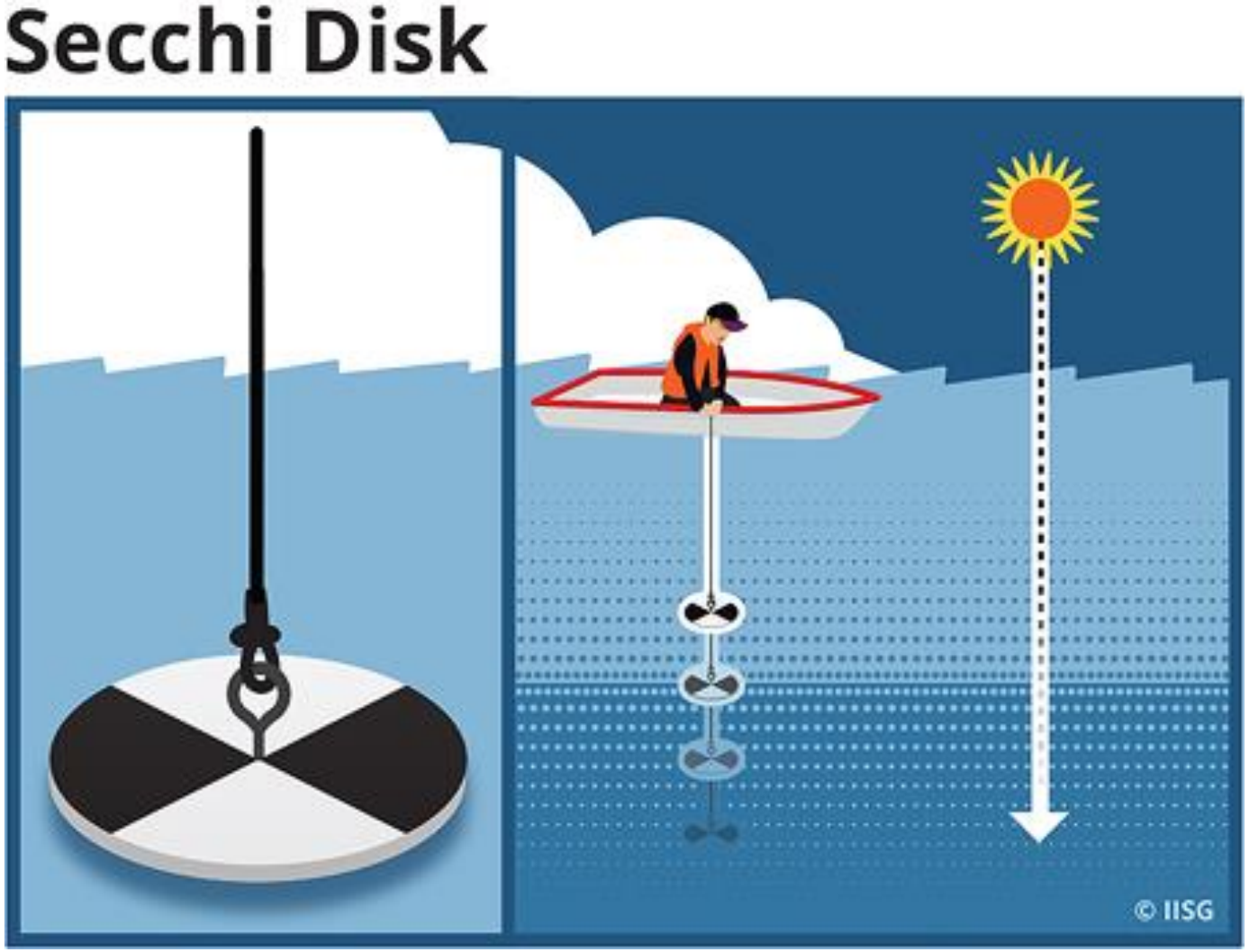
Today- more about SWQC sampling. Where does TONI MOORES take samples?

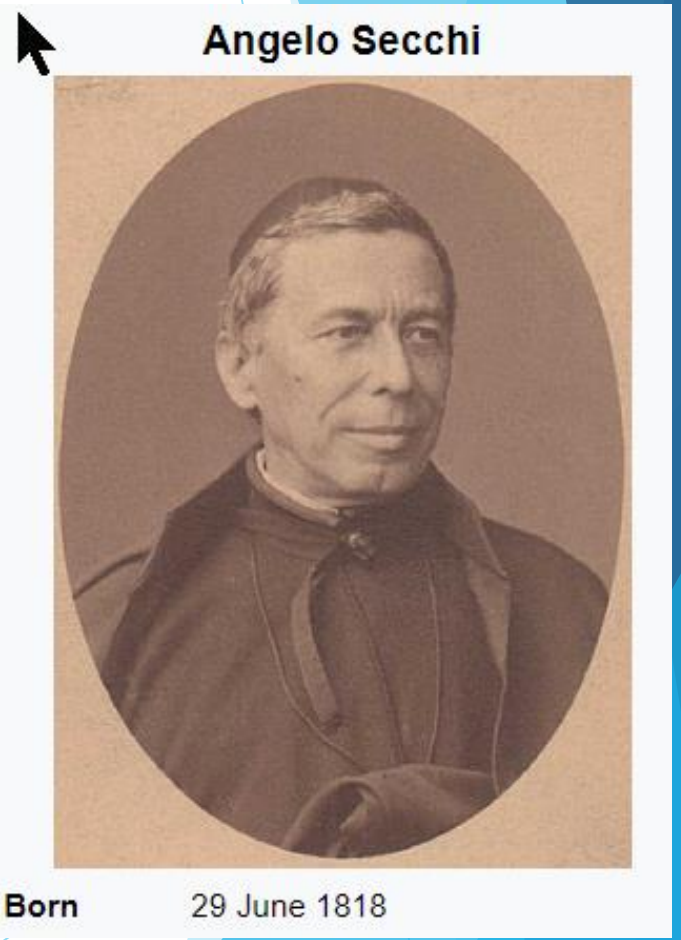
THREE SPOTS
24. Chateau
25. Deep Hole
27. Outlet

THREE DEPTHS
1 ft down
the middle
1 from bottom

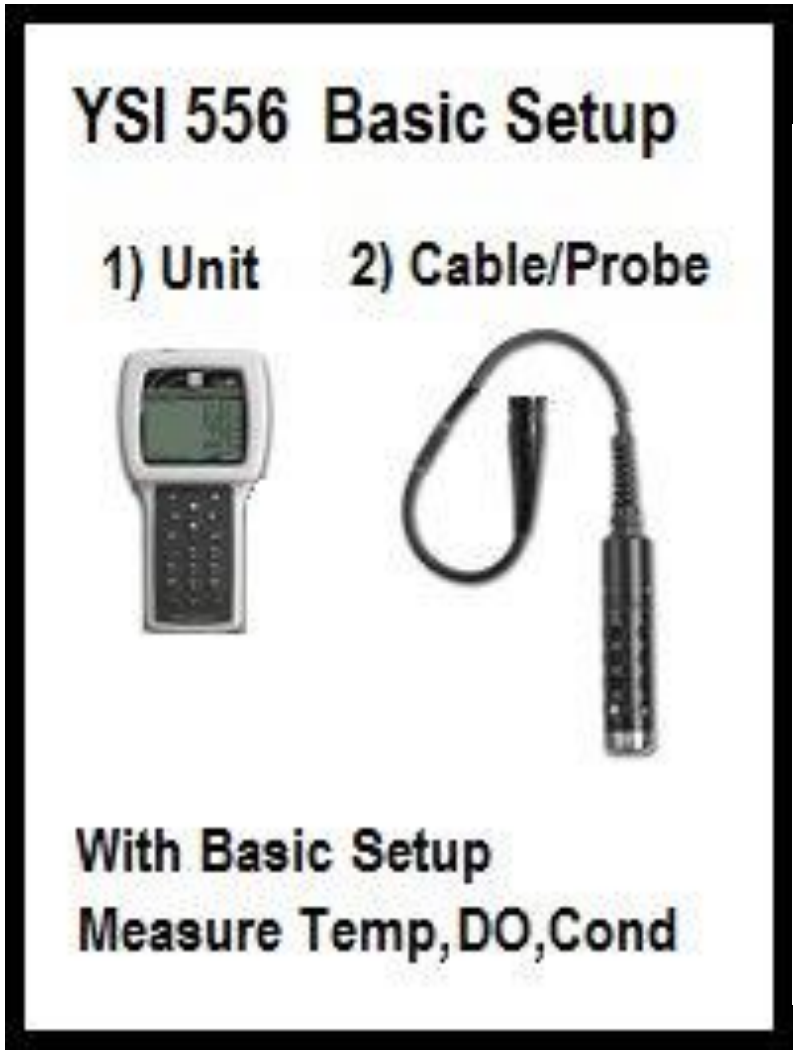


How LOW can you GO? - the **Secchi Disk** – measures CLARITY



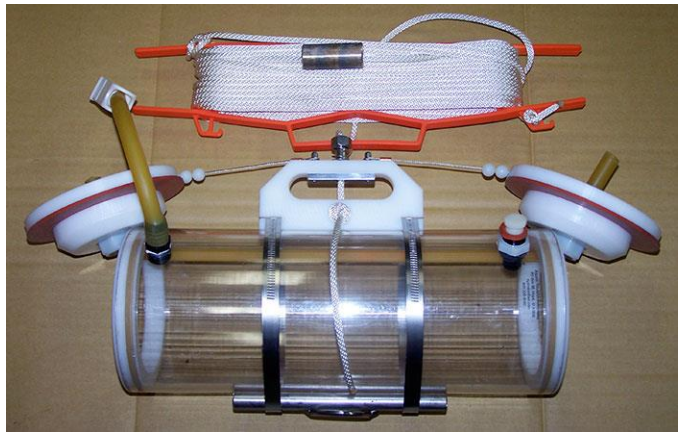


YSI 556 meter – Water's Physical Characteristics



Date
Time
Weather
Barometric Pressure
Location
Depth
pH
ORP
Dissolved Oxygen
Dissolved Oxygen %
Saturation
Temperature

Toni takes 3 Samples, 3 depths - using water sampler, transfer to glass bottles, some with reagent



Wide Mouth, Round, Sampling, 500mL, 12 PK

Item # **41U269** Mfr. Model # **GLC-02149** Catalog Page # **N/A** UNSPSC # **24122003**

3 places
3 depths
= 9 Bottles

Nashoba Analytical, LLC

Serving your water analysis needs.

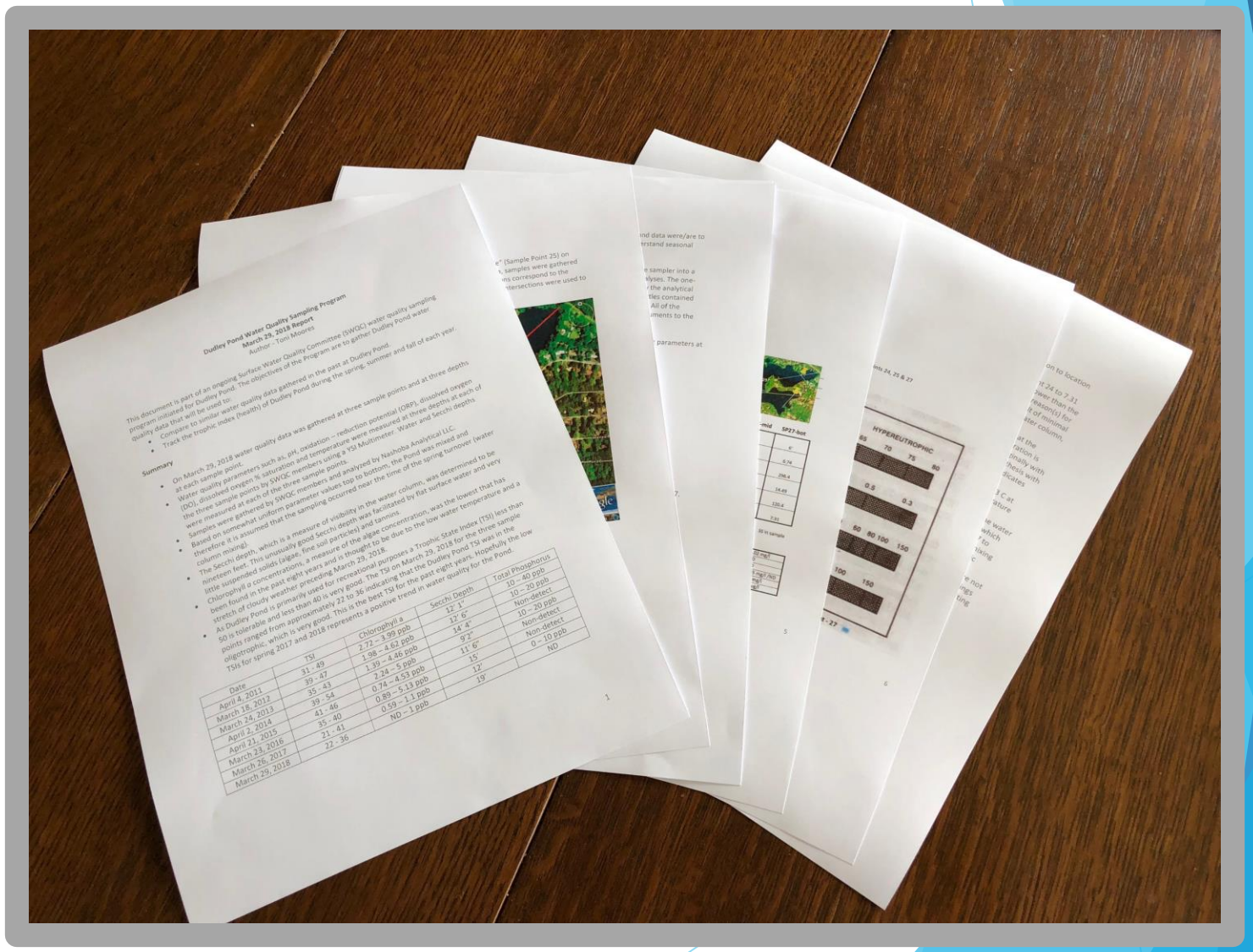
Drives samples to Ayer → for chemical analysis

Total Phosphorus, ppm (as P) (Soluble + Insoluble) (ppm = mg/l)
Orthophosphate, ppm (as P) (Soluble)
Ammonia, ppm (as N)
Nitrate/Nitrite, ppm (as N)
Total Kjeldahl Nitrogen (TKN), ppm (as N)
Chlorophyll *a,* ug/l (ppb)

After the results come back

Toni writes an 8pp analysis.

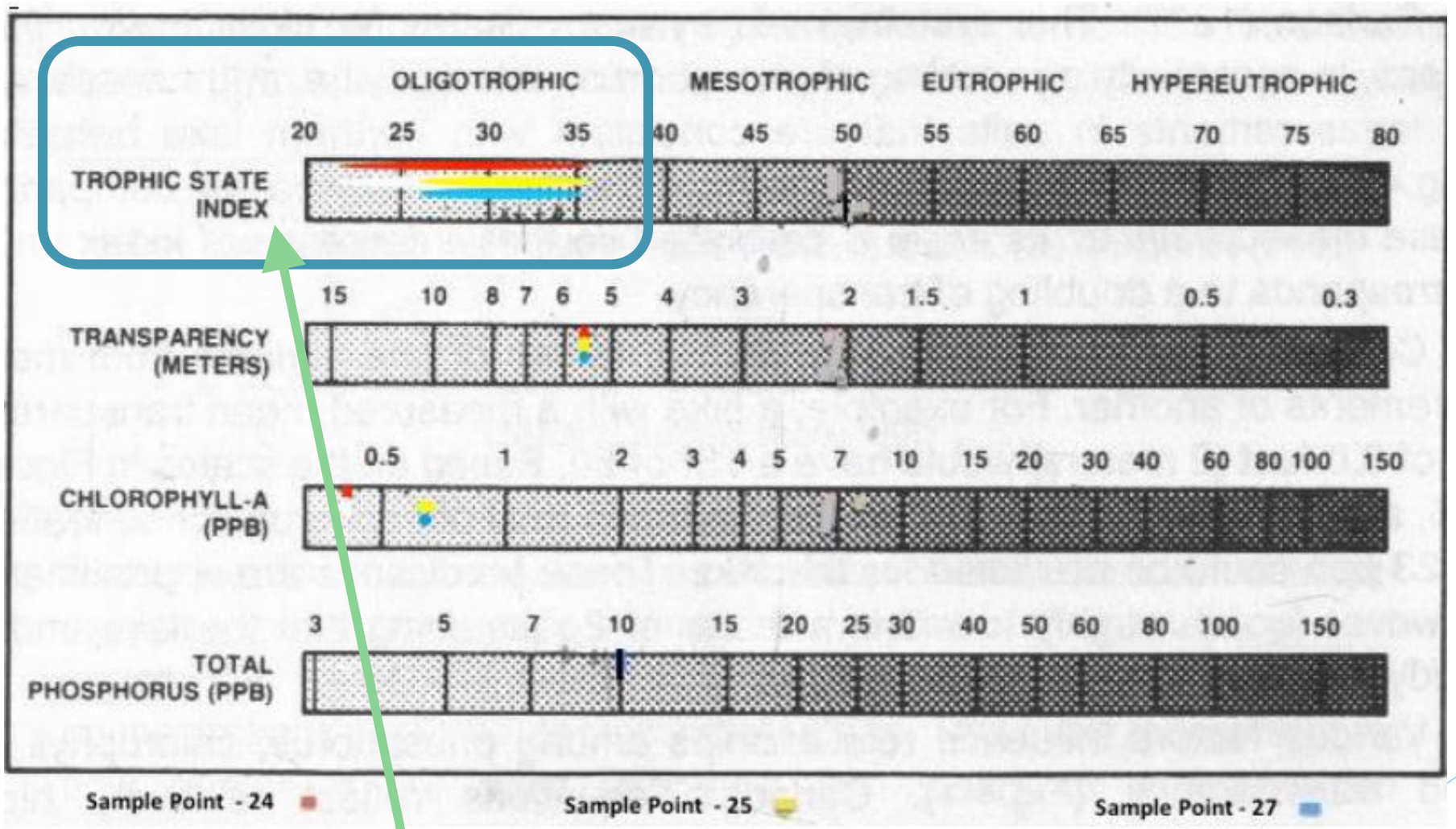
3x yearly and a year-end summary



GOOD NEWS:
Best Springtime Data in 8-year history!

Date	TSI	Chlorophyll a	Secchi Depth	Total Phosphorus
April 4, 2011	31 - 49	2.72 – 3.99 ppb	12' 1"	10 – 40 ppb
March 18, 2012	39 - 47	1.98 – 4.62 ppb	12' 6"	10 – 20 ppb
March 24, 2013	35 - 43	1.39 – 4.46 ppb	14' 4"	Non-detect
April 2, 2014	39 - 54	2.24 – 5 ppb	9'2"	10 – 20 ppb
April 21, 2015	41 - 46	0.74 – 4.53 ppb	11' 6"	Non-detect
March 23, 2016	35 - 40	0.89 – 5.13 ppb	15'	Non-detect
March 26, 2017	21 - 41	0.59 – 1.1 ppb	12'	0 – 10 ppb
March 29, 2018	22 - 36	ND – 1 ppb	19'	ND

Carlson Trophic State - combines measures:
Phosphorus, Chlorophyll a, and Secchi clarity



As good as it gets!

Why is this report important?

- You can't improve what you don't measure
- Conservation Commission takes us seriously
- We can compare ourselves to other ponds (DCR doesn't have data this good on Lake Cochituate)
- This type of data helps Wayland with new storm-water permitting requirements
- Its just nice to know our pond is healthy!
  Less plant food for invasives.

How did it get better?

- New Construction = New Septic Systems
- State legislation removing phosphorus from fertilizer, & household products.
- Enforcement of Septic System regulations
  (Hats off to Susan Green – BoH!)
- Public Awareness

*What will help **keep** Dudley Pond in good shape?*

- Better monitoring of N & P inputs from stormwater – Knowing & measure volume and chemistry from our outfalls
  - Coming in MS4 permitting
- Periodic required septic system inspections based on distance to the pond.
- Regular pump-outs of our septic systems – avoids nasty and costly surprises.
- Educating newcomers in pond-healthy practices.


Shelia Carel
03/26/2018