



**REPORT TO THE REGIONAL WATER SUPPLY COMMISSION MEETING  
OF WEDNESDAY, FEBRUARY 6, 2013 AND  
THE REGIONAL PARKS COMMITTEE MEETING OF FEBRUARY 20, 2013**

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**SUBJECT      STATUS REPORT - THE BULLFROG CONTROL PROGRAM IN THE WESTERN  
COMMUNITIES CONTROL CORRIDOR**

**ISSUE**

Results of the American bullfrog control program in the Western Communities Control Corridor in 2012 are presented to the Commission and the Committee for information.

**BACKGROUND**

Since 2006, the Regional Water Supply Commission and the Regional Parks Committee have each approved \$20,000 annually to fund a program to control American Bullfrogs (*Lithobates catesbeianus*) within a land corridor in the Western Communities (Attachment 1). The goal of the program is to prevent this invasive non-native species from migrating west from areas where they are already established and colonizing the Greater Victoria Water Supply Area (GVWSA) and Sooke Hills Wilderness Regional Park Reserve (SHWRPR). The City of Langford has provided an additional \$10,000 per year to fund bullfrog control in the municipality.

Consultations with public health experts in 2005, and a review of the available literature in 2009, produced no documented evidence that bullfrogs pose a threat to the quality of water in drinking water supply reservoirs. However, both recommended that bullfrogs be prevented from colonizing the GVWSA, if possible, as a precautionary approach because of gaps in the current knowledge on the potential effects of bullfrogs on drinking water quality. What is known, is that the American Bullfrog is associated with declines in native amphibians, including species at risk, and undesirable alterations to aquatic food webs.

**Overview of the Control Program**

Bullfrog control in the corridor is carried out between April and October, when the frogs are active and detectable, by Mr. Stan Orchard, a registered professional biologist, who has been undertaking the project since 2006. The objective is to prevent breeding and dispersal within the corridor by detecting and capturing adult and juvenile frogs. An average of about 80 night time surveys have been conducted annually by a 2 person crew in 17 lakes, ponds, and wetlands within the corridor. Spotlights are used to find bullfrogs along the shoreline and an electro-shocker is used to stun and capture each bullfrog detected. Captured bullfrogs are euthanized by freezing and data on sex, size and life history stage are recorded.

Repeat visits to all water bodies and wetlands are necessary, as results have shown that bullfrogs have been detected in subsequent surveys. This suggests that bullfrogs are either missed during previous visits, or migrate in from nearby inaccessible or unmapped areas (such as backyard ponds) within the corridor, or from outside the control corridor to the east. Integrated Water Services Watershed Protection staff monitor water bodies and wetlands at the western edge of the control corridor for bullfrog activity and notify Mr. Orchard when control in these sites is required. A number of members of the public are reporting the occurrence of bullfrogs within the corridor to Mr. Orchard, which also assists with control. Mr. Orchard also conducts bullfrog control work outside of the control corridor funded by other jurisdictions and private landowners.

## **Program Results**

In 2012, Mr. Orchard removed 2,150 bullfrogs from the 17 water bodies and wetlands in the control corridor over 78 field nights. Most wetlands and water bodies were visited multiple times and bullfrogs were detected during most surveys. A comparison of the overall 2012 results to prior years is provided in Figures 1 and 2 in Attachment 2.

Given the goal of preventing the westward spread of bullfrogs, the most meaningful results are the number of bullfrogs recorded within the western extent of the corridor. In 2012 four bullfrogs were detected and removed from Humpback Reservoir, down from a peak of 54 in 2011 (Figure 3 in Attachment 2). Results in other nearby ponds have been variable (see Figures 4 and 5 in Attachment 2). A sudden spike in numbers in a given water body indicates a breeding event in the water body in the previous year. Tadpoles were present in at least two water bodies in the control corridor in 2012, which also indicates that the program has been unable to completely prevent breeding. Every time reproduction occurs, increased effort is required at the breeding site for two to three years to prevent dispersal of newly metamorphosed frogs.

Since 2006, the results indicate that the control program has: 1) greatly reduced bullfrog numbers in the control corridor and substantially reduced the potential for population increase; and 2) successfully prevented bullfrog establishment in the GVWSA and SHWRPR. However, the program has been unable to eliminate bullfrogs from any water body or wetland, show a consistent decline in overall numbers captured, or completely prevent bullfrog reproduction in the corridor. These limitations suggest that, with the current level of effort, the program does not seem to be able to reduce bullfrog numbers quickly enough to effectively reduce the likelihood of spread beyond the corridor. Bullfrog control in the designated corridor is much more cost effective than trying to manage bullfrogs over a much wider area, or to try and remove them from the GVWSA and SHWRP once established. If CRD funding for the removal of the American Bullfrog in the control corridor is ended, it is certain that bullfrogs will successfully invade and establish within the GVWSA and SHWRPR.

## **Future Program Scope and Funding**

The program funding in 2013 will remain \$40,000, divided equally between Integrated Water Services and Regional Parks. Mr. Orchard has recommended an increase in the number of field visits per year in the control corridor that would result in higher program costs. A revised program budget reflecting this recommendation will be brought forward with the 2014 budget. Any increase in the number of annual field visits would need to be sustained for at least three years to evaluate the effect on the success of bullfrog control.

It should be noted that the BC Ministry of Environment endorses efforts to contain the range of the American bullfrog, but has not provided financial support to the CRD for bullfrog management, despite requests from the CRD Board. The Province will be developing a bullfrog management plan, but the timing for its release is unknown. In 2009 and 2010 the province provided funding to a non-governmental organization for public education about the dangers of facilitating the spread of bullfrogs. Mr. Orchard has applied twice to Environment Canada for funding for bullfrog control but has not been successful.

## **CONCLUSIONS**

American bullfrogs are a recognized threat to native amphibians and alter the ecology of water bodies and wetlands. While there is no documented evidence that bullfrogs pose a threat to the quality of water in drinking water supply reservoirs, public health experts have recommended that, as a precaution, bullfrogs be prevented from colonizing the GVWSA.

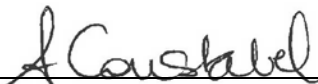
The bullfrog control program in the Western Communities control corridor has prevented the species from successfully colonizing the GVWSA and SHWRPR. A defined control corridor remains a cost-effective and efficient strategy for preventing the spread of bullfrogs, provided that sufficient resources are allocated to minimize breeding and prevent the dispersal of newly metamorphosed juveniles.

Bullfrog populations are declining within the control corridor with the current level of resources allocated to the program, but breeding continues and in-migration likely occurs from colonized areas to the east. Based on the trend in population reduction with the current level of effort each year, the program does not seem able to reduce bullfrog numbers quickly enough to effectively reduce the likelihood of spread beyond the corridor.

The program budget and scope will remain unchanged in 2013, but an increased scope and budget will be presented for 2014.

**RECOMMENDATION**

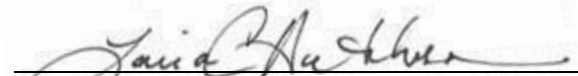
That the Regional Water Supply Commission and Regional Parks Committee receive the staff report for information.



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Annette Constabel  
Senior Manager, Watershed Protection  
Integrated Water Services

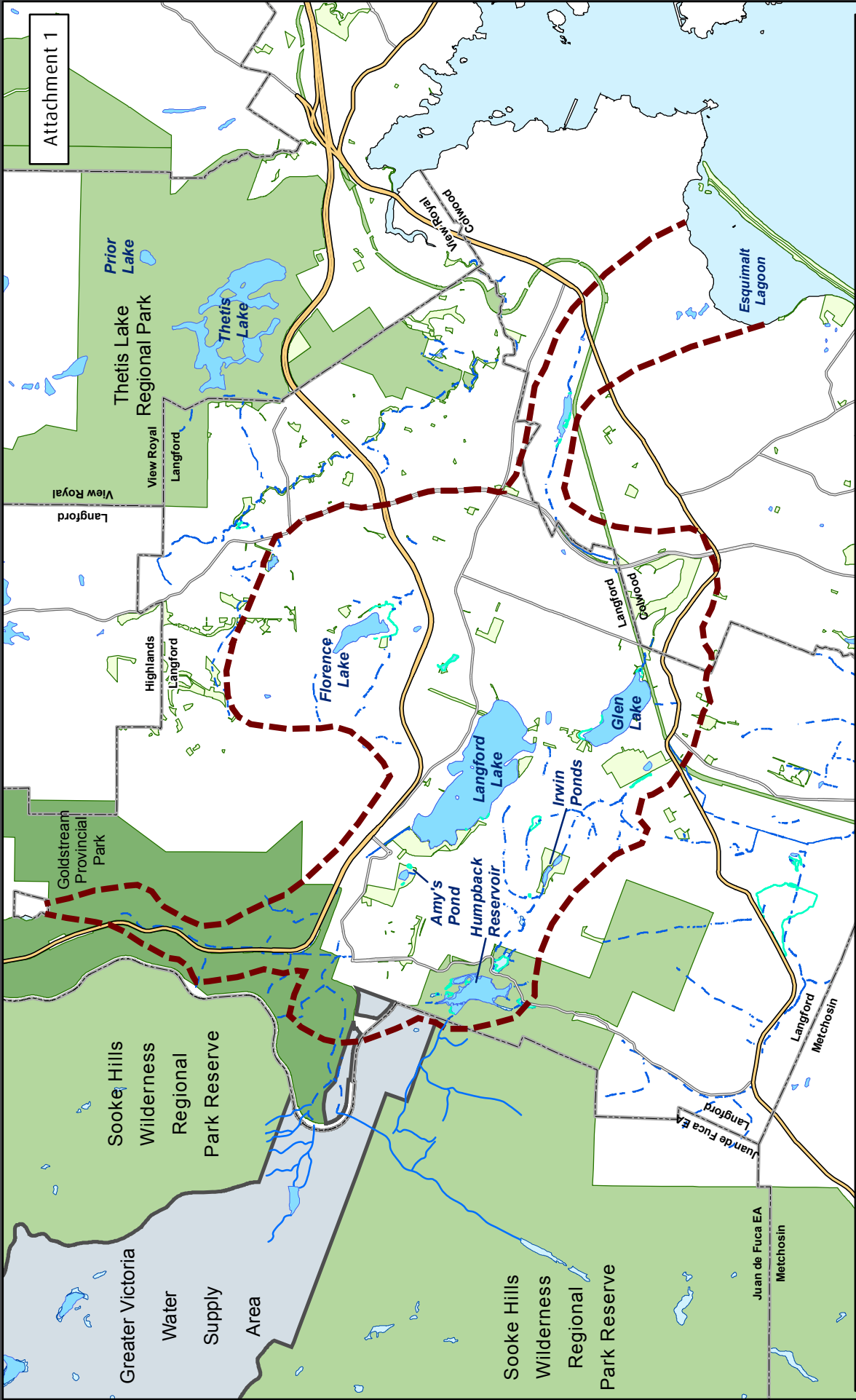


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AC:mm  
Attachments: 2



**Integrated Water Services & Regional Parks  
Western Communities Control  
Corridor for American Bullfrogs**

**NAD83 UTM Zone 10**

	Municipal Boundary		Wetland
	Roads		Lake or Reservoir
	Wetland/Marsh (Detailed)		Water Supply Area
	Stream		Municipal Park
	Stream-Indefinite Course		Regional Park
	Bullfrog Control Corridor		Provincial Park

GIS@crd.bc.ca | Attach1ControlCorridor.mxd

Important: This map is for general information purposes only. The Capital Regional District (CRD) makes no representations or warranties regarding the accuracy or completeness of this map or the suitability of the map for any purpose. This map is not for navigation. The CRD will not be liable for any damage, loss or injury resulting from the use of the map or information on the map and the map may be changed by the CRD at any time.

Status Report – American Bullfrog Control Program in the Western Communities Control Corridor

Figure 1 - Comparison of the Annual Number of Field Visits to Remove American Bullfrogs from the Western Communities Control Corridor Between 2007-2012

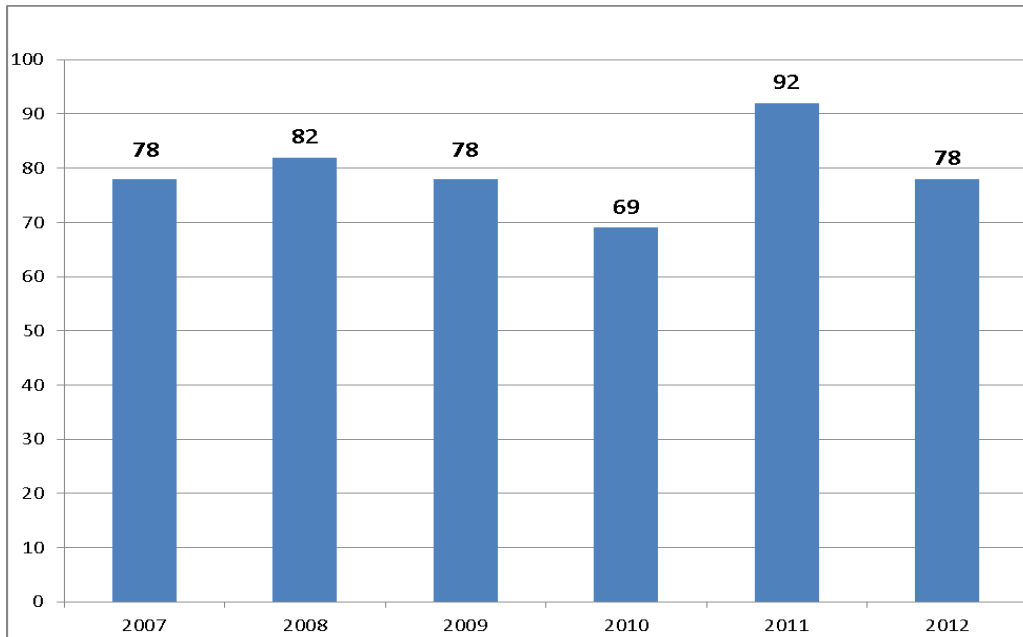
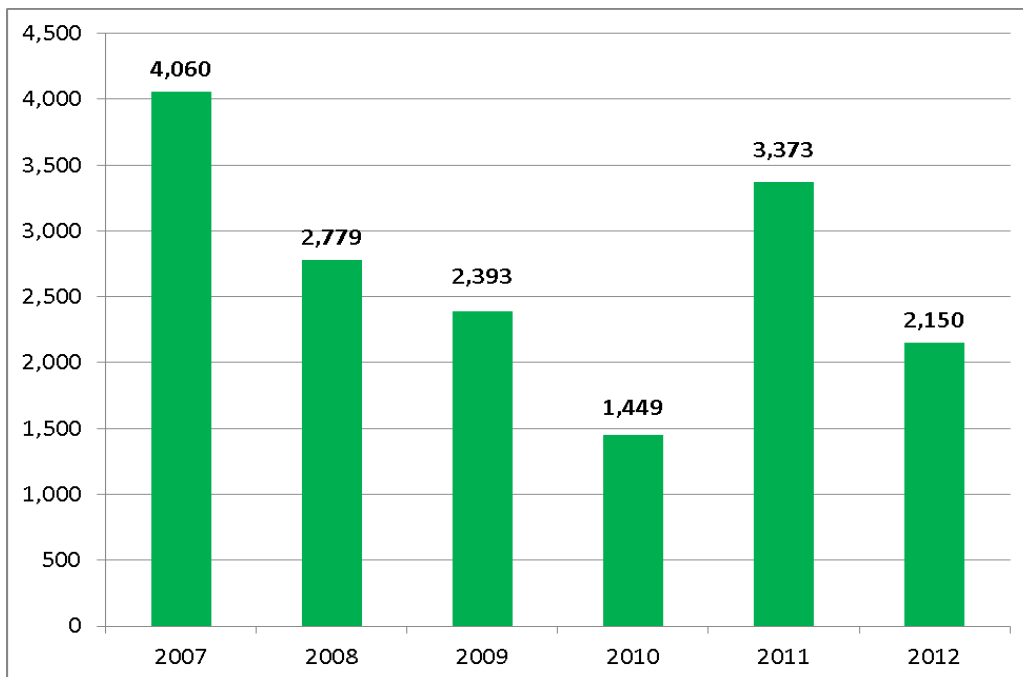
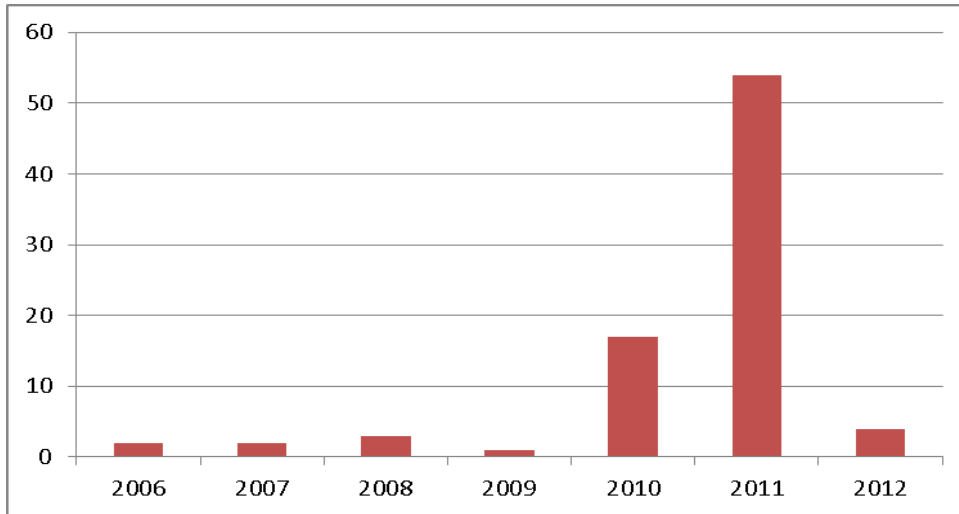


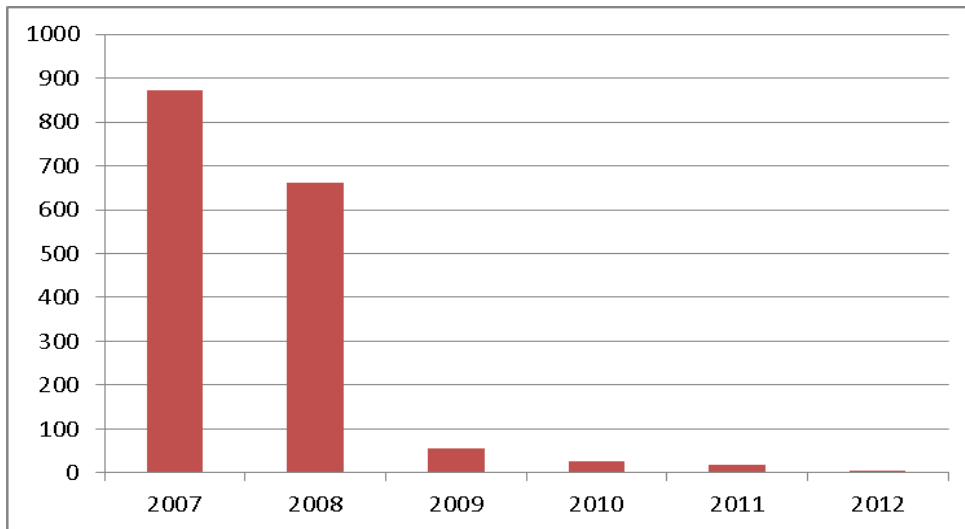
Figure 2 - Comparison of the Number of American Bullfrogs Removed Annually from the Western Communities Control Corridor Between 2007-2012



**Figure 3 - Comparison of the Number of American Bullfrogs Removed from Humpback Reservoir Annually Between 2006-2012**



**Figure 4 - Comparison of the Number of American Bullfrogs Removed from Amy's Pond Annually Between 2007-2012**



**Figure 5 - Comparison of the Number of American Bullfrogs Removed from Irwin Road Ponds Annually Between 2007-2012**

