Municipality/Organization: **Town of Sandown**

EPA NPDES Permit Number: **NHR041032**

MaDEP Transmittal Number: **W-**

Annual Report Number & Reporting Period: **No. 1: March 2017-March 2018**

NPDES PII Small MS4 General Permit Annual Report

Part I. General Information

Contact Person: Arthur Genualdo Title: DPW Director

Telephone #: (603) 887-3484 Email: Townofsandown@sandown.us

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Arthur Genualdo/ps

Printed Name: Arthur Genualdo

Title: Public Works Director

Date: 5-1-18

Part II. Self-Assessment

The Town of Sandown, NH has completed the self assessment and determined that our municipality is in compliance with all permit conditions except the following provisions:

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
PE-1	Public Awareness – Video	Health Officer/ Ed Mencis	12 showings/yr	2 Video's – After the Storm and In Small Doses – Arsenic are on town website and available to public at any time	2 Video's – After the Storm and In Small Does – Arsenic are on town website and available to public at any time. Log for showings on Cable TV attached.
Revised					
PE-2	Educational Flyer	DPW Director/ Arthur Genualdo	# Flyers Distributed (2600/yr)	Keep Gasoline from your Drinking Water and When it Rains flyers distributed to residents by transfer station attendants. Copies attached.	Dog Waste & Surface Water Quality Flyers distributed to residents by transfer station attendants. Copies attached.
Revised					
PE-3	Web Page Linked to Main Page	Town Administrator/ Lynne Blaisdell	10% of main page visitors	Continue to update website with Angle Pond, Seeley Beach/Philips Pond water sampling information. Reports attached.	Continue to update website with Angle Pond, Seeley Beach/Philips Pond water sampling information. Seeley Beach Reports attached
Revised					
PE-4	Town Library Information Kiosk	Selectman Jon Goldman	1 project/yr	Sample flyers on display at the Sandown Public Library	Sample flyers on display at the Sandown Public Library.
Revised					
Revised					
Revised					

1a. Additions

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
PP-1	Town Board Coordination	Selectman Jon Goldman	# Participants/ # Meetings	Preparation for new permit – information relayed to key department heads Conservation Commission works with the Planning Board to enforce the erosion control ordinance	Grant received with RPC – Stormwater Team members met with Julie Labranche to prep for new permit. (Selectman, Town Admin, Office Asst., Public Words Director, Health Officer, Planning Board Chair, Cons Com Admin Aide)
Revised					
PP-2	Town Deliberative Session	DPW Director/ Arthur Genualdo	Discuss & Pass Warrant Article	Voters added funds to existing Bridge Capital Reserve Fund Fremont Rd Bridge is scheduled for repairs in 2017 to correct scouring issue	Voters rejected creation of a stormwater mgt capital reserve fund for $10,000. Voters rejected additional money to be added to the Bridge Capital Reserve fund. However, Fremont Rd Bridge removed from State 'red list'. Voters approved of new compactors for transfer station – more capacity.
Revised			Costs allocated via the yearly budget		
PP-3	Coordinate w/State Hwy Dept.	DPW Director/ Arthur Genualdo	# Participants/ # Meetings	Paving of Fremont Road to intersection of Rte 121A with coordination on resolving drainage issue	No projects this term with the State
Revised			Routine meetings		
PP-4	Coordinate w/Adjacent Towns	DPW Director/ Arthur Genualdo		Nothing this year with adjacent towns	Nothing this year with adjacent towns
Revised					
PP-5	Waste Oil Disposal	DPW Director/ Arthur Genualdo	Annual Volume – 5%/yr. incr.	Continued use of waste oil heater Continue to collect used waste oil	Continued use of waste oil heater Continue to collect used waste oil
Revised					

Revised					

2a. Additions

PP-6	Exotic Species Program	Selectman Jon Goldman	# Participants/ # Monitorings Control of Fanwort and milfoil at Phillips Pond	**Progress on Goal(s) Permit Year 15** Phillips Pond Lake Association continue monthly testing. Installation of a 'beaver deceiver" in an outlet under the recreational trail	**Enter any revised info here** Voters passed warrant article $44,000 for treatment of Phillips Pond invasive weeds
PP-7	Local Water Quality Monitoring for Showell Pond and Phillips Pond	Selectman Jon Goldman	# Participants to monitor pond's cyanobacteria levels # months of absence of Blooms at Showell Pond & Phillips Pond	Current Phillips Pond Association water quality report attached.	Current Phillips Pond water quality report attached

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
ID-1	Update MS4 Plan	DPW Director/ Arthur Genualdo	Confirm Outfalls/ Update plan	All catch basins cleaned at the end of March and will receive updated GPS information from new subdivisions in 2016	All catch basins cleaned as of April and will receive updated info for 2017 data 4 catch basins repaired 1 culvert added to Depot Road
Revised					
ID-2	Identify Illicit Connections/Discharge	DPW Director/Arthur Genualdo Health Officer /Ed Mencis	# inspections & repairs/ yr	No illicit connections or discharges found during 2016	No illicit connections or discharges found during 2017
Revised					
ID-3	Failing Septic Systems	Health Officer/ Ed Mencis	# inspections & repairs/yr	8 failed systems recorded in 2016 Continued inspection of all repairs and replacements	12 failed system recorded in 2017 Continued inspection of all repairs and replacements
Revised					
ID-4	Illegal Dumping	DPW Director/ Arthur Genualdo	# Dumps reported & cleaned	5 violations of illegal dumping – Police investigations and fines if proven	6 violations of illegal dumping – 1 resulted in community service and fines for others if proven
Revised					
ID-5	Community Outreach	DPW Director/ Arthur Genualdo	# pamphlets distributed	Continue to provide brochures at Town Hall and Town Library on what homeowners can do to mitigate stormwater damage.	Continue to provide brochures at Town Hall and Town Library on what homeowners can do to mitigate stormwater damage.
Revised					
Revised					

3a. Additions

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 15 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
CS-1	Sediment Control	Conservation Comm/ Paul Carey	# Sites/Methods implemented	Conservation Commission works with the Planning Board to enforce the erosion control ordinance	Conservation Commission works with the Planning Board to enforce the erosion control ordinance
Revised					
CS-2	Erosion Control	Conservation Comm/ Paul Carey	# Sites/Methods implemented	Conservation Commission works with the Planning Board to enforce the erosion control ordinance	Conservation Commission works with the Planning Board to enforce the erosion control ordinance
Revised					
CS-3	SWPP Review		# Plans Reviewed	Town still requires submission of SWPP at preconstruction conference, together with proof of notice of intent filing	Town still requires submission of SWPP at preconstruction conference, together with proof of notice of intent filing
Revised		Planning Board/Ernie Brown	One		
CS-4	Construction Runoff Regs for Runoff Control		Subdivision Regulations Updated	No new actions were taken in 2016	No new actions taken in 2017 See section PC-1
Revised		Planning Board/Ernie Brown			
Revised					

Revised					

4a. Additions

5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Enter any revised info here
PC-1	Runoff Control in Site Plan Regs.		Annual Review/Reduction in loopholes	Working with Rockingham Planning Commission /management to implement stormwater into site plan regulations	Worked with Rockingham Planning Commission and stormwater regulations adopted 10/1717 into site plan regulations
Revised		Planning Board/Ernie Brown			
PC-2	Buffer Zone	Conservation Commission/ Paul Carey	Establish new BMPs	No new actions taken in 2016	No new actions taken in 2017
Revised					
PC-3	Inspection Program in Site Plan		# inspections/problems fixed	The Planning Board is working with the town's building inspector and health officer to enforce the erosion control ordinance.	The Planning Board continues to work with the town's building inspector and health officer to enforce the erosion control ordinance.
Revised		Planning Board/Ernie Brown			
PC-4	Catch Basins	DPW Director/ Arthur Genualdo	Inventory & clean out Basins	All catch basins cleaned, 100% tracking and identification with GPS	All catch basins cleaned, 100% tracking and identification with GPS
Revised					

Revised					
Revised					

5a. Additions

6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	**BMP Description**	**Responsible Dept./Person Name**	**Measurable Goal(s)**	**Progress on Goal(s) – Permit Year 15** (Reliance on non-municipal partners indicated, if any)	**Enter any revised info here**
MG-1	Road Salt Reduction	DPW Director/ Arthur Genualdo	Total Salt volume/yr	Continued use of molasses as an additive to reduce salt & sand amounts during plowing	Continued use of molasses as an additive to reduce salt & sand amounts during plowing
Revised					
MG-2	Spill Control & Reduction	Fire Dept/ Chief Wilfred Tapley	# Vehicle & non-vehicle releases	Continue to review procedures for spill control & reduction; update if necessary	Continue to review procedures for spill control & reduction; update if necessary
Revised					
MG-3	Fertilizer/Pesticide Reduction	Conservation Commission/ Paul Carey	Lawn care Specialist Training	Town Hall used environmentally safe fertilizer on the town grounds	Town Hall used environmentally safe fertilizer on the town grounds
Revised					
MG-4	Employee Training	DPW Director/ Arthur Genualdo	Workshops Attended	Employees attend NRRA conference yearly which covers hazardous waste,	Employees attend NRRA conference yearly which covers hazardous waste,

Revised				recycling and BMP's of waste management Several employees attended workshops in anticipation of new permit	recycling and BMP's of waste management Health Officer Ed Mencis attends training and workshops relating to septic systems
Revised					
Revised					

6a. Additions

7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) *<<if applicable>>*

BMP ID #	**BMP Description**	**Responsible Dept./Person Name**	**Measurable Goal(s)**	**Progress on Goal(s) – Permit Year 15** (Reliance on non-municipal partners indicated, if any)	**Enter any revised info here**
QI-1	E.Coli Monitoring	Health Officer/ Ed Mencis	Tracking Philips Lake Outfall	Continue monitoring State testing of Phillips Pond bathing waters – lake report attached	Updated VLAP reports for Angle and Phillips Pond attached
Revised					
Revised					

Revised					
Revised					
Revised					
Revised					

7a. Additions

7b. WLA Assessment

N/A

Part IV. Summary of Information Collected and Analyzed

Town beach monitoring is in place and baseline data collected to determine 'normal' & 'worst-case' (e.g., immediately after heavy rains) *e. coli* levels.

Part V. Program Outputs & Accomplishments (OPTIONAL)

Programmatic

Stormwater management position identified (Road Agent)	Yes	Yes

Education, Involvement, and Training

Estimated number of residents reached by education program(s)	2600	2600
Stormwater management committee established	Haz Mit Adopted	Haz Mit Adopted
Stream teams established or supported	yes	yes
Shoreline clean-up participation or quantity of shoreline miles cleaned	yes	yes
Household Hazardous Waste Collection Days		
▪ days sponsored	2	1
▪ community participation	Regional – Sandown included	Regional – Sandown included
▪ material collected	Not known (regional)	Not known (regional)
School curricula implemented		

Legal/Regulatory

	In Place Prior to Phase II	Under Review	Drafted	Adopted
Regulatory Mechanism Status (indicate with "**X**")				
▪ Illicit Discharge Detection & Elimination		X		
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X
Accompanying Regulation Status (indicate with "**X**")				
▪ Illicit Discharge Detection & Elimination		X		
▪ Erosion & Sediment Control				X
▪ Post-Development Stormwater Management				X

Mapping and Illicit Discharges

Outfall mapping complete	100%	100%
Estimated or actual number of outfalls		
System-Wide mapping complete	100%	100%
Mapping method(s)		
▪ Paper/Mylar	100%	100%
▪ CADD		
▪ GIS	100%	100%
Outfalls inspected/screened	100%	100%
Illicit discharges identified	0	0
Illicit connections removed	N/A	N/A
% of population on sewer	0	0
% of population on septic systems	100	100

Construction

Number of construction starts (>1-acre)	17 SFD 2016	14 SFD 2017
Estimated percentage of construction starts adequately regulated for erosion and sediment control	95%	95%
Site inspections completed (estimated between Planning Board, Engineer, Bldg Insp., Conservation)	100%	100%
Tickets/Stop work orders issued	0	0
Fines collected	0	0
Complaints/concerns received from public	1	0

Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	30%	0 *
Site inspections completed		0 *
Estimated volume of stormwater recharged	Not known	Not known
* We do not have post-construction Stormwater control regulations		

Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets)	Twice/year	Twice/year
Average frequency of catch basin cleaning (commercial/arterial or other critical streets)	Twice/year	Twice/year
Total number of structures cleaned	165	165
Storm drain cleaned	Regularly	Same
Qty. of screenings/debris removed from storm sewer infrastructure	Not known	Not known
Disposal or use of sweepings (landfill, POTW, compost, recycle for sand, beneficial use, etc.)	Compost	Compost
Cost of screenings disposal	No cost	No cost

Average frequency of street sweeping (non-commercial/non-arterial streets)	N/A	N/A

Average frequency of street sweeping (commercial/arterial or other critical streets)	Once/year	Once/year
Qty. of sand/debris collected by sweeping	3 tons	3 tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.)	Landfill	Landfill
Cost of sweepings disposal	No cost	No cost
Vacuum street sweepers purchased/leased	N/A	N/A
Vacuum street sweepers specified in contracts	N/A	N/A

Reduction in application on public land of: ("N/A" = never used; "100%" = elimination)		
▪ Fertilizers	N/A	
▪ Herbicides	N/A	
▪ Pesticides	N/A	

Anti-/De-Icing products and ratios	% NaCl % $CaCl_2$ % $MgCl_2$ % CMA % Kac % KCl % Sand	
Pre-wetting techniques utilized	N/A	N/A
Manual control spreaders used	Yes	Yes
Automatic or Zero-velocity spreaders used	No	NO
Estimated net reduction in typical year salt application	5-10%	5-10%
Salt pile(s) covered in storage shed(s)	Yes	Yes
Storage shed(s) in design or under construction	No	No

After The Storm- Sandown, NH

VIDEO SHOWN ON LOCAL CABLE ACCESS CHANNEL

Day	Date	Time	Channel
Friday	3/30/2018	11:30:16 AM	Ch17
Thursday	3/15/2018	7:18:45 PM	Ch17
Tuesday	3/6/2018	11:22:49 AM	Ch17
Tuesday	2/27/2018	6:22:49 PM	Ch17
Sunday	1/14/2018	11:41:07 AM	Ch17
Wednesday	1/3/2018	6:36:06 PM	Ch17
Tuesday	12/5/2017	10:44:13 AM	Ch17
Tuesday	5/2/2017	6:30:00 PM	Ch17
Sunday	4/16/2017	7:36:57 PM	Ch17
Friday	3/17/2017	6:10:07 PM	Ch17

What's the Problem with Dog Waste?

Dog waste left in our yards, forest areas and parks can have many adverse effects on the environment.

It's full of harmful bacteria and excess nutrients.

Besides being a neighborhood nuisance, dog waste can make people sick, especially children who are more likely to come into contact with it while playing.

Dog waste left on lawns can also kill or damage grass and other plants.

When dog waste is washed into lakes or streams, the waste decays, uses up oxygen in the water, and sometimes releases ammonia. This can kill fish!

Dog waste also contains nutrients that encourage weed and algae growth.

Too much of these nutrients turn water cloudy and green . . . imagine this in your backyard pond or stream!

Managing dog waste properly is something easy that everyone can do to make a difference in the quality of our surface waters.

Brought to you by the

Town of Sandown

PO Box 1756

Sandown, NH 03873

Information taken from

Mass DEP and dcr Massachusestts

DOG WASTE AND SURFACE WATER QUALITY

Did You Know?

There are over 1500 licensed dogs in our town.

Each of these dogs produces about ¾ pound of solid waste and over 7 billion bacteria daily!

Rainfall and snowmelt in the Town of Sandown goes untreated and ultimately goes into local streams, ponds, rivers and lakes.

As it flows, stormwater picks up contaminants and pollutants in its path.

That's why it's important to make sure that dog waste and its pollutants do not end up in our waterbodies.

What's So Bad About Dog Waste?

Bacteria and other parasites found in pet waste, such as Giardia and Cryptosporidium, can survive for long periods when left on the ground.

During a rain storm, these pollutants can be washed into local rivers and ponds and into local drinking water supplies.

Individual actions can result in significant water quality improvements when carried out by many people.

Unlike some forms of stormwater pollutants, individual people can easily and economically manage dog waste and help keep our waters safe and aesthetically pleasing.

How You Can Help

BRING IT – Always bring a plastic bag when you walk your dog.

BAG IT – Use the bag as a glove to pick up the dog waste. Scoop it up and turn the bag inside out around the waste.

DISPOSE IT – Properly dispose of dog waste by putting it in a trash can.

AND REMEMBER

- Pick up after your pet in your yard
- Only bring your dog where dogs are allowed.

What lakeside homeowners can do to protect New Hampshire's surface waters?

- Design and site your septic system in accordance with DES rules.
- Keep your septic system maintained by inspecting and pumping every two to three years.
- Do not apply fertilizer closer than 25' from the shore–**it's against the law**.
- If you must fertilize, use low phosphate, slow release nitrogen fertilizer between 25' and 250' from shore.
- Keep a buffer zone of native plants along the shore.
- Minimize paving to reduce stormwater runoff.
- Reroute runoff from eroded paths, so it can slow down and soak into the soil, minimizing runoff.
- Use low phosphate cleaning supplies.
- Do not bathe in the water.
- Do not allow farm animals in the lake or stream—provide alternative water sources.

What boaters can do to keep New Hampshire's inland surface waters clean

- Use low-polluting outboard marine engines: four-stroke or direct fuel injected two-stroke.
- Make certain there are no overboard discharges of sewage or gray water into the water–**it's against the law**.
- Whenever possible, refuel personal watercraft and small boats on land, at gas stations and away from the shore.
- When boating in shallow areas or along the shoreline, minimize your wake.
- Clean boats, motors, and trailers of any clinging plant or animal material before launching in the lake or river. Dispose of all attached materials on land and away from shore.

This information is made available through the cooperation of the
N.H. Dept. of Environmental Services
6 Hazen Drive, Concord, NH 03302
(603) 271-3503
and the
Rotary Club of Wolfeboro
PO Box 781, Wolfeboro, NH
www.rotary-district-7850.org/Clubs/WolfeboroNH

For more information about drinking water, shoreland protection, and eco-safe boating tips, go to the DES website at www.des.state.nh.us.

Don't Drink Untreated Surface Water!

What lake and riverfront residents and renters should know about drinking untreated surface water

N.H. Dept. of Environmental Services
and
Rotary Club of Wolfeboro, NH

DO NOT USE
Lakes or Streams for Domestic Water Supply

Some residents and visitors think of New Hampshire as relatively rural and pristine and believe it is safe to use surface water for drinking. Surface waters include lakes, ponds, streams, and some springs—and these waters naturally contain microorganisms.

Diseases that may be transmitted by surface water include gastroenteritis, dysentery, and giardiasis. Symptoms of ingesting contaminated surface water include nausea, vomiting, diarrhea, mild fever, and general malaise.

Populations of potentially harmful microorganisms are naturally occurring in all waterbodies. Weather and water conditions, poor human sanitary practices, feces from animals and waterfowl can result in an uncontrollable change in water quality that can make you sick, even though past bacterial tests of the water may have shown good water quality.

Regardless of the presumed safety of this practice in the past, drinking untreated water from lakes, ponds, and streams is not safe and **DES strongly cautions against this practice.**

Treating your own drinking water is not recommended, because:

- There are usually no restrictions on activities in the vicinity of the intake.
- Testing, inspections, record keeping, and maintenance of the system is usually sporadic.

- Routine chemical and bacteriological monitoring, as well as monitoring for other pathogens, is usually not done.
- Mixing time for the source water and the chlorine may be insufficient to kill some microorganisms, and others can only be removed by filtration.

While many municipalities and private companies take water from lakes or rivers for domestic use, sophisticated filtration and/or chlorination systems are always required. Many lakes that are used as a source of municipal water supply have restrictions on fishing, swimming, and boating activities, thus restricting the presence of man and lowering potential contamination. In addition, they are sampled daily.

For reliable drinking water, DES recommends the use of dug, point, or drilled wells, or municipal or small public water systems operated by a certified water system operator. Another option is to bring bottled water to a house that does not have clean, potable water.

GRANITE STATE ANALYTICAL SERVICES, LLC
22 Manchester Road, Unit 2, Derry, NH 03038
Phone (800) 699-9920 (603) 432-3044 Fax (603) 434-4837
http://www.granitestateanalytical.com/

CERTIFICATE OF ANALYSIS

DATE PRINTED: 07/11/2017
RECEIPT TEMPERATURE: ON ICE 14.6° CELSIUS

CLIENT NAME: Town of Sandown Rec Dept.

CLIENT ADDRESS: PO Box 642, Attn:Recreation Dept.
Sandown, NH 03873

SAMPLE ID#: 1707-00695-001
SAMPLED BY: Client-Customer
SAMPLE SITE: MPN Beach

DATE AND TIME COLLECTED: 07/10/2017 11:50AM
DATE AND TIME RECEIVED: 07/10/2017 1:00PM
SAMPLE LOCATION: Seeley Beach Sandown
CLIENT JOB #

Test Description	Results	Test Units	DQ Flag	LOQ (RL)	Method	Analyst	Date & Time Analyzed
E. coli MPN	35.9	MPN/100 mL		1	SM 9223B	CW-NH	07/10/17 4:24PM

The results presented in this report relate to the samples listed above in the condition in which they were received.
RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.

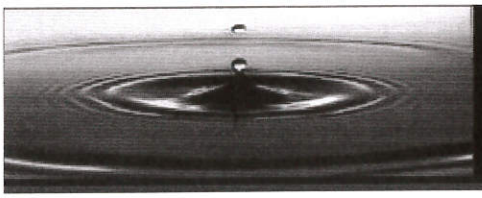
Data Qualifier (DQ) Flags: None

*** NELAP Accredited Analysis**

NELAP ACCREDITED TNI LABORATORY

Donald A. D'Anjou, Ph. D.
Laboratory Director

This analysis meets NELAP requirements except as noted.
State Certifications: | NH 1015 | MA M-NH003 | ME NH00003 | RI 101513 | VT VT-101507 |



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Phone (800) 699-9920 (603) 432-3044 Fax (603) 434-4837
http://www.granitestateanalytical.com/

CERTIFICATE OF ANALYSIS

DATE PRINTED: 07/26/2017
RECEIPT TEMPERATURE: ON ICE 13.1° CELSIUS
CLIENT NAME: Seeley Beach
CLIENT ADDRESS:

SAMPLE ID#: 1707-03041-001
DATE AND TIME COLLECTED: 07/25/2017 12:00PM
SAMPLED BY: Client-Customer
DATE AND TIME RECEIVED: 07/25/2017 4:00PM
SAMPLE LOCATION:

SAMPLE SITE: MPN Beach
CLIENT JOB #

Test Description	Results	Test Units	DQ Flag	LOQ (RL)	Method	Analyst	Date & Time Analyzed
E. coli MPN	30.5	MPN/100 mL		1	SM 9223B	CW-NH	07/25/17 4:46PM

The results presented in this report relate to the samples listed above in the condition in which they were received.
RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.

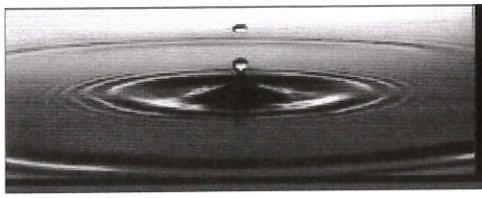
Data Qualifier (DQ) Flags: None

*** NELAP Accredited Analysis**

NELAP ACCREDITED TNI LABORATORY

Donald A. D'Anjou, Ph. D.
Laboratory Director

This analysis meets NELAP requirements except as noted.
State Certifications: | NH 1015 | MA M-NH003 | ME NH00003 | RI 101513 | VT VT-101507 |



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Phone (800) 699-9920 (603) 432-3044 Fax (603) 434-4837

http://www.granitestateanalytical.com/

CERTIFICATE OF ANALYSIS

DATE PRINTED: 08/03/2017

RECEIPT TEMPERATURE: ON ICE 25.1° CELSIUS

CLIENT NAME: Town of Sandown Rec Dept.

CLIENT ADDRESS: PO Box 642, Attn:Recreation Dept.
Sandown, NH 03873

SAMPLE ID#: 1708-00340-001

SAMPLED BY: Client-Customer

DATE AND TIME COLLECTED: 08/02/2017 10:20AM

DATE AND TIME RECEIVED: 08/02/2017 12:53PM

SAMPLE LOCATION: Seeley Beach

SAMPLE SITE: MPN Beach

CLIENT JOB #

Test Description	Results	Test Units	DQ Flag	LOQ (RL)	Method	Analyst	Date & Time Analyzed
E. coli MPN	28.8	MPN/100 mL	J	1	SM 9223B	CW-NH	08/02/17 3:52PM

The results presented in this report relate to the samples listed above in the condition in which they were received.

RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.

Data Qualifier (DQ) Flags: J = Estimated concentration.

Note: Bacteria sample contained less than the method required minimum sample volume of 100mL.

*** NELAP Accredited Analysis**

Donald A. D'Anjou, Ph. D.
Laboratory Director

Volunteer Lake Assessment Program Individual Lake Reports

ANGLE POND, SANDOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,511	Max. Depth (m):	11.6	Flushing Rate (yr^{-1})	1.6
Surface Area (Ac.):	150	Mean Depth (m):	3	P Retention Coef:	
Shore Length (m):	4,000	Volume (m^3):	1,849,000	Elevation (ft):	220

TROPHIC CLASSIFICATION

Year	Trophic class
1984	EUTROPHIC
2002	MESOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2016 305(b) report on the status of N.H. waters, and are based on data collected from 2006-2015. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm

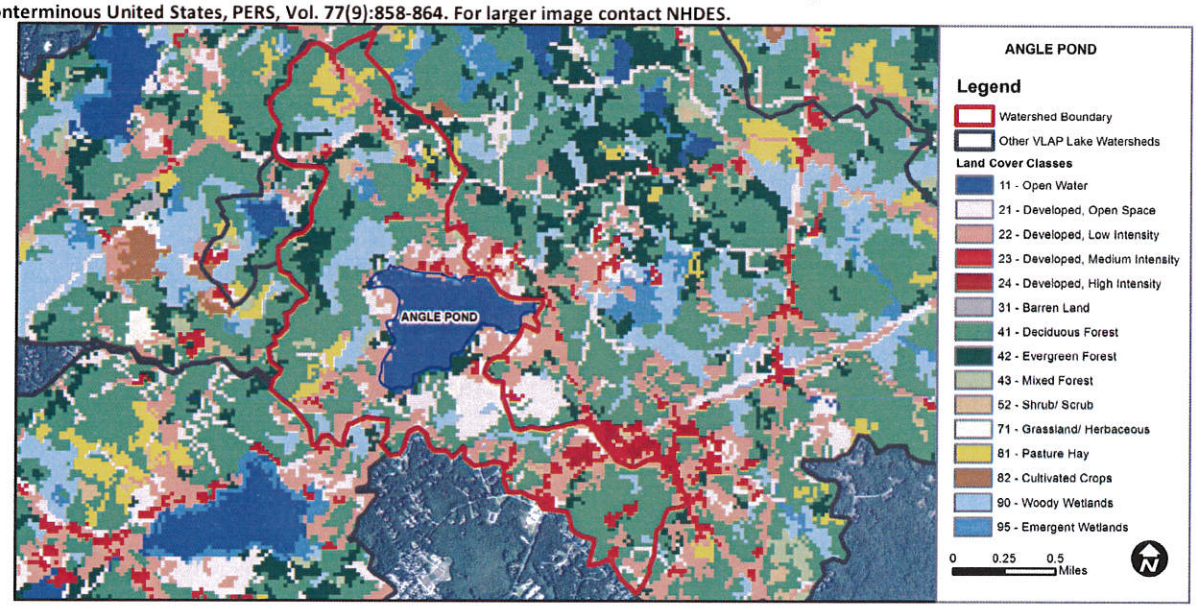
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
Primary Contact Recreation	Escherichia coli	No Data	No data for this parameter.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

ANGLE POND - ANGLE POND GROVE BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	11.9	Barren Land	0	Grassland/Herbaceous	0.17
Developed-Open Space	8.55	Deciduous Forest	38.36	Pasture Hay	3.27
Developed-Low Intensity	15.6	Evergreen Forest	7.11	Cultivated Crops	0
Developed-Medium Intensity	4.03	Mixed Forest	0.64	Woody Wetlands	7.93
Developed-High Intensity	0.45	Shrub-Scrub	0.75	Emergent Wetlands	0.86

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
ANGLE POND, SANDOWN
2017 DATA SUMMARY

RECOMMENDED ACTIONS: Angle Pond water quality declined in 2017 and an algal bloom likely occurred in July due to excess nutrient (phosphorus) levels. The above average spring/early summer rainfall and associated stormwater runoff likely transported excess nutrients to the pond that fed algal growth. Stormwater management should be a main focus in the watershed and on waterfront properties. Consider joining NHDES' Soak up the Rain NH program to help implement stormwater management in the watershed. For more information visit www.soaknh.org. Sayre Inlet phosphorus and turbidity levels were extremely elevated and indicate upstream sources of pollution, and turbidity levels exceed state water quality standards. Work with the DES Watershed Management Bureau, the NH Dept. of Agriculture and the Town to address upstream sources of pollution. Keep up the great work!

OBSERVATIONS *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated in June, increased to levels indicative of an algal bloom in July, and then decreased to moderate levels in August. Average chlorophyll level increased greatly from 2016 and was much greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Metalimnetic (middle water layer), Hypolimnetic (lower water layer), and Outlet conductivity levels remained elevated and much greater than the state median. Epilimnetic chloride levels were much greater than the state median however did not exceed the state chronic chloride standard. Historical trend analysis indicates relatively stable epilimnetic conductivity levels with moderate variability between years. Sayre Inlet conductivity and chloride levels continue to be elevated however chloride levels did not exceed the state standard.
- **COLOR:** Apparent color was measured in the epilimnion and indicates the pond is moderately tea colored, or brown.
- **E. COLI:** Sayre Inlet E. coli levels were within a low range in June and much less than the state standard of 406 cts/100 mL for surface waters.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were elevated in June following a significant storm event and above average spring/early summer rainfall, and then decreased to within a low to moderate range in June and August. Average epilimnetic phosphorus level increased from 2016 and was slightly greater than the state median and the threshold for mesotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Metalimnetic phosphorus level was low in June, increased to an elevated level in July during the algal bloom, and then decreased to a moderate level in August. Hypolimnetic phosphorus levels increased from low to elevated as the summer progressed likely due to phosphorus release from bottom sediments under anoxic conditions. Outlet phosphorus levels were elevated in June and July. Sayre Inlet phosphorus levels remained greatly elevated in June and July.
- **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was below average in June and July due to highly colored water flushed in from spring rains, as well as algal blooms. Transparency increased (improved) only slightly in August, and average NVS transparency decreased from 2016 and was the lowest (worst) measured since 2006. Historical trend analysis indicates highly variable transparency since monitoring began.
- **TURBIDITY:** Epilimnetic turbidity levels decreased as the summer progressed and remained within a low to moderate range for that station. Metalimnetic turbidity levels were within a low to average range. Hypolimnetic turbidity levels were low in June and July and elevated in August. Outlet turbidity levels remained within a low to moderate range. Sayre Inlet turbidity levels were greatly elevated in June and July.
- **PH:** Epilimnetic pH levels were within the desirable range 6.5-8.0 units and increased in 2017 likely due to photosynthetic by-products from elevated algal and/or cyanobacteria growth. Historical trend analysis indicates relatively stable epilimnetic pH levels with moderate variability between years. Metalimnetic, Hypolimnetic, Outlet, and Sayre Inlet pH levels were also within the desirable range.

Table 1. 2017 Average Water Quality Data for ANGLE POND-SANDOWN

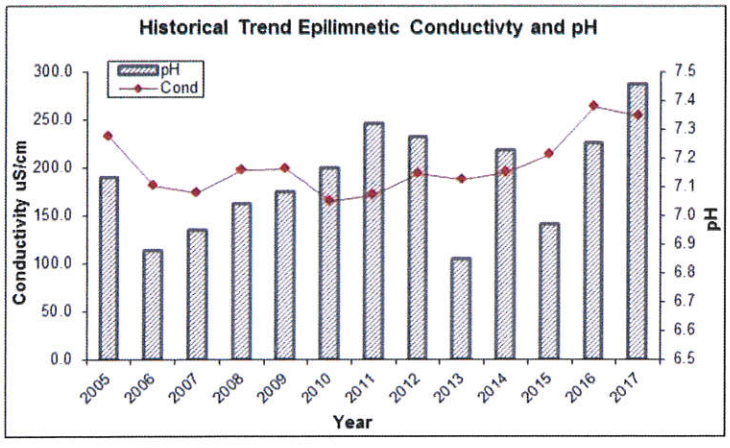
Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color PCU	Cond. uS/cm	E. Coli MPN/100ML	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Epilimnion	18.4	12.74	54	73	254.0		14	2.42	2.83	0.87	7.46
Metalimnion					251.7		14			0.89	6.84
Hypolimnion					243.0		16			3.14	6.51
Outlet					270.5		23			0.76	6.72
Sayre Inlet			100		417.0	30	193			16.65	6.76

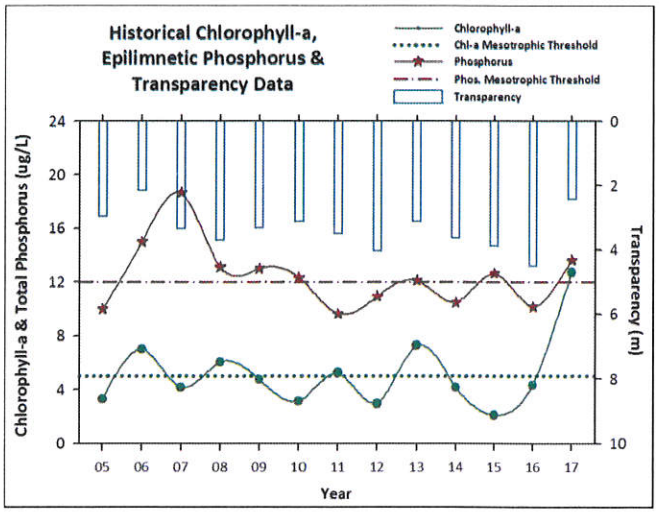
NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.





Volunteer Lake Assessment Program Individual Lake Reports

PHILLIPS POND, SANDOWN, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,006	Max. Depth (m):	5.8	Flushing Rate (yr^{-1})	3.7
Surface Area (Ac.):	85	Mean Depth (m):	3.1	P Retention Coef:	0.54
Shore Length (m):	2,600	Volume (m^3):	1,058,500	Elevation (ft):	212

TROPHIC CLASSIFICATION

Year	Trophic class
1977	MESOTROPHIC
1990	MESOTROPHIC

KNOWN EXOTIC SPECIES

Fanwort

The Waterbody Report Card tables are generated from the DRAFT 2016 305(b) report on the status of N.H. waters, and are based on data collected from 2006-2015. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm

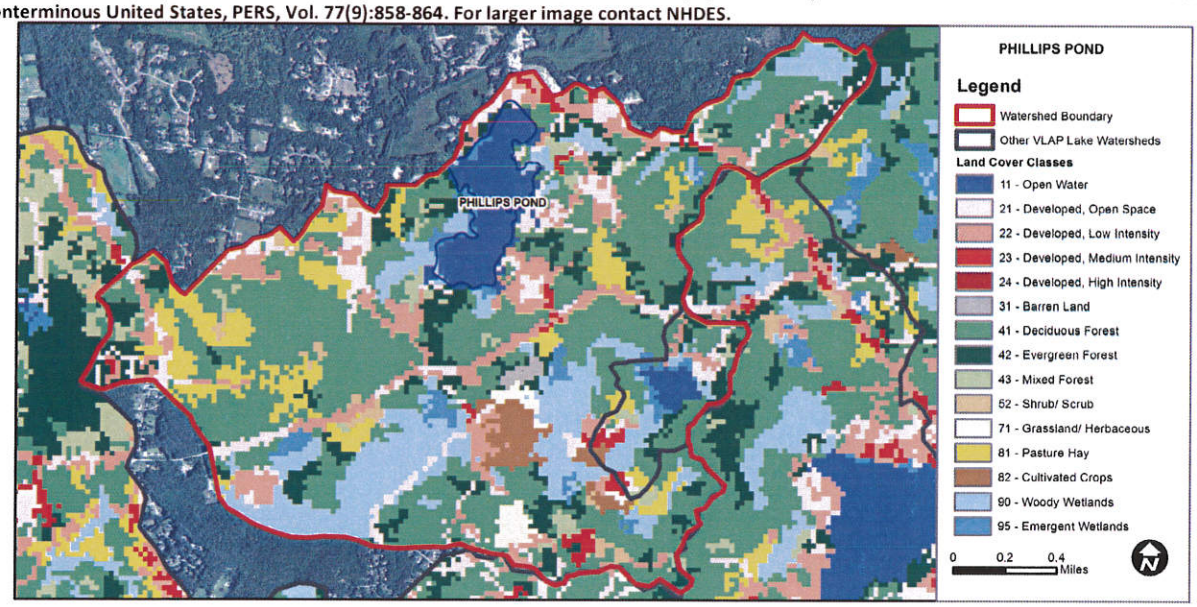
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen satura	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Slightly Bad	Data exceed water quality standards or thresholds for a given parameter by a small margin.
Primary Contact Recreation	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

PHILLIPS POND - SEELEY TOWN BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
PHILLIPS POND - SEELEY TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



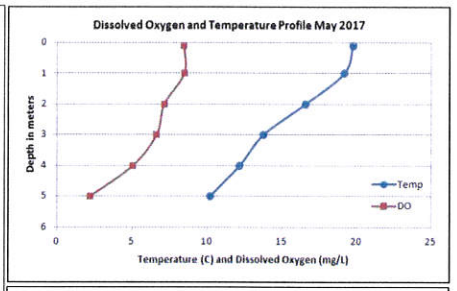
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.42	Barren Land	0.36	Grassland/Herbaceous	0.98
Developed-Open Space	7.18	Deciduous Forest	38.38	Pasture Hay	6.56
Developed-Low Intensity	9.29	Evergreen Forest	9.97	Cultivated Crops	1.91
Developed-Medium Intensity	1.39	Mixed Forest	1.97	Woody Wetlands	13.57
Developed-High Intensity	0	Shrub-Scrub	0.97	Emergent Wetlands	2.13

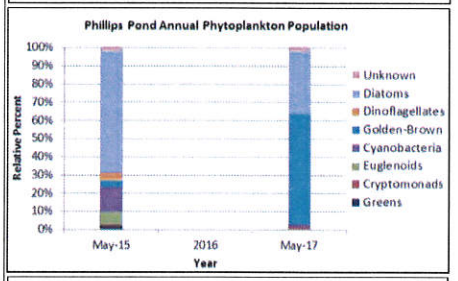
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
PHILLIPS POND, SANDOWN
2017 DATA SUMMARY

RECOMMENDED ACTIONS: Pond conductivity levels have significantly increased (worsened) since monitoring began, and chloride levels are elevated for NH surface waters. This indicates the impacts of winter de-icing materials applied to local roads, parking lots, driveways and walkways. Encourage local road agents and winter maintenance companies to obtain a NH Voluntary Salt Applicator license through UNH Technology Transfer Center's Green SnowPro Certification program to help reduce conductivity and chloride levels. Hypolimnetic phosphorus levels continue to be indicative of internal loading from bottom sediments and/or milfoil management activities. This highlights the importance of minimizing external sources of phosphorus from the watershed. DES' "NH Homeowner's Guide to Stormwater Management" is a great resource to help manage stormwater runoff and reduce nutrient (phosphorus) loading to the pond. Apparent color was measured to better understand how tea colored the water is, or how much dissolved organic matter is present, and how this affects water clarity throughout the season. There appears to be a relationship between color and clarity and we recommend monthly color analyses continue to better understand this relationship. Keep up the great work!

OBSERVATIONS *(Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were elevated in May and then decreased to a low level in June, and fluctuated between a low to moderate range from July to September. Average chlorophyll levels decreased slightly from 2016 however were slightly greater than the state median and threshold for mesotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Epilimnetic (upper water layer), Hypolimnetic (lower water layer), Inlet, Metacomet Inlet, and Outlet conductivity and chloride levels remained elevated and much greater than the state medians. However, chloride levels remained less than the state chronic chloride standard. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- **COLOR:** Apparent color was measured in the epilimnion and was highest in May and June during spring rains and snowmelt and then decreased slightly as the summer progressed. Color levels indicate the pond water is highly tea colored, or dark brown.
- **TOTAL PHOSPHORUS:** Epilimnetic phosphorus levels were slightly elevated on each sampling event. Average epilimnetic phosphorus increased from 2016 and was greater than the state median and threshold for mesotrophic lakes. Historical trend analysis indicates stable epilimnetic phosphorus levels since monitoring began. Hypolimnetic phosphorus levels were elevated from June to September and the turbidity was also elevated indicating the release of phosphorus from bottom sediments in hypolimnetic waters when dissolved oxygen levels are depleted below 1.0 mg/L, a process called internal phosphorus loading. Tributary phosphorus levels were generally slightly elevated from July through September when flow levels were stagnant or very low.
- **TRANSPARENCY:** Transparency measured without the viewscope was lower from May through July when water color was darkest, and then increased (improved) in August and September as water color became lighter. Average transparency decreased (worsened) in 2016 and was much less (worse) than the state median. Historical trend analysis indicates highly variable transparency since monitoring began. Transparency measured with the viewscope (VS) was generally higher (better) than NVS transparency and likely a better measure of actual conditions.
- **TURBIDITY:** Epilimnetic, Inlet, Metacomet Inlet, and Outlet turbidity levels fluctuated within a low to average range from May through September. Hypolimnetic turbidity levels were elevated from June through September due to the formation and accumulation of organic compounds under anoxic (no oxygen) conditions.
- **PH:** Epilimnetic and Inlet pH levels were within the desirable range 6.5-8.0 units and historical trend analysis indicates stable epilimnetic pH levels since monitoring began. Hypolimnetic and Outlet pH levels were slightly acidic, and Metacomet Inlet pH levels were acidic and potentially critical to aquatic life.





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Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Table 1. 2017 Average Water Quality Data for PHILLIPS POND-SANDOWN

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color PCU	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	12.9	5.14	62	168	250.8	18	1.63	2.34	0.89	6.78
Hypolimnion					262.5	29			8.89	6.33
Inlet			46		236.8	29			0.77	6.70
Metacomet Inlet			68		256.4	24			0.53	5.93
Outlet			66		270.4	20			0.92	6.24

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.