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PUBLIC HEALTH

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Bright Lake Sanitary Survey

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Presenter: Chris Spooney

Outline

- Bright Lake
- Why a Survey?
- Effects of Blue-Green Algae
- Importance of Survey
- Scope
- Characteristics Captured
- Methodology
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Bright Lake “Mudd Lake”

- Municipality of Huron Shores
- Historically the site of Day Mills
- Fed by Big Basswood Lake (via Harris Creek) and Pickerel Creek
- Pickerel Creek flows through agricultural area
- Flows out into the Bolton River
- Shallow lake (Ave depth ~20ft)

Bright Lake

- Both seasonal and full-time residents
- The lake has been occupied since the pioneer days
- A number of subdivisions on lake
- Two resorts on lake
- Site of popular winter fish derby



Why a Survey?

- The Council for Municipality has taken the initiative to survey their lakes
- Request Algoma Public Health conduct a survey of existing sewage systems
- Concerns with increased blue-green algae blooms and their effects
- Health, property values, tourism, fishing, and the future

Effects of Blue-Green Algae

- Some blue-green algae produce toxins
- These toxins can irritate the skin and eyes.
- Cause nausea, vomiting, abdominal cramps, diarrhea and more serious symptoms.
- Children and pets are at higher risk.

Other Effects

- Property values decrease
- Tourism drops
- Fish consumption concerns
- Future development of the lake
- Sustainability



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Importance of Survey

- Determine if faulty sewage systems were contributing to the increased BGA blooms
- Educate property owners about the effects of sewage and how to maintain their systems properly.
- Ensure malfunctioning or non-existent sewage systems were brought to code.

Scope

- Contact all property owners on the lake
- Site visit of each property
- Sanitary survey form used to collect information
- Photographs taken
- Malfunctioning systems to be repaired or upgraded (Recommendations)

Characteristics Captured During Sanitary Survey

- Type of Residence (seasonal or full-time)
- Description (cement, vinyl, brick, wood)
- Class of system(s) on property
- Drinking water supply (dug, drilled, sand, surface water)
- Electrical Service

Characteristics Con't

- Trailer or mobile home present on property
- Environmental concerns (pooling, chemical storage, fertilizer, etc)
- Topography (high run-off area, vegetation, draining)
- Fixture units (kitchen, bathtub, shower, sink, dishwasher)
- Sewage disposal (tile bed, leaching pit, lagoon, other)

Methodology

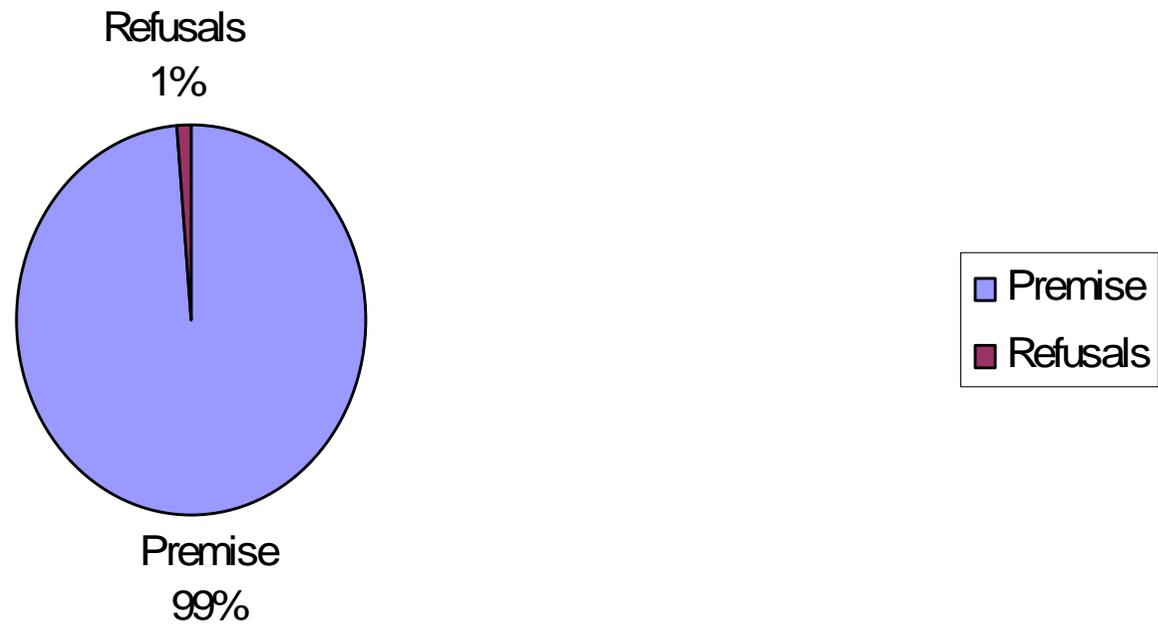
- Property sketched (lake, roadways, neighbors)
- Distance from the lake
- Owner advised of problems
- Educational packages provided
- Referral to Inspector (OBC) for potential enforcement (infractions)

Instruments Used On Site

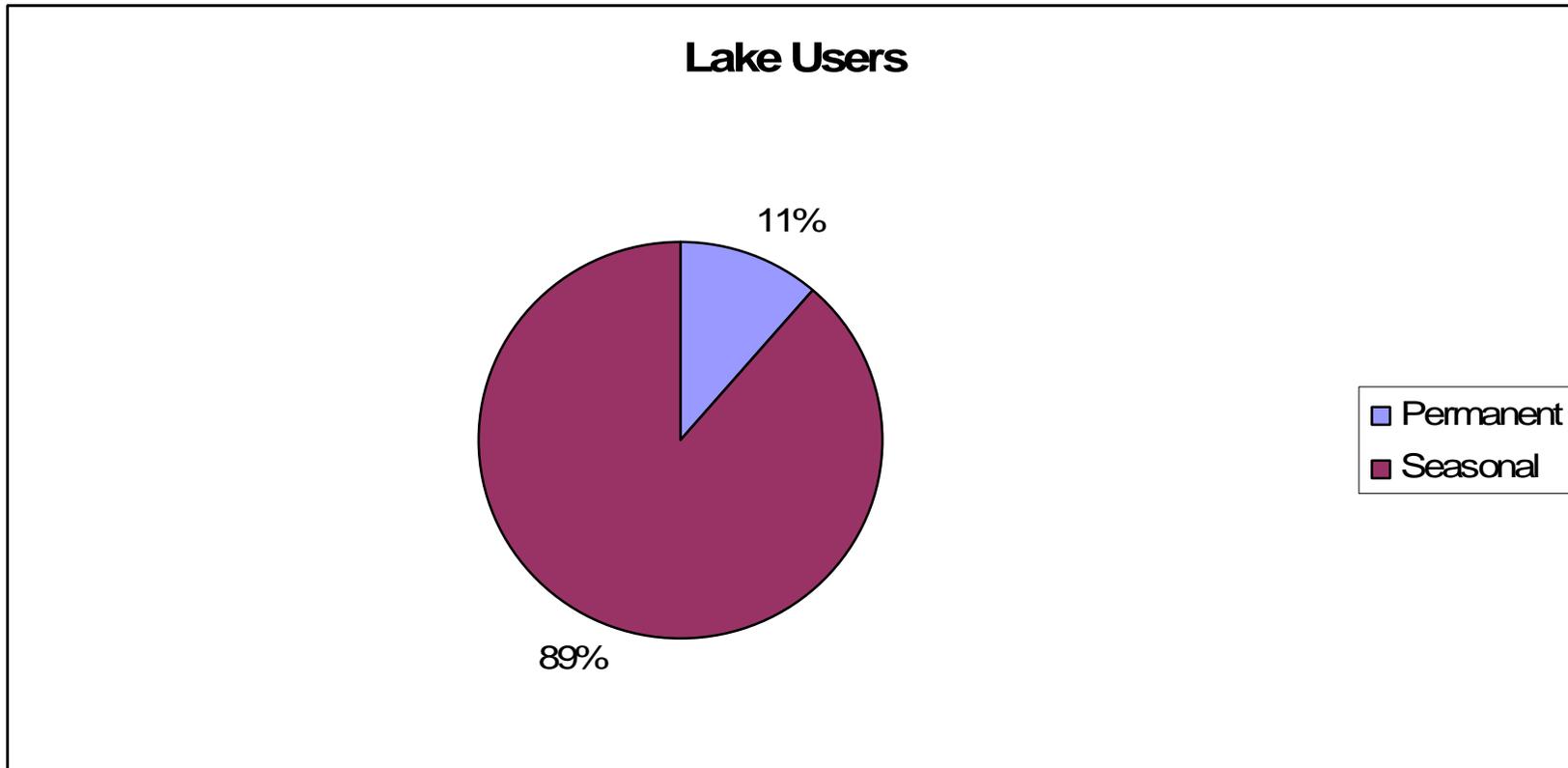
- Measuring Tape
- Garmin Handheld GPS
- Digital Camera
- Fluorescent Dye Testing
- Water Sampling (Bacteriological & BGA)
- Boat Tours
- Survey Form

Results

Systems Viewed



Seasonal Vs Permanent



Duration of Seasonal Residents

0-4 weeks	5-8 weeks	9-12 weeks	13-16 weeks	17-20 weeks	>20 weeks	Total
44	18	6	8	2	2	80

Sewage Disposal Systems (SDS)

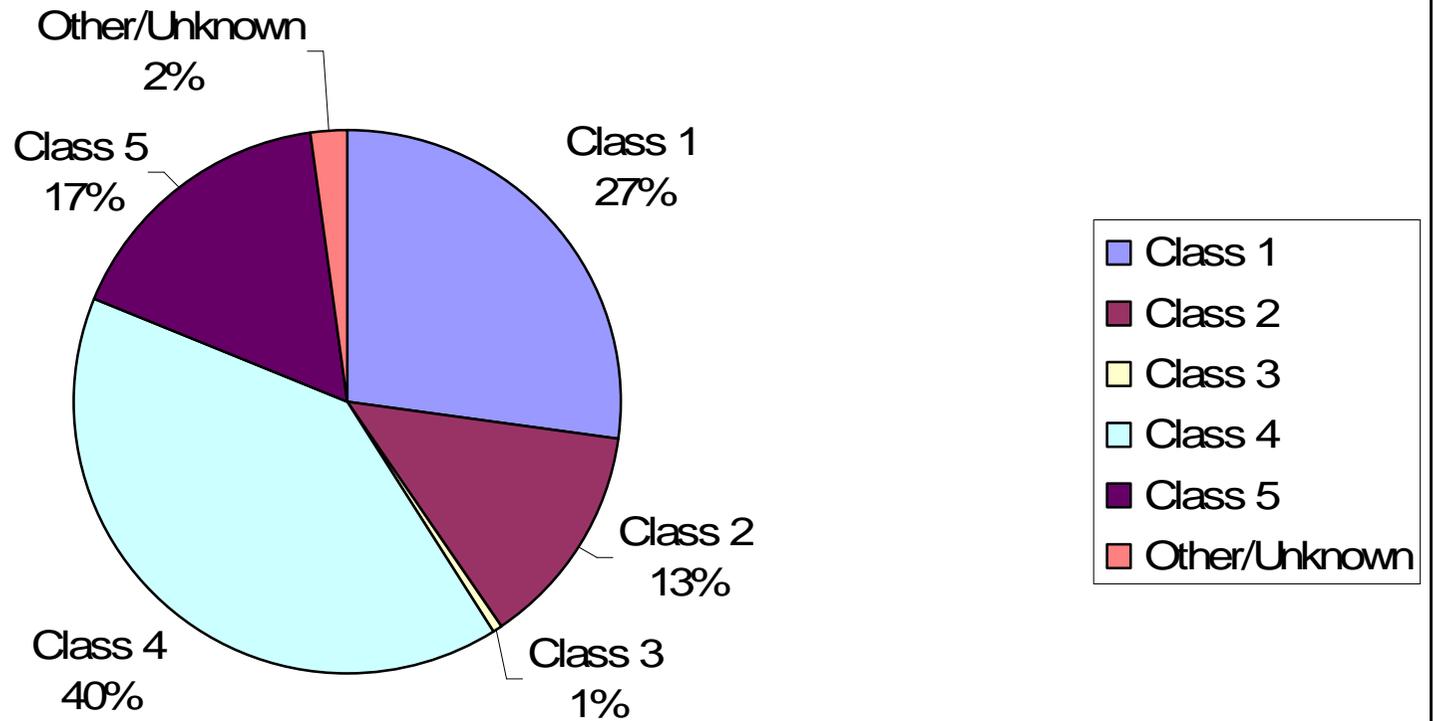


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Classification of Sewage Disposal Systems (SDS)

- Class 1 – Privy and composting toilets
- Class 2 – Leaching pits for grey water waste
- Class 3 – Cesspools
- Class 4 – Septic tank and field bed systems
- Class 5 – Holding tank

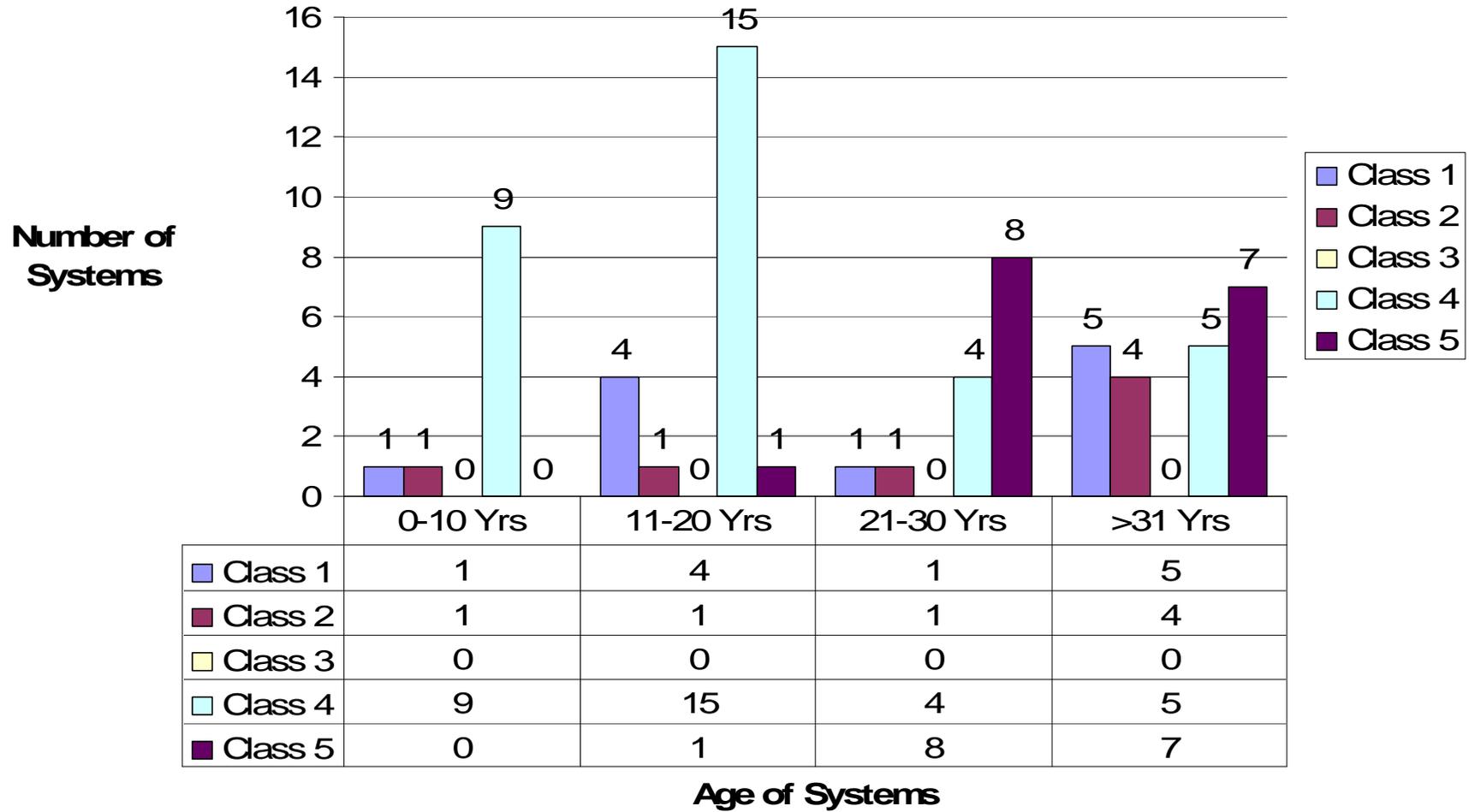
Systems On The Lake



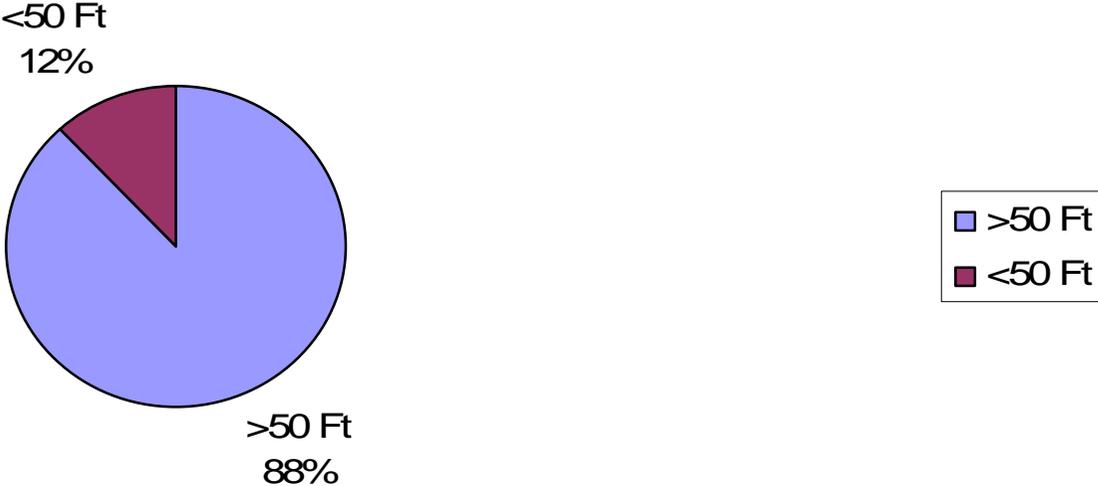
Life Span of Systems

- The average life span is generally 20 to 30 years.
- Most sewage disposal systems on Bright Lake are close to that age, if not exceeding it.
- From the limited data collected the bulk of SDS were installed between 1980 and 2000.
- Many of the sewage systems pre-date Algoma Public Health Records (1978).

The Known Age of Systems



System Distances To The Lake



Type of SDS	Numbers of SDS	% of SDS	Number of non-compliant SDS	Rate of non-compliant SDS (%)
Class 1	49	27	14	29%
Class 2	24	13	16	67%
Class 3	1	1	0	0
Class 4	72	40	2	2%
Class 5	30	17	0	0
Other	4	2	0	Unknown
Total	180	100%	32	

Non-Compliant SDS

- Not all infractions pose the same level of impact on the environment or the same risk.
- It is important to note that although a SDS may be out-dated and does not meet the current building regulation does not imply that the SDS is failing.
- For the purpose of this survey, risk categories have been assigned to the non-compliant systems as follows:

Risk Category	Description
Low	No evidence of sewage contamination. Infractions are primarily due to structural issues such as venting and improper construction but pose no threat
Medium	Evidence of grey water discharge from Class 2 SDS
High	Immediate health hazards and evidence of sewage contamination

Number of Non-Compliant SDS as Risk Categorized

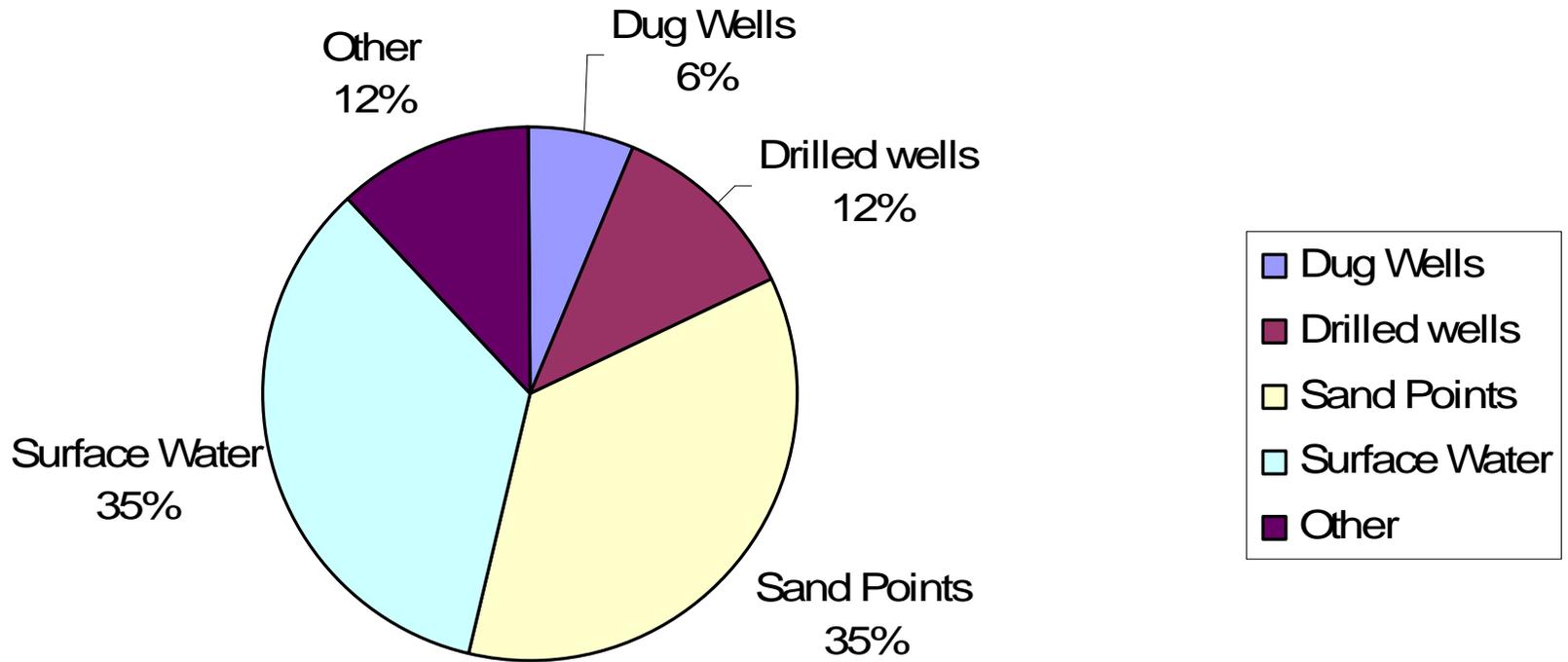
Risk Category	Number of non-compliant SDS
Low Risk	14
Medium Risk	16
High Risk	2
Total	32

Water Sampling



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Cottage Source Water



Bacteriological Water Results

- Eight drinking water samples were taken between Myers Road, Pioneer Road and Sunset Beach Road.
- All samples were tested for bacteriological indicators (Total Coliform and E.coli)
- All results were satisfactory.

Blue-Green Algae Water Sampling

- Two water samples were taken for the presence of blue-green algae (BGA) when a bloom was evident.
- Samples were submitted to the MOE lab for the presence of BGA capable of producing toxins.
- Both BGA samples showed no potential for producing the harmful toxins at that time.

Fluorescent Dye Testing

- Several fluorescent dye tests were conducted during the sanitary survey.
- Dye is thoroughly flushed into the plumbing system of the dwelling and in the event of surface ponding; the effluent presents itself as a fluorescent green sheen.

Discussion

- Majority of residents on Bright Lake are seasonal
- Class 2 systems involved the majority of infractions (Medium Risk)
- Low risk issues largely involved Class 1 systems like pit privies (Vent Stack)

Discussion

- Two property owners were identified as high risk assessments
- One case involved a potentially defective septic tank and the other owner was a refusal

Discussion

- In total, there were 7 applications submitted this past summer for new Class 4 systems
- This is the most applications that had submitted on one summer over the past few years

Conclusion

- It is highly unlikely sewage contamination from faulty sewage systems is the primary cause of BGA blooms
- However, it is possible that it may be one of many contributing factors when assessing the increase in BGA blooms

Other Contributing Factors

- Warmer temperature
- Increased lake usage from other recreational users
- Decreasing lake levels
- Extra nutrient loading from property development
- Pesticide use, fertilizers, and run-off

Another Potential Factor

- Agriculture
 - There are approximately 2300 head of cattle that are located within close proximity of the lake
 - It is unknown the extent that cattle farming has on BGA, but it may be worth taking a look

Conclusion

- Letters are being issued to cottage owners who:
 - Refused to participate in the survey
 - Infractions
 - Building inspector

- Permit applications will then be submitted for upgrades
- Systems will then be remediated and brought up to code
- Follow-up inspection

Thank-you

- APH extends their gratitude to the Municipality of Huron Shores Mayor & Council and staff for all their hard work in providing property information, locations, maps, and more!
- Thanks to the Executive of the Bright Lake Association for their ongoing support, information, and boat use.
- The MOE who assisted us by sending samples to their laboratory for algae analysis and information on previous work they had done on the lake.
- Thanks to all the residents of Bright Lake for their cooperation & participation.