



Making a difference...together

REGIONAL WATER SUPPLY COMMISSION

Notice of Meeting on **Wednesday, January 21, 2015 @ 12:30 pm**
Board Room, 6th Floor, 625 Fisgard Street, Victoria, BC

G. Baird	C. Coleman	V. Derman
B. Gramigna	F. Haynes	M. Hicks
B. Isitt	R. Kasper	Z. King
G. Logan	M. Lougher-Goodey	J. Loveday
T. Morrison	D. Murdock	G. Orr
J. Rogers	V. Sanders	W. Sifert
L. Szpak	L. Wergeland	G. Young
E. Zhelka		

AGENDA

1. Election of Chair and Vice-Chair
2. Approval of Agenda
3. Adoption of Minutes of October 15, 2014..... 1
4. Chair's Remarks
5. Commission Orientation 5
6. Extension of Contract No. 2012-742 Supply of Hired Equipment – Watershed Protection Division (Staff Report #2015-01) 21
7. Plans for the Centennial Anniversary of the Greater Victoria Water Supply System (Information Report #2015-02) 23
8. Water Quality Report for Sooke Lake Reservoir September - December 2014 (Staff Report #EPR2015-01) 27
9. Water Watch 38
10. New Business
11. Motion to Close the Meeting
That the Regional Water Supply Commission close the meeting in accordance with the Community Charter, Part 4, s. 90(1) (a) *personal information about an identifiable individual who holds or is being considered for a position as an officer, employee or agent of the municipality or another position appointed by the regional district.*
12. Adjournment

To ensure a quorum, advise Margaret at 250.474.9606 if you or your alternate cannot attend.



Making a difference...together

MINUTES OF A MEETING OF THE REGIONAL WATER SUPPLY COMMISSION
Held Wednesday, October 15, 2014 in the 6th Floor Boardroom, 625 Fisgard Street

PRESENT: Commissioners: D. Murdock (C), C. Coleman, V. Derman, P. Gerrard, B. Gramigna, S. Gudgeon, L. Helps, M. Hicks, D. Hodgins, B. Isitt, S. Johannesen, Z. King, G. Logan, C. McBride (for C. Mearns), W. Milne, K. Murdock (for T. Ney), J. Rogers, V. Sanders, W. Sifert, L. Szpak,
Staff: T. Robbins, B. Lapham, P. Sparanese, A. Constabel, G. Harris, H. Gibson, S. Thaver, M. Montague (Recorder)
ABSENT: M. Lougher-Goodey, N. Wade

It was noted that M. Lougher-Goodey was not able to attend today's meeting and, in his absence, D. Murdock assumed the Chair. The meeting was called to order at 12:30 pm.

1. **APPROVAL OF THE AGENDA**

MOVED by Commissioner King and **SECONDED** by Commissioner Helps, that the Regional Water Supply Commission approve the agenda as distributed.

CARRIED

2. **ADOPTION OF THE MINUTES OF JULY 16, 2014**

MOVED by Commissioner Rogers and **SECONDED** by Commissioner Logan, that the Regional Water Supply Commission adopt the minutes of the meeting held July 16, 2014 as distributed.

CARRIED

3. **CHAIR'S REMARKS**

The Chair remarked as follows:

- He thanked the Commission for letting him Chair the meeting today and thanked them for the work they accomplished this year.
- He noted that this was the last meeting of the Regional Water Supply Commission for 2014 and thanked T. Robbins and M. Lougher-Goodey for their efforts during the year.

4. **WATER ADVISORY COMMITTEE – VERBAL REPORT FROM THE CHAIR AND VICE-CHAIR**

D. Spinner, Chair, and R. Mersereau, Vice-Chair, gave a brief update on the Water Advisory Committee.

5. **SERVICE PLAN REVIEW PROCESS**

T. Robbins spoke to the report. The Commission discussed options to provide security in the watershed, and earthquake preparedness.

MOVED by Commissioner Derman and **SECONDED** by Commissioner Sifert, that the Regional Water Supply Commission approve the attached service plan.

CARRIED

6. **2015 CAPITAL AND OPERATING BUDGET**

T. Robbins spoke to the report.

MOVED by Commissioner Derman and **SECONDED** by Commissioner Gramigna, that the Regional Water Supply Commission recommend that the CRD Board:

1. Approve the 2015 Capital Budget and the Five Year Capital Plan;
2. Approve the 2015 Operating Budget;
3. Approve the 2015 wholesale water rate of \$0.6254 per cubic metre;
4. Approve the 2015 agricultural water rate of \$0.2105 per cubic metre; and
5. Amend the "Water Supply Local Service Area Fee and Charge Bylaw No. 1, 1997" accordingly.

Commissioner Hicks and Commissioner Logan left the meeting.

CARRIED

Commissioner Sifert and Alternate Commissioner McBride **OPPOSED**

7. JAPAN GULCH WATER DISINFECTION FACILITY UPGRADE – PROJECT STATUS REPORT

T. Robbins spoke to the report.

MOVED by Commissioner Derman and **SECONDED** by Commissioner Rogers, that the Regional Water Supply Commission direct CRD staff to:

- a) Proceed with the DB procurement strategy for this project;
- b) Retain OPUS as the owner's representative, subject to finalizing the revised scope and effort for services, and revising the original contract accordingly; and
- c) Approve the redistributed budget of \$9.0M for the DB procurement strategy.

CARRIED

8. WATER QUALITY REPORT FOR SOOKE LAKE RESERVOIR JUNE - AUGUST 2014

G. Harris spoke to the report.

MOVED by Commissioner Szpak and **SECONDED** by Commissioner Gerrard,

That the Regional Water Supply Commission direct staff to post the Sooke Lake Reservoir monitoring results for June 2014 through August 2014 for public release.

CARRIED

9. EVENT REPORT FROM WATER MAIN FAILURE ON OCTOBER 4, 2014

The report was handed out to the Commission members and T. Robbins spoke to it.

Commissioner Rogers left the meeting.

MOVED by Commissioner Derman, and **SECONDED** by Commissioner Helps, that the Regional Water Supply Commission receive the report and recommend that:

1. CRD staff will conduct a review of its emergency response procedures and requirements when coordinating a response within a municipality, when municipal residents, municipal infrastructure and municipal emergency support services are impacted as a result of CRD regional infrastructure. CRD staff will meet with municipal staff and emergency personnel to raise awareness of CRD regional infrastructure within each municipality.
2. CRD staff will review all similar municipal bulk water supply points on the Regional Water Supply system to ensure infrastructure transfer points are clearly defined and documented and/or document with the municipalities as required.
3. CRD staff will review previously completed supply system infrastructure upgrade projects to determine, as practically as possible, if similar vulnerabilities exist. All future supply system upgrade projects will include replacement of infrastructure to the point of municipal ownership or to a point where upgrades have previously taken place and state of infrastructure is known.

CARRIED

Commissioners Sifert, Isitt and Hodgins **OPPOSED**

10. WATER WATCH

MOVED by Commissioner Coleman, and **SECONDED** by Commissioner Helps, that the Regional Water Supply Commission receive the report for information.

CARRIED

11. NEW BUSINESS

There was no new business.

12. ADJOURNMENT

MOVED by Commissioner Sifert and **SECONDED** by Commissioner Isitt,
that the Regional Water Supply Commission meeting be adjourned at 2:23 pm.

CARRIED

Chair

Secretary

Regional Water Supply Service

Commission Orientation

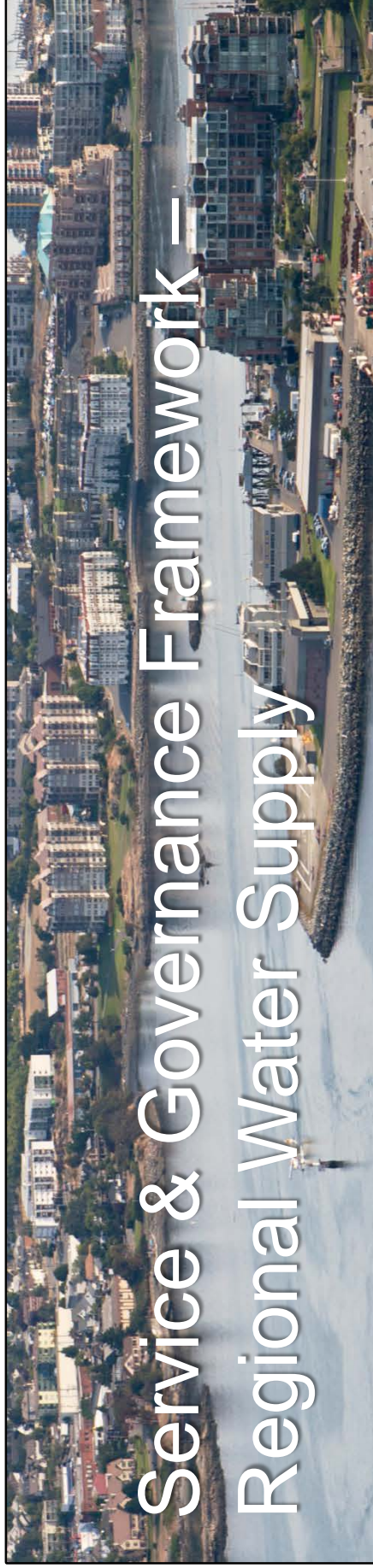
January 21, 2015



A vertical photograph of a lush forest stream. A large, moss-covered log lies across the water, with a small waterfall cascading over it. The surrounding forest is dense with green ferns and trees.

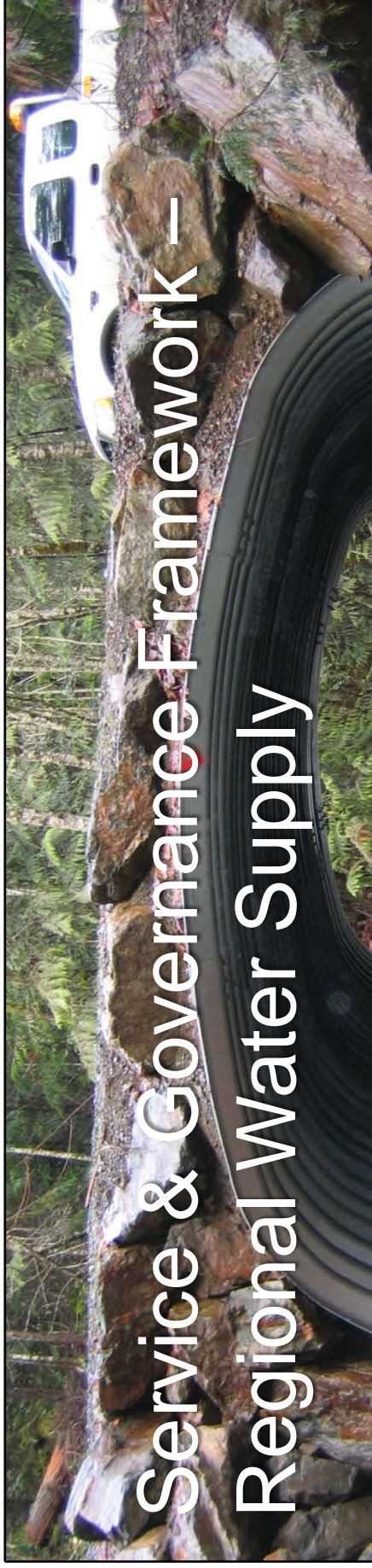
Presentation Overview

- Service and Governance Framework
- Regional Water Supply Source and Infrastructure Overview
- Service Delivery - CRD Departmental Programs
- Service Budgets
- Water Demand & Rates
- Budget Factors & Upcoming Initiatives
- Staff Support




Provincial Act & Regulation & CRD Bylaws

- Capital Region Water Supply & Sooke Hills Protection Act 1997 – Service Establishment
- Capital Region Water Supply & Sooke Hills Protection Regulation 1997 – Commission Establishment
- CRD Bylaw No. 2537 – Water Supply Local Service Area Establishment Bylaw
- CRD Bylaw No. 2539 – Regional Water Supply Commission Bylaw
- CRD Bylaw No. 2570 – Water Supply Fee & Charge Bylaw
- CRD Bylaw No. 2739 – Adoption of Strategic Plan for Water Management



CRD Bylaws & Strategic Plan

- CRD Bylaw No. 2804 – Water Supply Area Protection Bylaw
- CRD Bylaw No. 3061 – Water Conservation Bylaw
- CRD Bylaw No. 3516 – Cross Connection Control Bylaw
- 2012-2016 Strategic Plan for the Greater Victoria Water Supply System

- CRD Board – Chair Nils Jensen
 - CRD Bylaw No. 2864 – CRD Board Delegation Bylaw
- 2015 – 2018 Regional Water Supply Commission – Chair & Vice Chair TBD
 - Zeb King, District of Central Saanich
 - Gordie Logan, City of Colwood
 - Tim Morrison, Township of Esquimalt
 - Gord Baird, District of Highlands
 - Mike Hicks, Juan de Fuca EA
 - Winnie Sifert, City of Langford
 - Lillian Szpak, City of Langford
 - Bob Gramigna, District of Metchosin
 - Geoff Orr, District of North Saanich
 - Eric Zhelka, District of Oak Bay
 - Vic Derman, District of Saanich
- 2015 – 2018 Regional Water Supply Commission – Chair & Vice Chair TBD
 - Fred Haynes, District of Saanich
 - Dean Murdock, District of Saanich
 - Vicki Sanders, District of Saanich
 - Leif Wergeland, District of Saanich
 - Mervyn Lougher-Goodey, Town of Sidney
 - Rick Kasper, District of Sooke
 - Chris Coleman, City of Victoria
 - Jeremy Loveday, City of Victoria
 - Ben Isitt, City of Victoria
 - Geoff Young, City of Victoria
 - John Rogers, Town of View Royal
- Water Advisory Committee – Vice Chair represents Regional Water Supply Commission 

Regional Water Supply Source

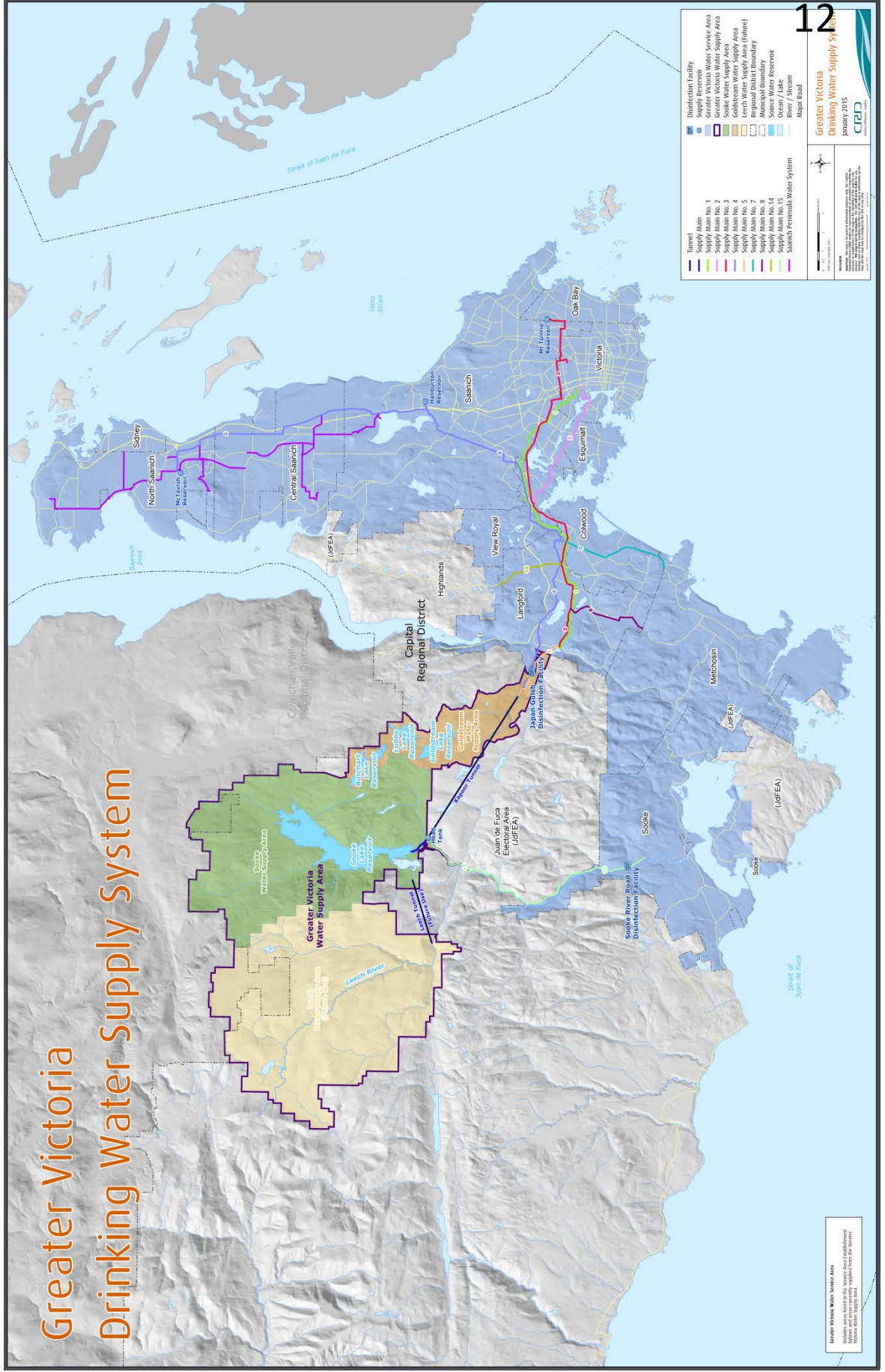
- Greater Victoria Water Supply Area – 20,549 hectares
 - Sooke, Goldstream, Leech Watersheds
- 6 Lake Reservoirs & 11 Dams
- Sooke Lake Reservoir – Primary Supply Source
- Goldstream Reservoir System – Secondary Supply Source
- Unfiltered Source Water with 3-Step Disinfection Process
 - Primary Disinfection
 - Ultraviolet light – targets parasites (Giardia & Crypto)
 - Free chlorine – targets bacteria & viruses
 - Secondary Disinfection
 - Ammonia to produce chloramine – long-lasting disinfectant residual
 - Unfiltered Raw Source Water
 - Turbidity (cloudiness) typically < 1 NTU
 - E.Coli bacteria < 20 CFU/100 mL
- Average 130 million litres of water treated & delivered every day



- Total length of water transmission mains across system: 110 kilometres
- Pipe diameters range from 400mm – 1067mm
- Pipe construction and material types:
 - Welded Steel 85%
 - Ductile Iron (DI) 7%
 - Kapoor Tunnel 8%
- Number of Revenue Meters: 48
- Number of Balancing Reservoirs: 3
- Number of Pressure Reducing Stations: 7
- Over \$130 million invested in supply infrastructure renewal since 1995



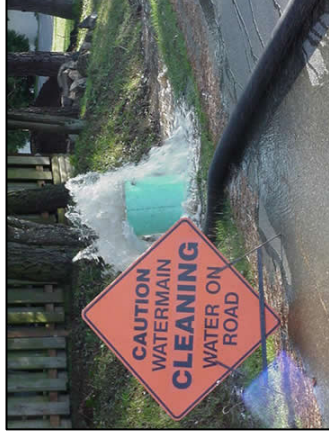
Greater Victoria Drinking Water Supply System



Greater Victoria Water Service Area
Includes areas listed in the Service Area Establishment
Process Water Supply Plan

Service Delivery – CRD Departmental Programs

- Operations & Engineering
 - Water System Operation and Maintenance
 - Capital Project Delivery
 - Engineering Design & Project Management
 - System Infrastructure Planning & Asset Management
 - Emergency Response
- Plant Maintenance & Fleet Management
 - Preventive Maintenance Planning & Management for Operations
 - Fleet: Service Vehicles & Heavy Equipment
- Water Quality
 - Water Quality Sampling, Lab Testing, Monitoring, Reporting, Regulatory Compliance
 - Cross Connection Control



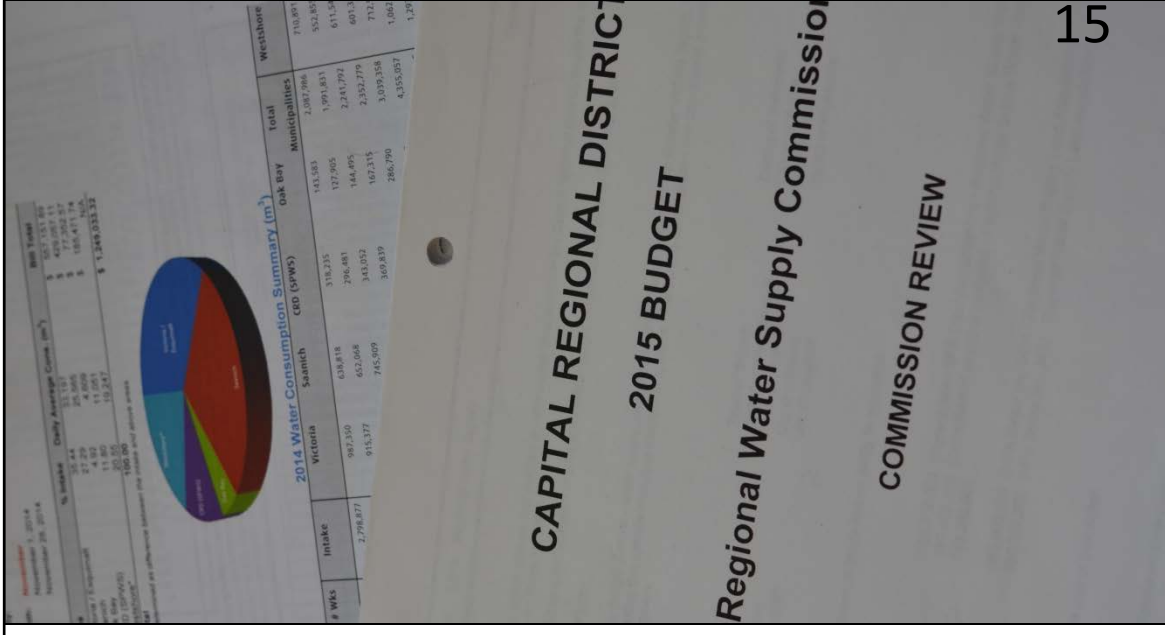
Service Delivery – CRD Departmental Programs

- Demand Management
 - Administration of Water Conservation Bylaw
 - Promotion of responsible water use through public outreach and education
- Customer Service
 - Field Response to Customer Concerns
 - Leaks, Pressure Issues, Meter Inquiries
- Water Metering & Billing
 - Municipal Meter Reading & Billing Frequency



Service Budgets

- Operating & Capital Budgets
 - Provides for all expenditures for Operation & Maintenance (O&M), administration of water service and capital projects
 - Utility Rate Model – Full Cost Recovery
- Operating, Capital Project Lists & Supplemental budget items considered by Commission annually in November for recommendation to CRD Board
- Service Funding
 - 100% of Operating & Supply Capital, including debt servicing, funded by sale of water



Budget Summaries

- 2015 Budgets:
 - Total Budget: \$27.93 M
 - Total Supply Capital Budget: \$4.80 M
 - RWSC – JDF Shared Capital: \$660 K

- 2015 Budget Context:
 - Debt Servicing 46.1%
 - Transfers to Water Capital/Debt Reserve 10.5%
 - Supply System Operations 31.3%
 - Water Quality Program 4.2%
 - Cross Connection Control Program 1.8%
 - Demand Management Program 2.6%
 - Agricultural Subsidy 3.5% 100%



Water Demand & Water Rates

- 2015 Regional Water Supply Wholesale Water Rate: \$0.6254 / cubic metre
- 2015 Agricultural Water Rate: \$0.2105 / cubic metre
- 2015 Budget Water Demand: 43,588,000 cubic metres



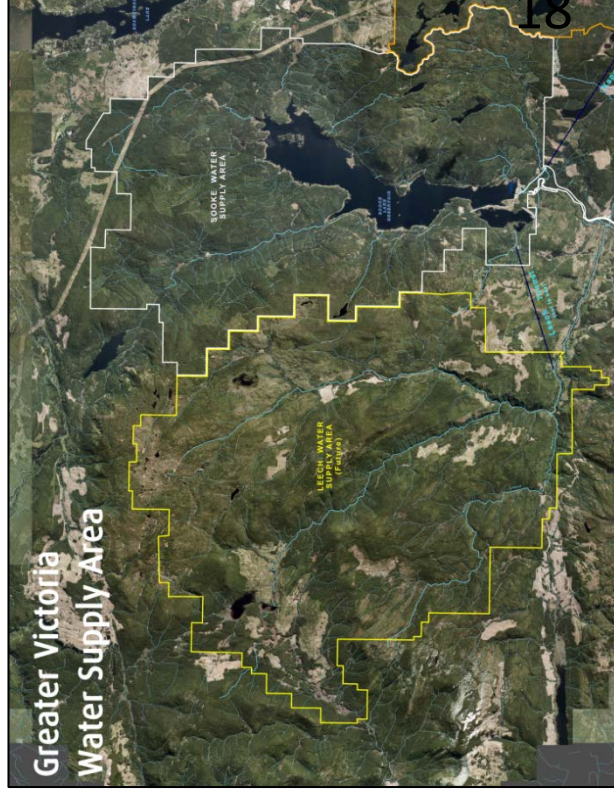
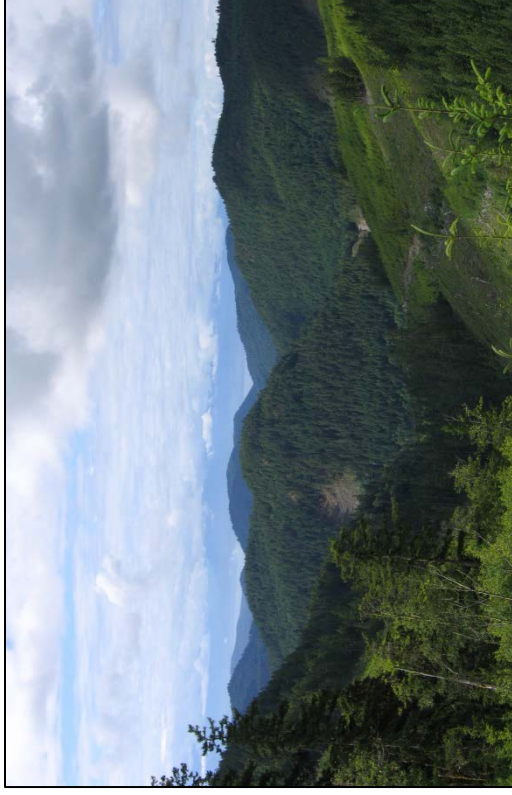
2015 – 2019 Budget

Factors

- Continuing trend of lower demand
- Debt servicing - \$65 M Leech WSA
- Continuing infrastructure investment

Upcoming Initiatives

- Leech Water Supply Area Security
- Japan Gulch Disinfection Upgrades
- 2015 Centennial – Water Supply





- CRD Administration and Finance
 - Bob Lapham, CAO
 - Diana Lokken, GM, Finance & Technology
 - Shanney Thaver, Financial Analyst and Accountant, Water Services
- Regional Water Supply Operations, Engineering & Commission Support
 - Ted Robbins, GM, Integrated Water Services
 - Peter Sparanese, Senior Manager, IWS Operations & Engineering
 - Annette Constabel, Senior Manager, Watershed Protection
 - Jan Van Niekerk, Senior Manager, Customer & Technical Services
 - Margaret Montague, Commission Secretary
- Water Quality, Demand Management, Cross Connection Control Programs
 - Larisa Hutcheson, GM, Parks & Environmental Services
 - Glenn Harris, Senior Manager, Environmental Protection & Water Quality
 - Heidi Gibson, Senior Manager, Environmental Partnerships



Questions?



**REPORT TO THE REGIONAL WATER SUPPLY COMMISSION
MEETING OF JANUARY 21, 2015**

SUBJECT **EXTENSION OF CONTRACT NO. 2012-742 SUPPLY OF HIRED EQUIPMENT –
WATERSHED PROTECTION DIVISION**

ISSUE

To extend the contract for the supply of hired equipment for a further year as allowed under the 2012 – 2014 contract awarded to Tri-X Excavating Ltd.

BACKGROUND

An invitation to tender was issued on October 12, 2012 with the winning bidder Tri-X Excavating Ltd awarded a two-year contract beginning November 1, 2012.

Tri-X Excavating Ltd. has delivered good service over the past two years providing equipment and operators as needed for the Watershed Protection division and providing quality work.

The amount of hired equipment needed to implement Watershed Protection activities and projects varies from year to year. The 2013 and 2012 expenditures under the contract are summarized below:

Contract Period	Expenditure
Year 1 (2013)	\$124,583
Year 2 (2014)	\$49,749
Total	\$174,332

Projects that required hired equipment in the past two years included 200 and 300 series excavators and gravel trucks to complete bridge and culvert replacement projects, upgrade roads, and to build a section of new road to a communications facility.

Works planned for 2015 continue with bridge and culvert replacements, road upgrades and road deactivation and a short section of new road construction for wildfire suppression and forest fuel management purposes in the Horton Ridge area. An expenditure of \$90,000 for hired equipment is estimated to be needed to complete these projects in 2015.

The current two-year contract includes an extension clause for two further one-year extensions. 2015 would be the first of the two one-year extensions allowed in the contract. A short (3 month) extension was granted on October 30, 2014 to complete current projects in early November, and in case hired equipment is needed prior to a Regional Water Supply Commission decision on a full year of additional service.

The Regional Water Supply Commission's authority to approve contracts is outlined in the *Capital Regional District Delegation Bylaw No. 1, 2001* (a Bylaw to Delegate Powers, Duties and Functions of the Capital Regional District Board). The Commission has the authority to approve contracts over \$200,000. As the extension of the Hired Equipment contract for Watershed Protection is expected to exceed \$200,000 in 2015, including prior year work, the Regional Water Supply Commission's approval is required.

ALTERNATIVES

Alternative 1: That the Regional Water Supply Commission approve the extension of the award of the contract for the supply of Hired Equipment for the Watershed Protection division to Tri X Excavating Ltd. for a further 9 months, effective March 1 to October 31, 2015, based on the hourly/daily rates as submitted in the 2012 tender, not including taxes.

Regional Water Supply Commission – January 21, 2015
Extension of Contract No. 2012-742 Supply of Hired Equipment
- Watershed Protection Division

2

Alternative 2: That the Regional Water Supply Commission not approve the extension of the award of the contract for the supply of Hired Equipment for the Watershed Protection division to Tri X Excavating Ltd., and direct staff to retender the supply of hired equipment.

IMPLICATIONS

Under Alternative 1, current projects and activities would continue without impacting the approved annual capital and operating programs and providing the opportunity to extend the current contract and pricing.


Under Alternative 2, not approving the contract extension would require a new tender for hired equipment services, which may impact service and budgets for annual capital and operating programs.

CONCLUSION

As the current contract for Hired Equipment for the Watershed Protection division includes an extension clause for two one-year term extensions, and as the CRD is satisfied with the current services, it is recommended that the Commission approve a one-year extension. For the extension to be exercised, all terms and conditions of the original contract must remain unchanged.


RECOMMENDATION

That the Regional Water Supply Commission approve the extension of the award of the contract for the supply of Hired Equipment for the Watershed Protection division to Tri X Excavating Ltd. for a further 9 months, effective March 1 to October 31, 2015, based on the hourly/daily rates as submitted in the 2012 tender, not including taxes.



Annette Constabel, MSc, RPF, PMP
Senior Manager, Watershed Protection

AC:mm



Ted Robbins, BSc, CTech
General Manager, Integrated Water Services
Concurrence

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY JANUARY 21, 2015**

**SUBJECT PLANS FOR THE CENTENNIAL ANNIVERSARY OF THE GREATER VICTORIA
WATER SUPPLY SYSTEM**

ISSUE

To inform the Regional Water Supply Commission of planned activities to celebrate the 2015 centennial anniversary of water supply from Sooke Lake Reservoir to Greater Victoria.

BACKGROUND

Water was first supplied to Greater Victoria from Sooke Lake Reservoir in May of 1915 (Attachment A). At that time, a 44 km above ground concrete flowline (aqueduct) fed Humpback Reservoir, which supplied underground steel mains to downtown Victoria.

Today, many residents of Greater Victoria have limited awareness of where their tap water comes from, the history of water supply in the area, and the role and operations of the Capital Regional District (CRD) in supplying, treating and protecting their drinking water.

In order to commemorate 100 years of regional drinking water supply and provide an opportunity to showcase the Regional Water Supply System, the work of the Regional Water Supply Commission, and Integrated Water Services, the following activities and communications have been scheduled in 2015:

May - Print and Online Materials

Materials for print and online use will be developed and distributed to highlight the history, services and importance of the Regional Water Supply System. These materials include a brochure, stand-up banners and a webpage under the Education & Outreach section of the CRD website. The brochures will be ready for distribution during the public tours of the water supply area in May 2015, and Integrated Water Services anticipates partnering with municipalities to display this material.

May - Public Tours

Public watershed tours will again be offered during BC Drinking Water Week May 4 – 9, 2015. As in the past, staff led coach tours will visit the Goldstream Water Supply Area, Sooke Water Supply Area and the Japan Gulch Treatment Facility with opportunities for secondary student classes to participate.

June - Public Open House in the Water Supply Area

A public open house located at the Field Operations Centre at the Goldstream Entrance to the Water Supply Area will provide a venue for a variety of activities for all ages and is intended to be interesting, educational, entertaining and memorable. Some of the activities may include:

- Interpretive short bus tours of the site with staff members highlighting history, operations and security of the water supply area;
- Interpretive walking tour to some of the largest trees in the watershed demonstrating fire history of the area;
- Tours of the Japan Gulch Treatment Facility;
- Tours of the Howard English Fish Hatchery;
- Opportunity to view the Lubbe Powerhouse (1897), Humpback Dam and Flowline (1913 – 1915);
- Educational displays regarding the Water Supply Area, the work of Integrated Water Services, Demand Management and water management in general;
- Hands-on displays and demonstrations of operational activities – fire and service equipment, water mains;

- Historical displays and interpretation of the construction of the flowline and dams;
- Children’s activities and crafts on a water theme; and
- Cake cutting and a historical photo booth

Public Outreach & Media

A communications plan will be developed to promote the Open House and encourage media interest. The annual public tours of the watershed and Hartland Happening historically garner significant local media interest so it is expected the open house will have a similar response. A media release and invitation will be extended to local media outlets.

Financial Implications

The Open House will be funded by operational budget supplementary funds as well as in-kind contributions of sponsors, partners and volunteers.

September - Video

An 8 -10 minute video on the Regional water supply system past, present and future is being developed. The video will cover the history, infrastructure and social impact of the Regional water supply system. Scheduled to be released and distributed in September 2015, the video is expected to provide a commemorative and general communications tool for the department for the next several years. The video will include aerial footage of the Water Supply Area and interviews with commissioners and staff.

FINANCIAL IMPLICATIONS

Supplemental operational funding was approved by the Regional Water Supply Commission in 2014 (\$10,000) and 2015 (\$40,000) to plan and implement activities to celebrate the centennial. The budget for the planned activities is as follows:

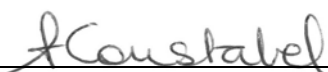
ACTIVITY	2014	2015
Print and Online Materials	-	\$5,000
Public Tours	-	Existing funding
Open House	\$3,000	\$25,000
Video	\$7,000	\$10,000
Total	\$10,000	\$40,000


CONCLUSION

We have an obligation to recognize and an opportunity to celebrate 100 years of the Greater Victoria Water Supply System with the public. An open house, video and supporting print and digital materials will provide information about the Regional water supply system and opportunity for the public to participate in the commemoration and celebration of drinking water in Greater Victoria.

RECOMMENDATION

That the Regional Water Supply Commission receive the staff report for information.


 Annette Constabel, MSc, RPF
 Senior Manager, Watershed Protection


 Ted Robbins, BSc, CTech
 General Manager, Integrated Water Services
 Concurrence

HD:AC:mm
Attachment: 1

SOOKE LAKE SYSTEM IS FORMALLY OPENED

Little Ceremony Marks Inauguration of Victoria's New Water Works Plant- Mayor Performs Official Act.

Little ceremony marked the formal opening of the Sooke Lake water works system yesterday morning shortly before noon at the head works at Sooke Lake. Mayor Stewart officially set the new source of the city's supply in motion citywards when, after brief speeches by Water Commissioner Rust and himself and a prayer by the Rev. Dr. Scott, pastor of the Metropolitan Methodist Church, he turned the wheel controlling one of the intake valves and allowed the lake water to flow into the intake. Other valves were operated by members of the City Council, and when three valves were opened a volume of water to the quantity of approximately [number unreadable] gallons per twenty-four hours was pouring through the intake and screen house and over the weir in the gate house into the chamber, whence runs the conduit pipe line to Humpback Reservoir. About nine hours later the pipe line was discharging its load into Humpback Reservoir and from now on the Sooke Lake supply will be available for city use.

**REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, JANUARY 21, 2015**

**SUBJECT WATER QUALITY REPORT FOR SOOKE LAKE RESERVOIR
 SEPTEMBER - DECEMBER 2014**

ISSUE

To present the monitoring results for water quality conditions observed in Sooke Lake Reservoir for the period September through December 2014.

BACKGROUND

The Capital Regional District (CRD) supplies drinking water for the majority of residents in the region, which also includes many small systems in the electoral areas. As a requirement under the *BC Drinking Water Protection Act*, staff monitor water quality to ensure the region's drinking water supply is safe and potable.

All public drinking water systems in British Columbia must comply with the *BC Drinking Water Protection Act* and the BC Drinking Water Protection Regulation. In addition, the CRD relies upon water quality parameters in the *Guidelines for Canadian Drinking Water Quality* and guidelines developed by the US Environmental Protection Agency to guide and inform our water quality monitoring program.

Water quality monitoring is one of the cornerstones of the multi-barrier approach to providing safe, potable drinking water to the region's residents. The monitoring program ensures proper integration of an understanding of source waters, treatment process, distribution infrastructure and maintenance, and the delivery of water to customers, and also ensures that any potential risks or concerns can be effectively managed to ensure a safe drinking water supply.

The results of the monitoring are presented on a regular basis, directly to the Commission and Island Health, and to the general public through the CRD website.

A summary of monitoring results for Sooke Lake Reservoir for the period September through December 2014 is attached as Appendix A. Graphs comparing data with previous years and long-term averages are attached as Appendix B. Note: In all charts, 2014 data are shown in red.

ALTERNATIVES

That the Regional Water Supply Commission:

1. Direct staff to post the Sooke Lake Reservoir monitoring results for September 2014 through December 2014 for public release.
2. Request additional information before public release of the monitoring results for September 2014 through December 2014.

ECONOMIC IMPLICATIONS

The budget for reporting on the water quality results in the Sooke Lake Reservoir is included in the main regional water supply budget.

ENVIRONMENTAL IMPLICATIONS


All water quality parameters indicated good overall water quality for this period, consistent with trends in previous years. The previously observed unusual trend in nitrogen over phosphorus ratio indicating very low productivity conditions in Sooke Lake has now abated and returned to a trend more in line with historical records. For the period of December 1 to December 5, 2014, Goldstream Lake was utilized as water source for the Greater Victoria Drinking Water Supply System due to the annual Kapoor Tunnel inspection.

CONCLUSION


The water quality monitoring from September through December 2014 indicated that the source water in the Sooke Lake Reservoir was of good overall quality. The monitoring program remains effective for ensuring oversight of the drinking water system.

RECOMMENDATION

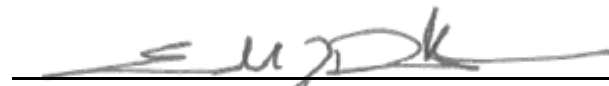
That the Regional Water Supply Commission direct staff to post the Sooke Lake Reservoir monitoring results for September 2014 through December 2014 for public release.



Glenn Harris, Ph.D., R.P.Bio.
 Senior Manager, Environmental Protection



Larisa Hutcherson, P.Eng.
 General Manager
 Parks & Environmental Services
 Concurrence



Ted Robbins, B.Sc., C.Tech.
 General Manager, Integrated Water Services
 Concurrence

CM:cam

Attachments: 2

SUMMARY OF WATER QUALITY IN SOOKE LAKE RESERVOIR September–December 2014

Physical Parameters

Water Levels. Similar to previous years, the water level in Sooke Lake Reservoir declined steadily until it reached its lowest level on October 20, 2014 with 182.75 m elevation which is equal to 69.8% of full service level (Figure 1). By December 31, 2014, the reservoir reached 99% of full service level, which is sooner than in previous years other than 2012. The observed water levels were within the expected range of this parameter and very similar to recent historical records. (Note: In all charts, 2014 data are shown in red.)

Water Temperature. Initially, during the subject period, the weekly average water temperature in Sooke Lake Reservoir was slightly higher than the long-term average, however, by the end of October 2014, the water temperature returned to tracking very closely the long-term average temperature trend (Figure 2). The sharp drop in water temperature at the beginning of December was due to source water switch to Goldstream Lake for the Kapoor Tunnel inspection. Goldstream Lake typically exhibits colder water temperatures in the winter. (Note: The small circles on the chart show the extent of water temperature variation in previous years.)

Water Clarity

Turbidity. The turbidity in Sooke Lake Reservoir continued to remain well below the 1.0 NTU turbidity limit and even slightly below the long-term average; very similar to the levels recorded in the same period of 2010-2013 (Figure 3).

Water Transparency. The transparency of the water in Sooke Lake Reservoir during the first part of this reporting period was slightly higher than observed in the last few years. It remained however within the range of the long-term average and by mid October returned to levels well below the long-term average and very close to conditions observed since 2010. In general, the transparency of the water resembles conditions observed before raising the water level in the reservoir in 2004 (Figure 4).

Bacteria

Total Coliform Bacteria. The total coliform concentration in the raw source water entering the Japan Gulch Disinfection Plant from Sooke Lake Reservoir was similar to the past several years and generally below the long-term average (Figure 5). An expected increase during the first week in December was due to the scheduled switch to Goldstream Lake which naturally exhibits higher total coliform concentrations. *E. coli* concentrations remained low and well below the USEPA limit for an unfiltered supply (see insert in Figure 5).

Nutrients

Phosphorus. The total phosphorus levels in both in the south (Figure 6) and north (Figure 7) basins, coming off of historic lows in July, have steadily risen since August to levels comparable with previous years. Levels, however, remained low in both basins throughout the reporting period and indicate low productivity conditions in Sooke Lake which is generally favourable for a drinking water supply source.

Nitrogen. The total nitrogen levels in both in the south (Figure 8) and north (Figure 9) basins have followed the reverse trend compared with total phosphorus. While phosphorus

concentrations were at historical low levels during the summer of 2014, the nitrogen concentrations, at the same time, were recorded well above long-term trends. As phosphorus concentrations started to rise in August, nitrogen concentrations began to recede to levels consistent with previous years and in line with historical trends.

Water Quality staff continue to closely monitor the nutrient trends in Sooke Lake.

Chlorophyll-a

Chlorophyll-a concentrations throughout Sooke Lake Reservoir were lower than the long-term average and similar to, or lower than, the levels seen during the same interval in 2010-2013 (Figures 10-12). These concentrations are relatively low for a surface water reservoir and reflect the low levels of nutrients (especially phosphorus) in this water body.

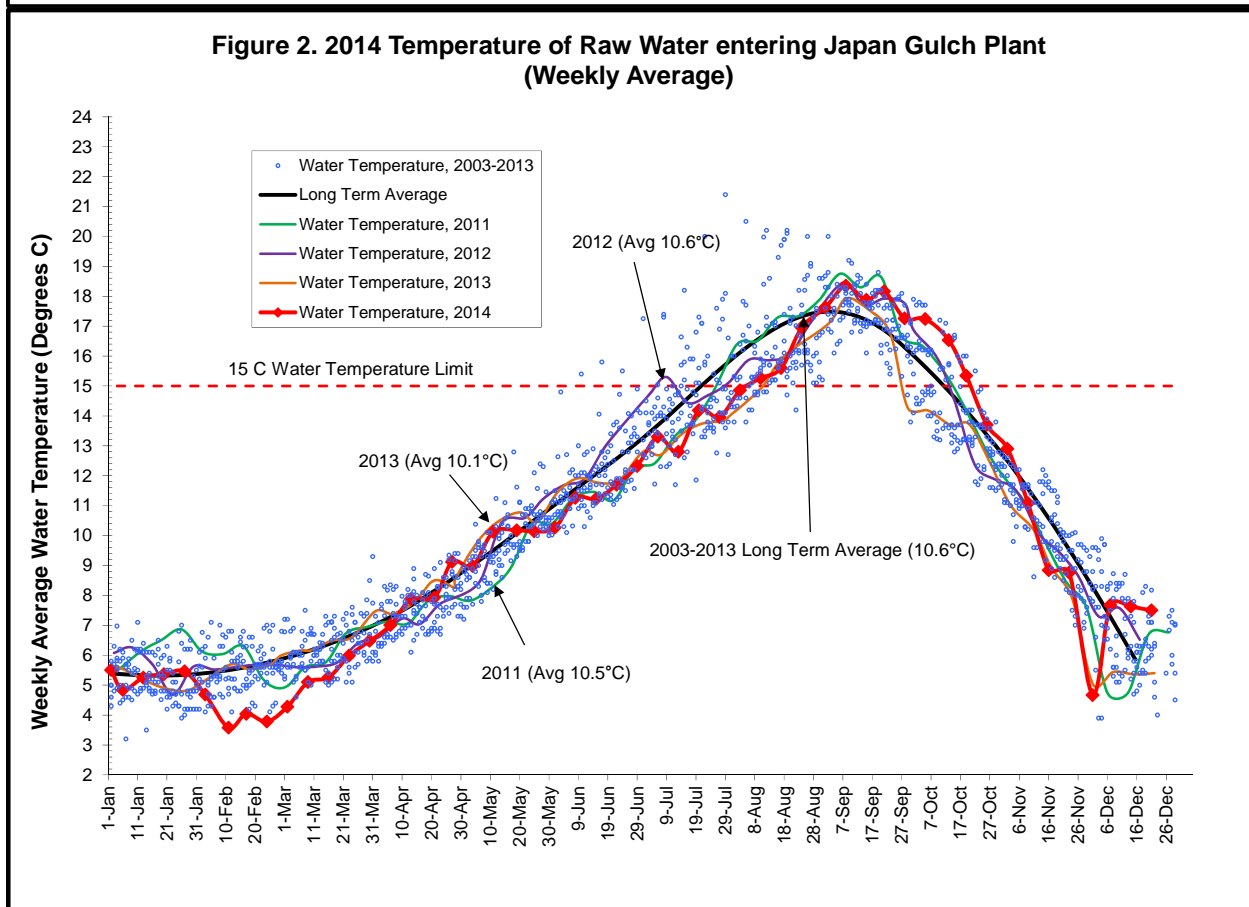
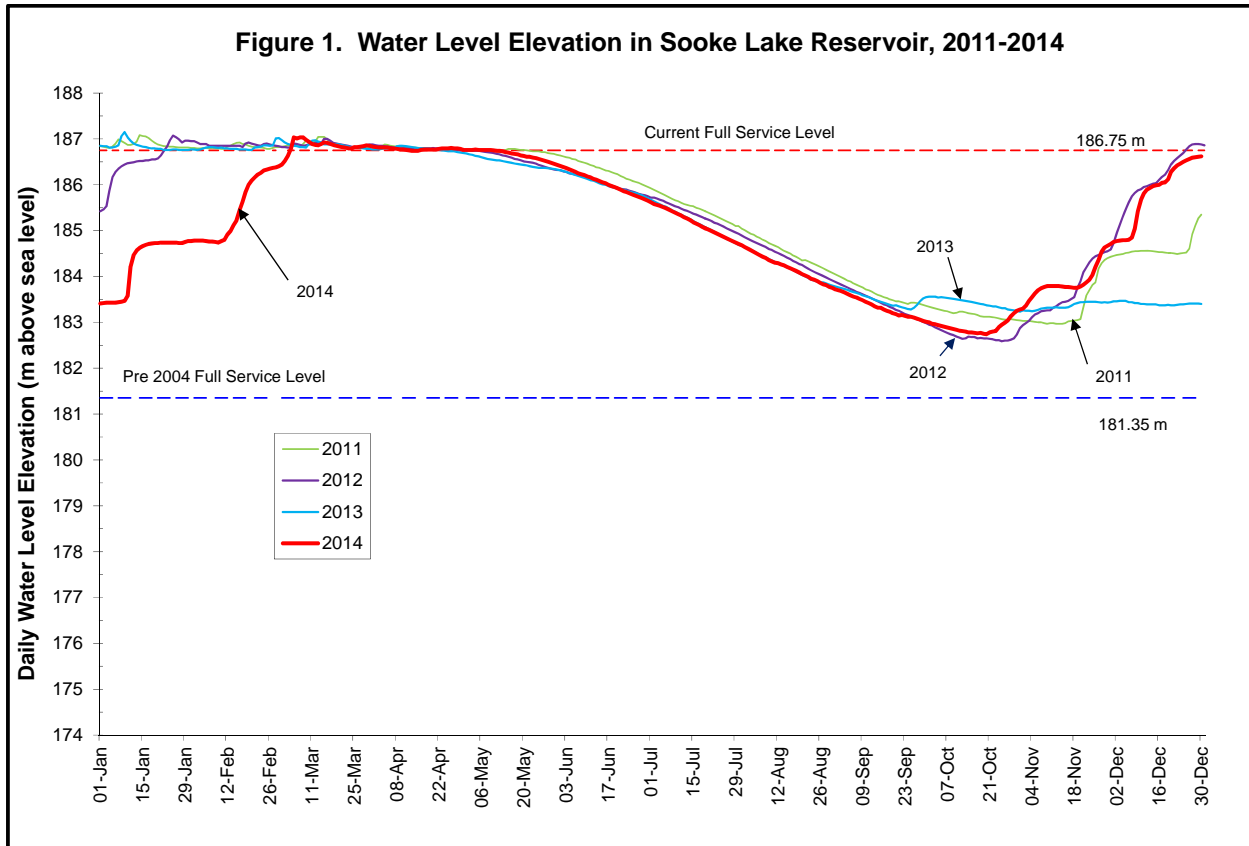
Algae

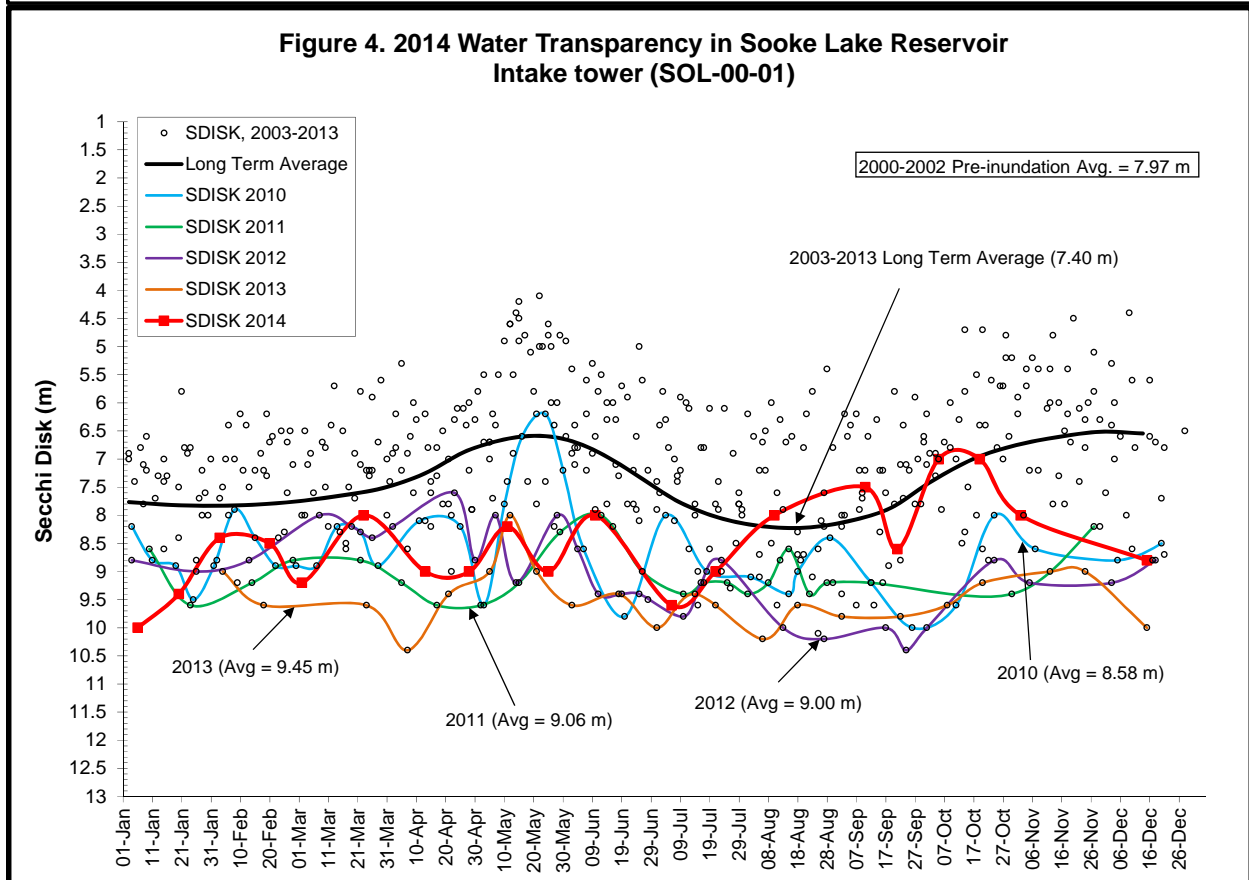
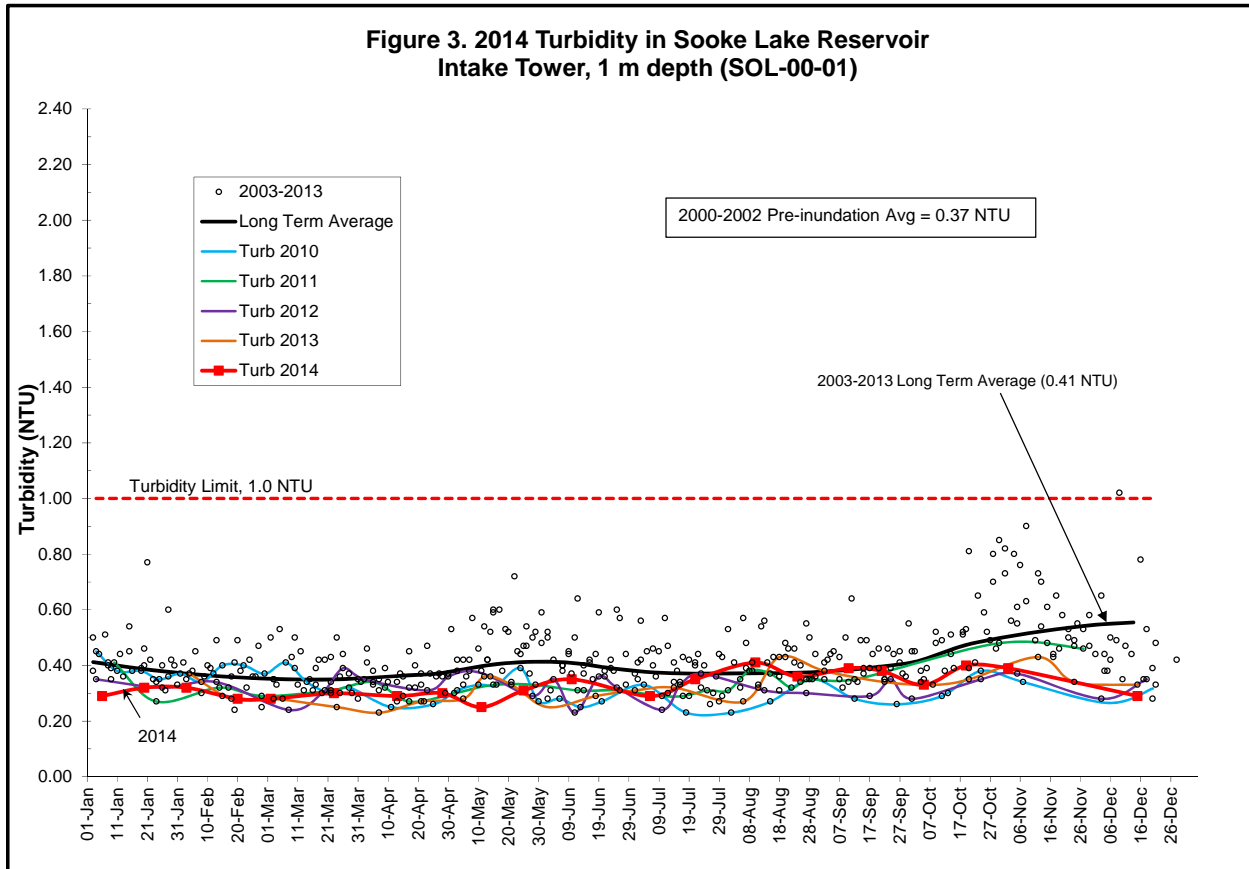
Staff continued to collect algal samples bi-weekly during the early fall months and graduated to monthly sampling in November and December, for a total of six sampling dates in this quarter. The samples were both qualitatively (presence, absence, dominance) and quantitatively (enumeration of cells and colonies) analyzed and subsequently archived.

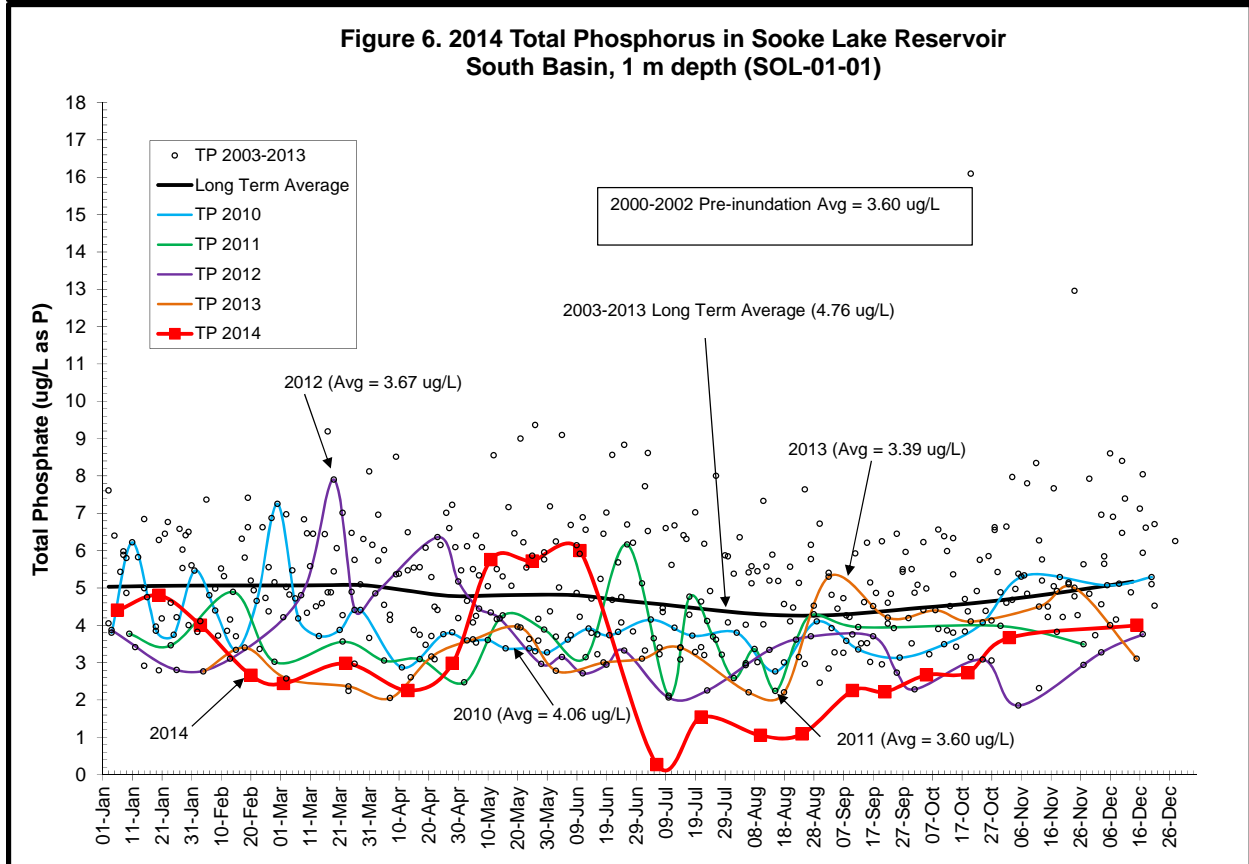
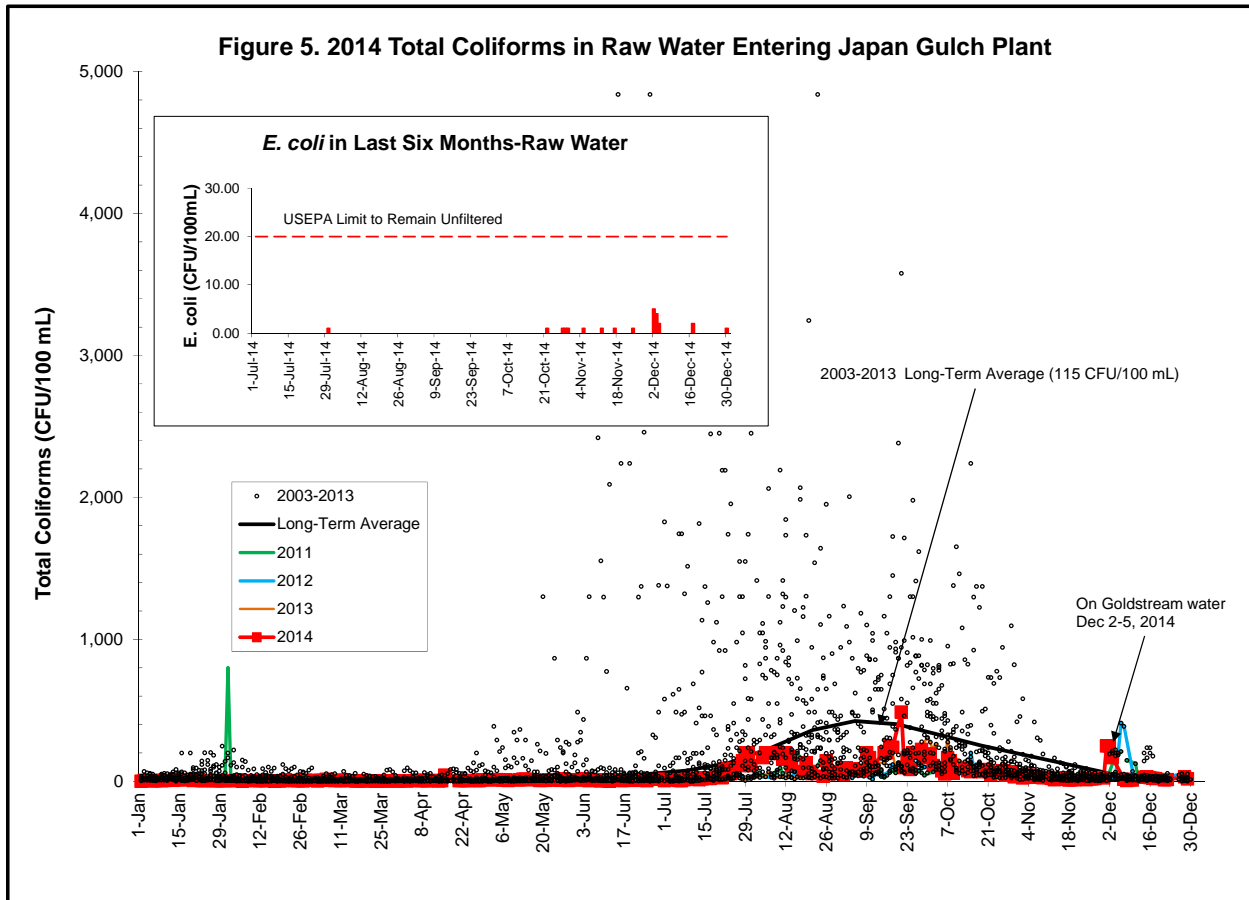
Algal species composition of qualitative samples was diverse, ranging from a total of 37-64 different species of algae found per sampling date at SOL-00-00 (the intake tower). This range of total number of species found is an indicator of good water quality.

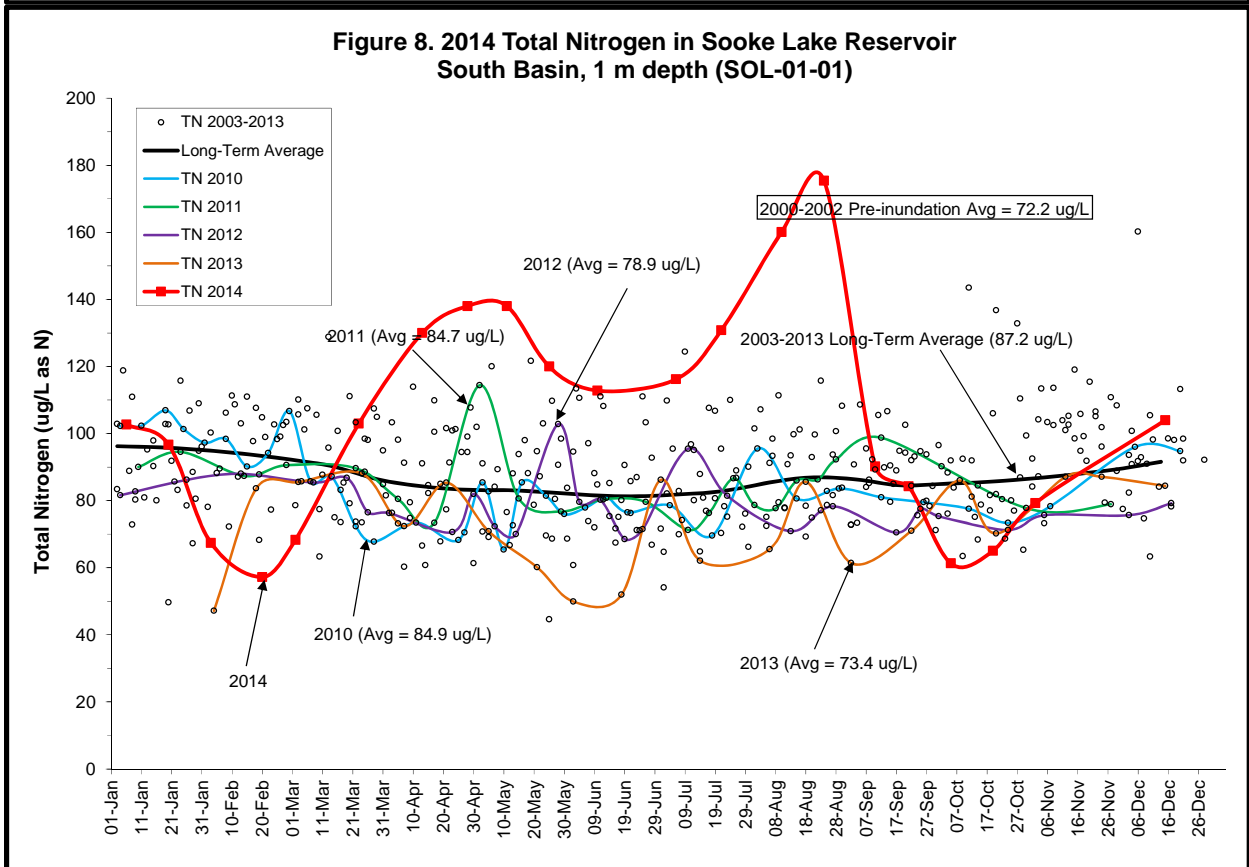
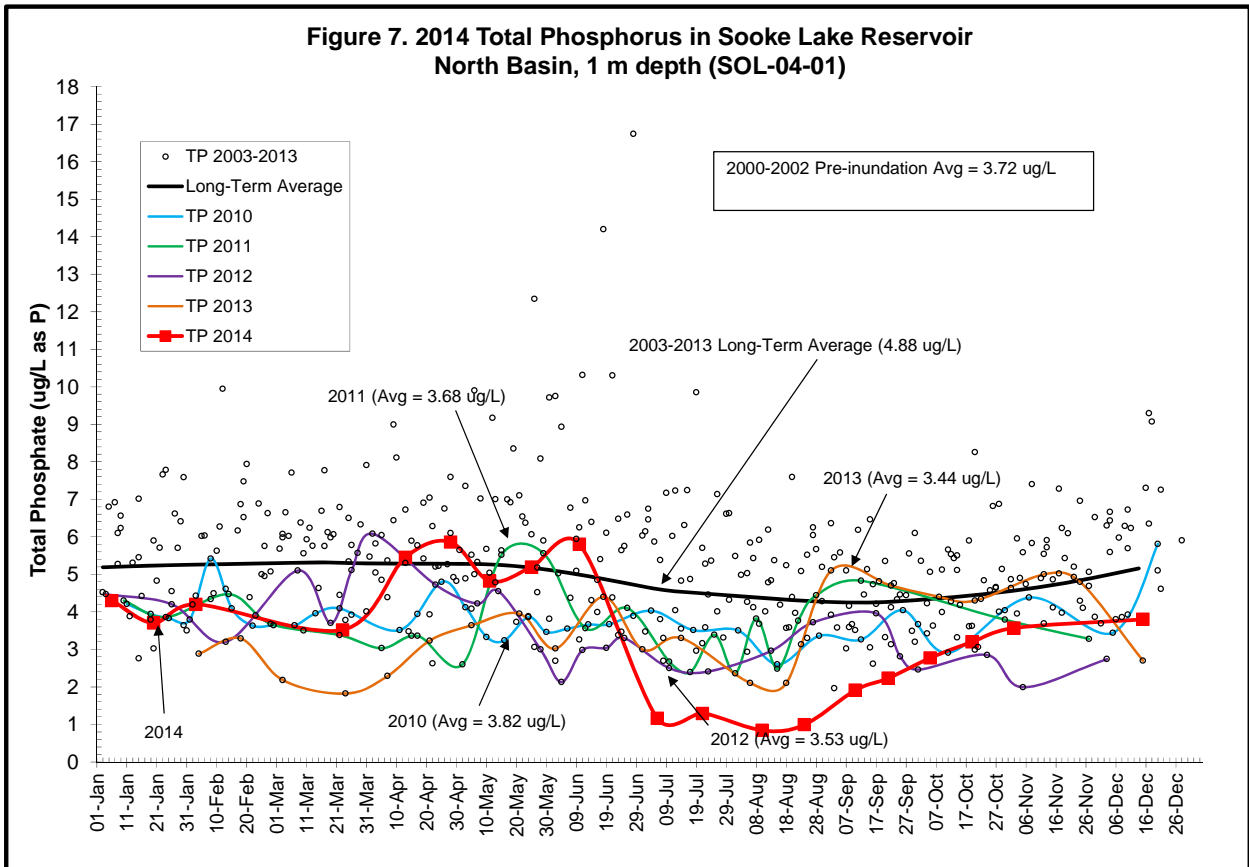
Similar to the trend in the third quarter of 2014, the greatest number of species observed overall in samples in the fourth quarter belonged to the Diatom group, followed closely by species belonging to the Green algal group (Figure 13). While no algal blooms occurred during this time period, dominant species (the species seen most frequently in a given sample) belonged to the Diatom group of algae (Figure 14). All of these data are concurrent with chlorophyll-a levels remaining at the low end of seasonal averages and the absence of other water quality issues such as taste and odour over the same time period.

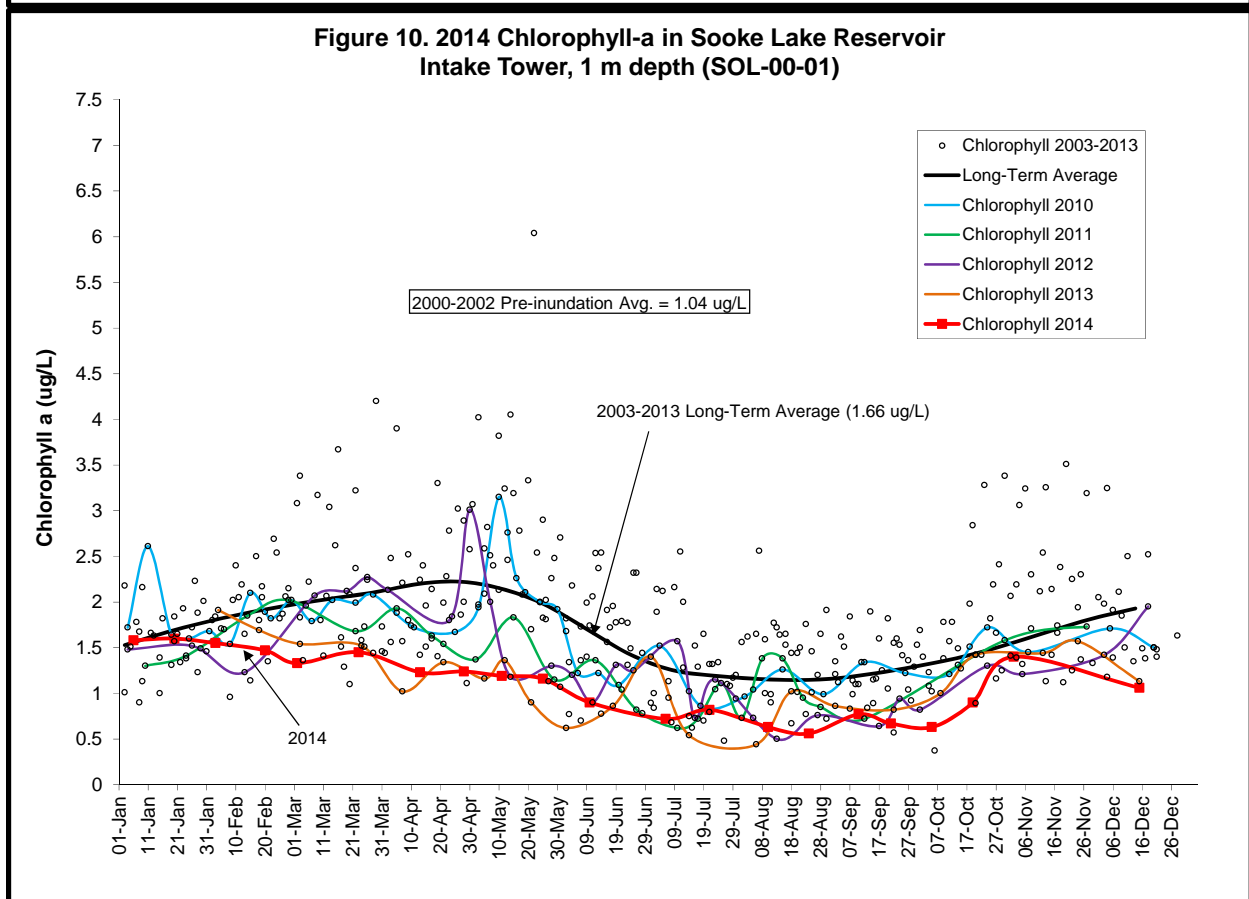
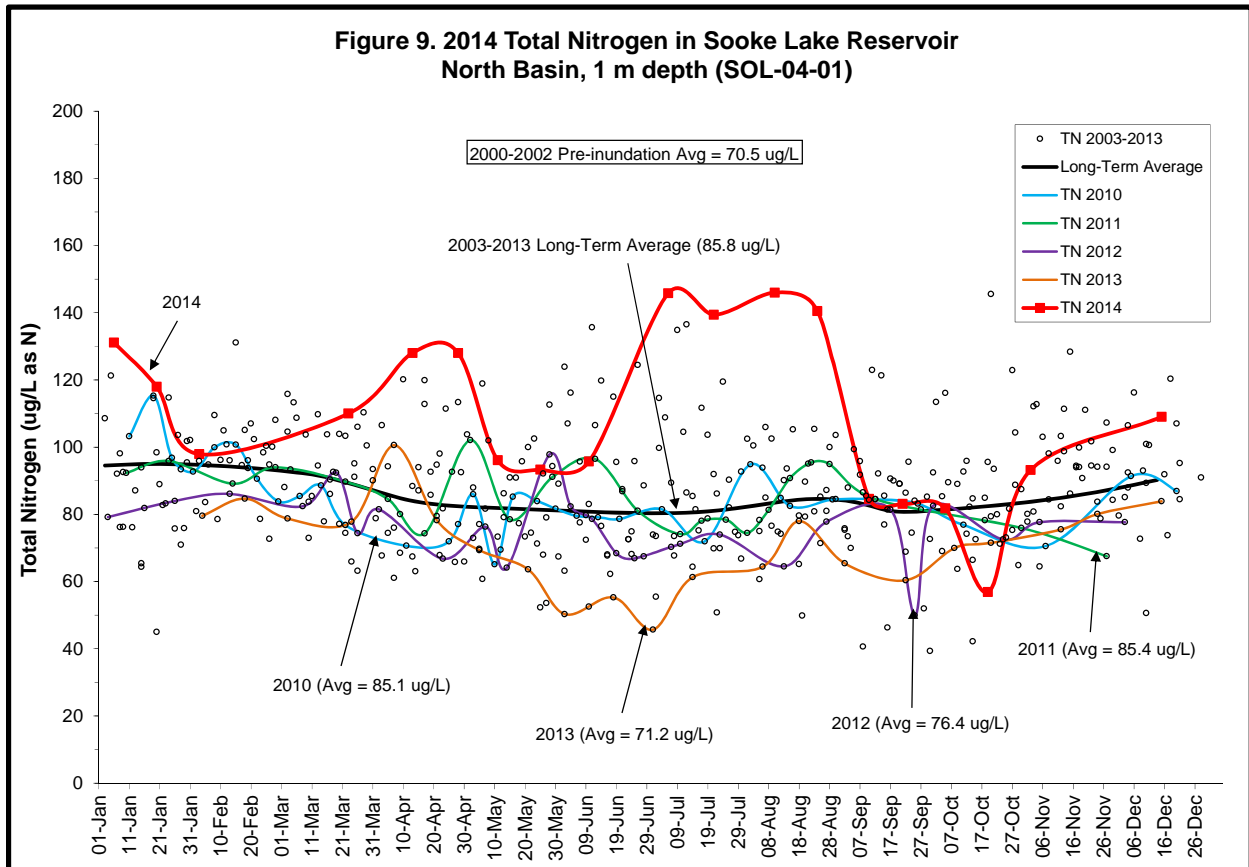
Water Quality Trends in Sooke Lake Reservoir 2011-2014











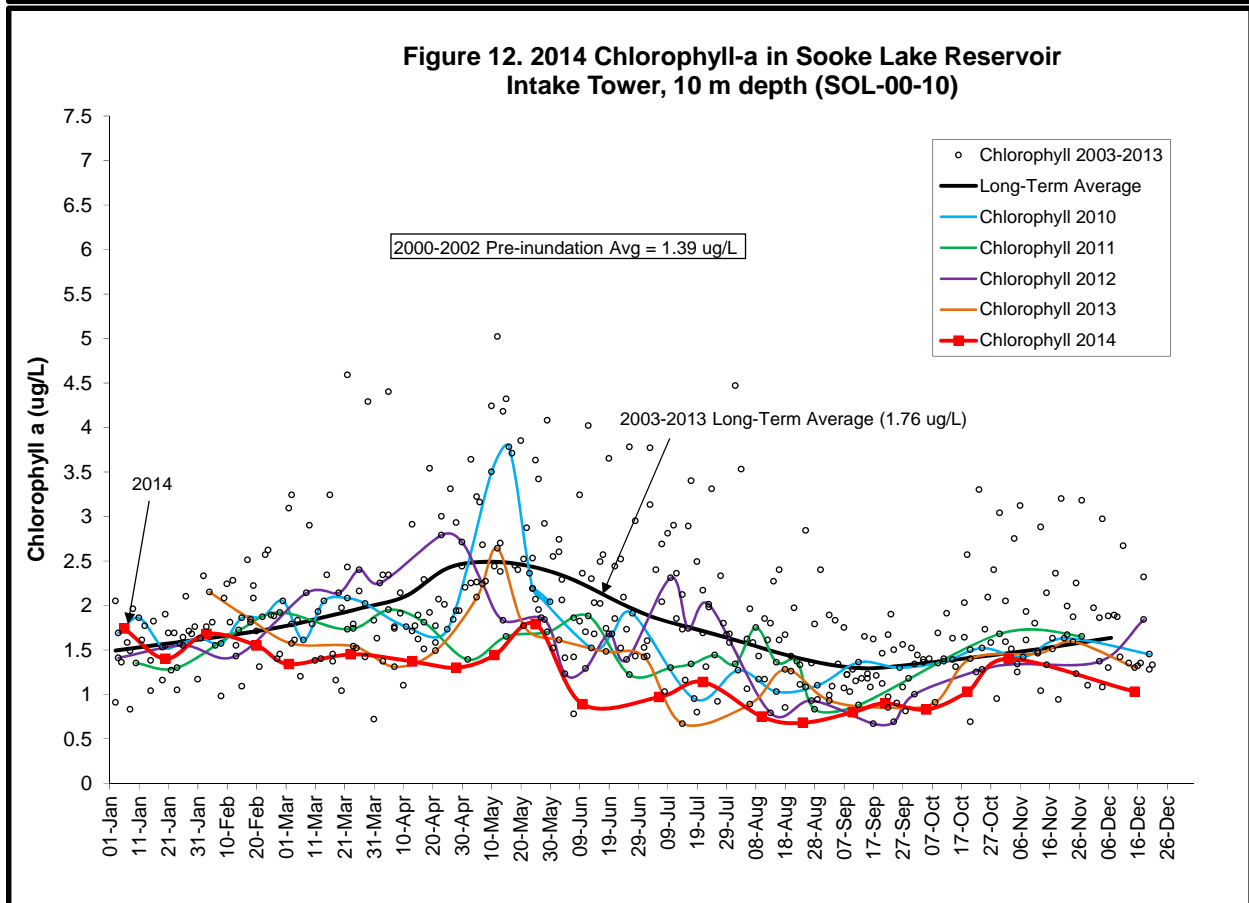
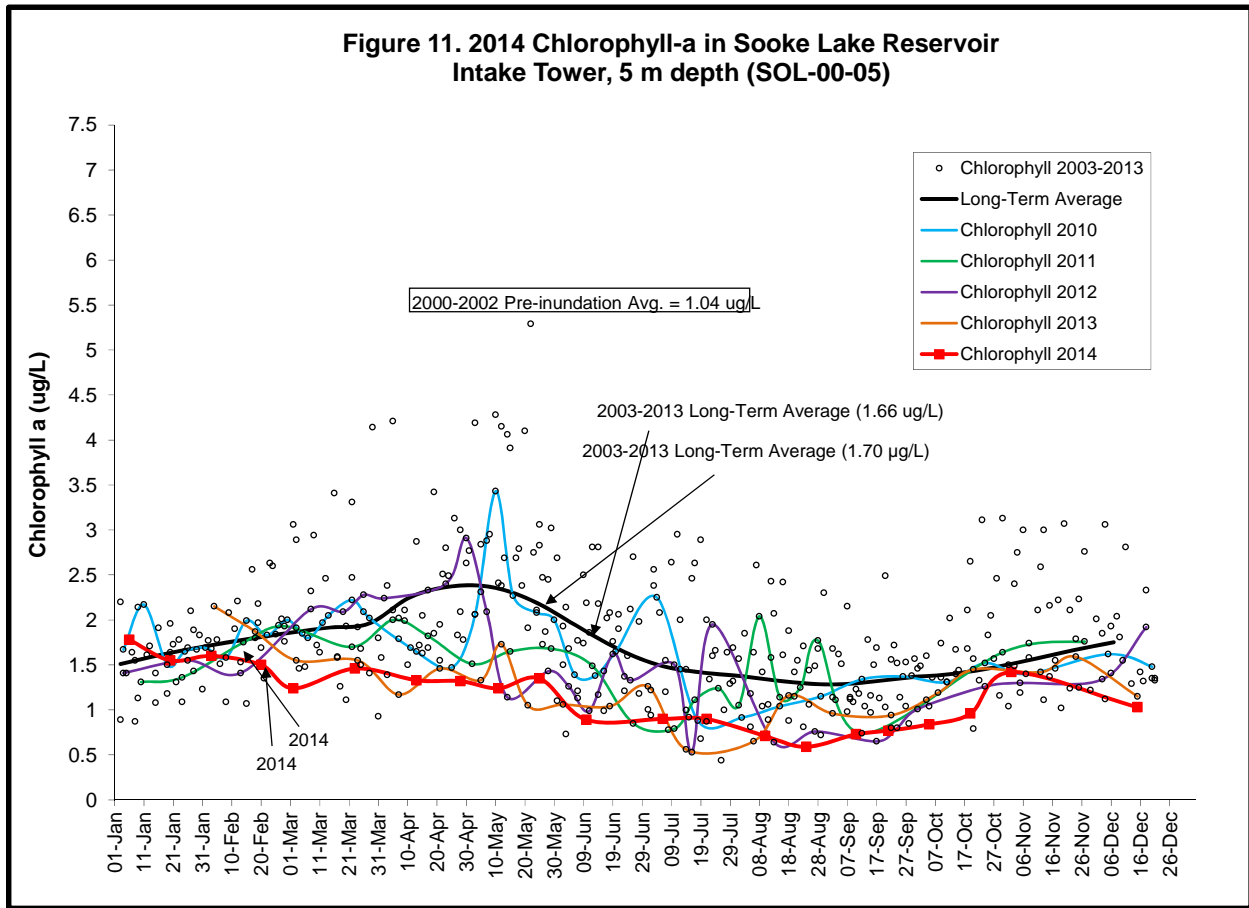


Figure 13. Average Total Qualitative Sample Composition by Major Algal Group, September-December, 2014 (SOL-00-00: Intake Tower)

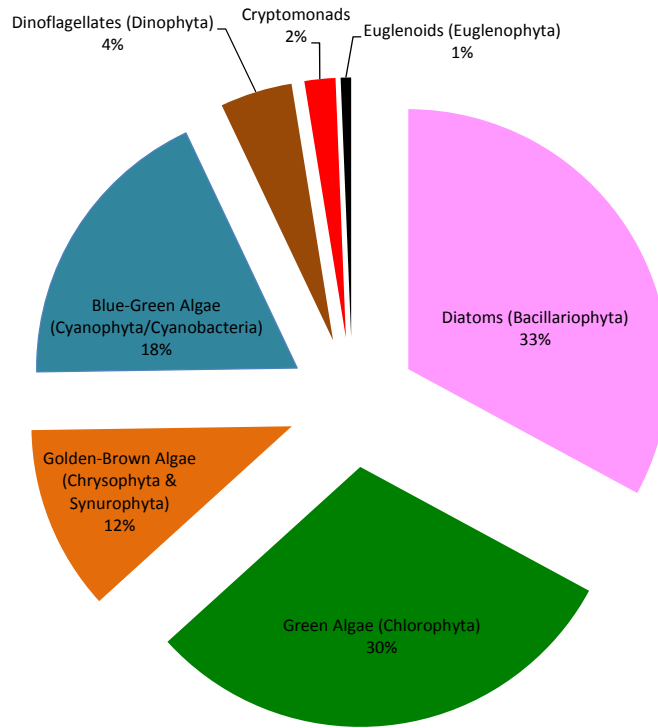
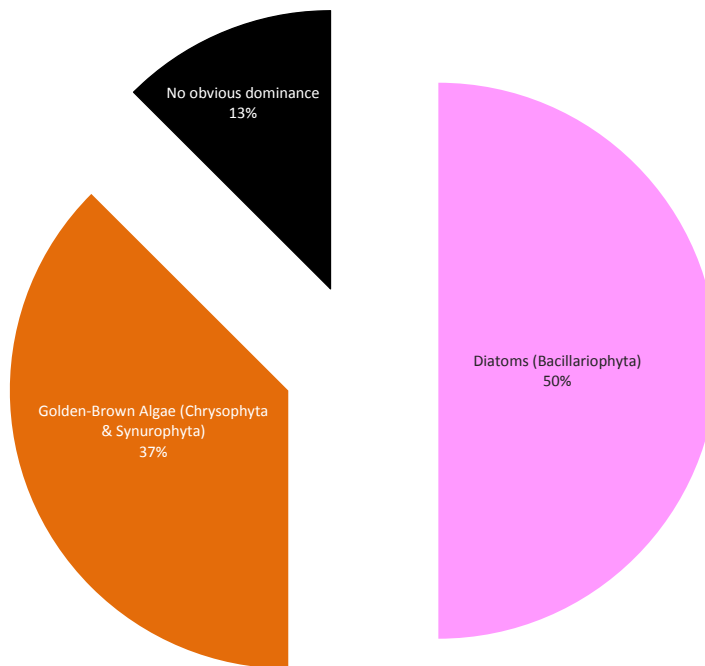


Figure 14. Qualitative Sample Dominance* by Major Algal Group, September-December, 2014 (SOL-00-00: Intake Tower)



*Where dominance indicates species seen most commonly in a given sample yet not at concentrations high enough to deem an algal bloom.

CAPITAL REGIONAL DISTRICT - INTEGRATED WATER SERVICES

Water Watch

Issued: January 12, 2015

Water Supply System Summary:

1. Useable Volume in Storage:

Reservoir	January 31 5 Year Ave		January 31/14		January 11/15		% Existing Full Storage
	ML	MIG	ML	MIG	ML	MIG	
Sooke	89,882	19,774	78,502	17,270	92,727	20,400	100.0%
Goldstream	9,124	2,007	7,545	1,660	8,846	1,946	90.0%
Total	99,006	21,781	86,047	18,930	101,574	22,346	99.0%

2. Average Daily Demand:

For the month of January	92.8 ML	20.42 MIG
For week ending January 11, 2015	93.4 ML	20.55 MIG
Max. day January 2015, to date:	98.5 ML	21.67 MIG

3. Average 5 Year Daily Demand for January

Average (2010 - 2014)	101.7 MLD ¹	22.37 MIGD ²
-----------------------	------------------------	-------------------------

¹MLD = Million Litres Per Day ²MIGD = Million Imperial Gallons Per Day

4. Rainfall January:

Average (1914 - 2014):	272.6 mm
Actual Rainfall to Date	91.3 (33% of monthly average)

5. Rainfall: Sep 1 - Jan 11

Average (1914 - 2014):	884.0 mm
2014 / 2015	854.2 (97% of average)

6. Water Conservation Action Required:

To avoid possible leaks next spring, now is the time to winterize your sprinkler system.

Check our website at www.crd.bc.ca/water for more information.

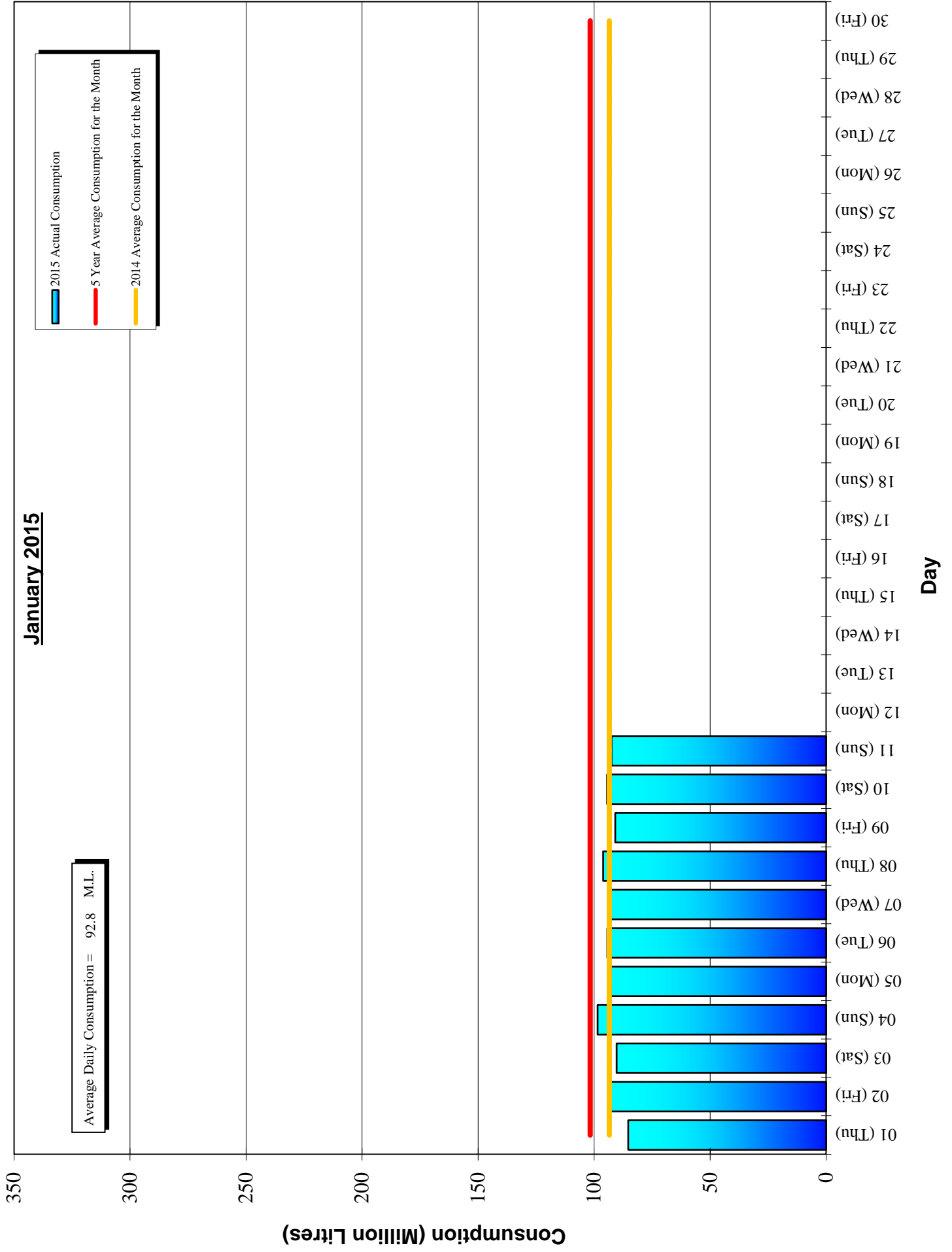
If you require further information, please contact:

Ted Robbins, B.Sc., C.Tech
General Manager, CRD - Integrated Water Services

or

Deborah Walker
Demand Management Coordinator

Capital Regional District Integrated Water Services
479 Island Highway
Victoria, BC V9B 1H7
(250) 474-9600



Daily Consumptions: - January 2015

Date	Total Consumption		Air Temperature @ Japan Gulch		Weather Conditions	Precipitation @ Sooke Res.: 12:00am to 12:00am			
	(ML)	(MIG)	High (°C)	Low (°C)		Rainfall (mm)	Snowfall (mm)	Total Precip.	
01 (Thu)	85.3	<=Min	18.76	1	-3	Sunny	0.0	0.0	0.0
02 (Fri)	93.1		20.48	3	0	Cloudy / Showers	0.8	0.0	0.8
03 (Sat)	90.3		19.86	3	1	Cloudy / Showers	3.8	0.0	3.8
04 (Sun)	98.5	<=Max	21.67	9	2	Cloudy / Rain	47.8	0.0	47.8
05 (Mon)	92.8		20.42	9	6	Cloudy / Rain	33.8	0.0	33.8
06 (Tue)	94.3		20.75	9	5	Cloudy / P. Sunny	0.0	0.0	0.0
07 (Wed)	93.1		20.48	7	3	Cloudy / P. Sunny	0.0	0.0	0.0
08 (Thu)	96.1		21.15	6	2	Sunny / P. Cloudy	0.0	0.0	0.0
09 (Fri)	90.9		19.99	7	3	Cloudy / Showers	3.6	0.0	3.6
10 (Sat)	94.4		20.76	6	5	Cloudy / Showers	1.5	0.0	1.5
11 (Sun)	92.5		20.35	7	6	Cloudy	0.0	0.0	0.0
12 (Mon)									
13 (Tue)									
14 (Wed)									
15 (Thu)									
16 (Fri)									
17 (Sat)									
18 (Sun)									
19 (Mon)									
20 (Tue)									
21 (Wed)									
22 (Thu)									
23 (Fri)									
24 (Sat)									
25 (Sun)									
26 (Mon)									
27 (Tue)									
28 (Wed)									
29 (Thu)									
30 (Fri)									
31 (Sat)									
TOTAL	1021.3 ML	224.66 MIG					91.3	0	91.3
MAX	98.5	21.67	9	6			47.8	0	47.8
AVE	92.8	20.42	6.1	2.7			8.3	0	8.3
MIN	85.3	18.76	1	-3			0.0	0	0.0

ML = Million Litres MIG = Million Imperial Gallons

Average Rainfall for January (1914 - 2014)	272.6
Actual Rainfall: January	91.3
% of Average	33%
Average Rainfall (1914 - 2014): Sept 01 - Jan 11	884.0
Actual Rainfall (2014 - 2015): Sept 01 - Jan 11	854.2
% of Average	97%

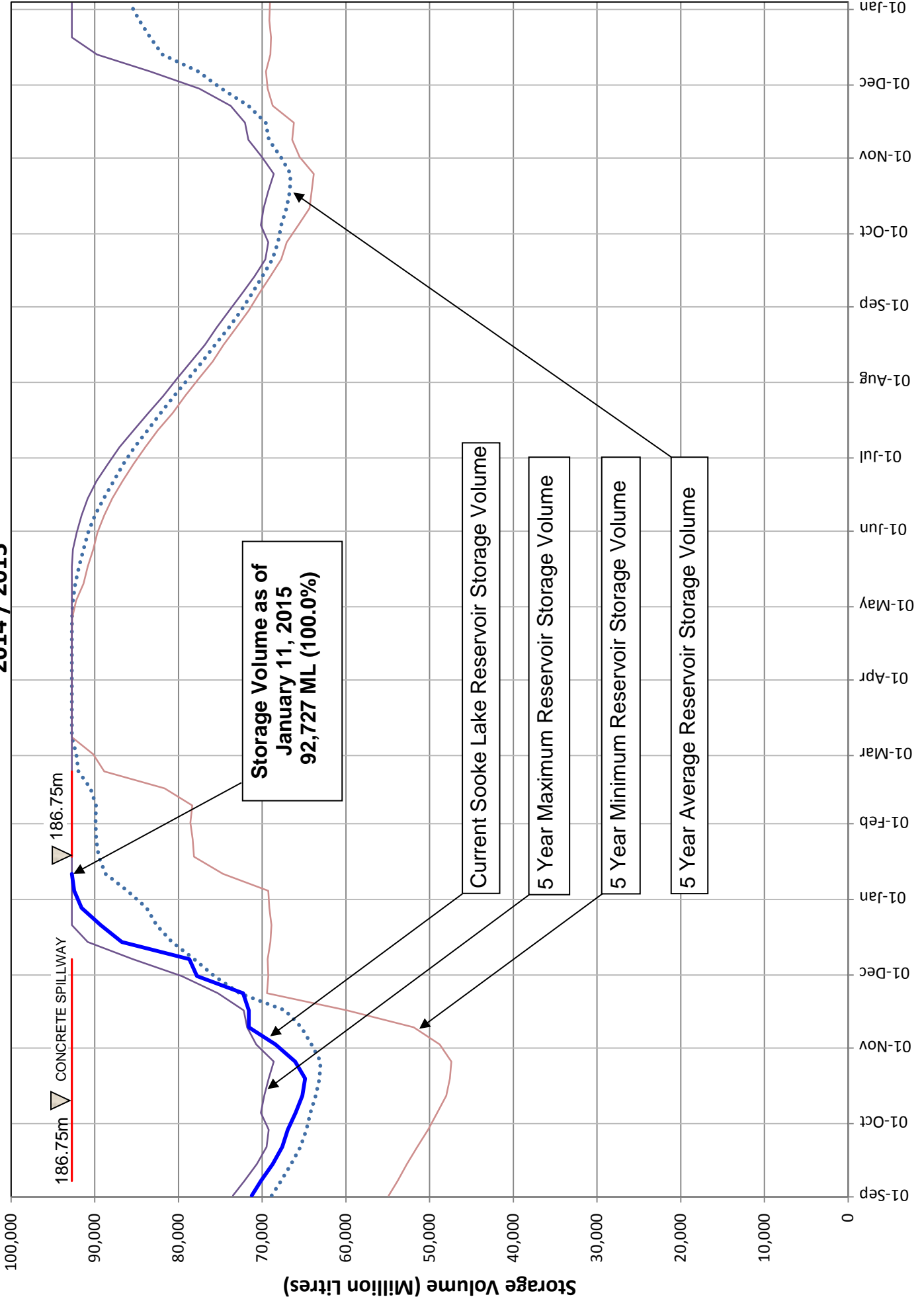
Number days with precip. 0.2 or more
6

Note: 10% of Snow depth applied to rainfall figures for snow to water equivalent.

Water spilled at Sooke Reservoir to date = 0.77 Billion Imperial Gallons
 = 3.50 Billion Litres

SOOKE LAKE RESERVOIR STORAGE SUMMARY

2014 / 2015



186.75m

CONCRETE SPILLWAY

186.75m

Storage Volume as of January 11, 2015
92,727 ML (100.0%)

Current Sooke Lake Reservoir Storage Volume

5 Year Maximum Reservoir Storage Volume

5 Year Minimum Reservoir Storage Volume

5 Year Average Reservoir Storage Volume