



PUBLIC WORKS COMMITTEE

**Thursday, March 7, 2013
4:00 PM**

Henry Baker Hall, Main Floor, City Hall



Office of the City Clerk

**Public Agenda
Public Works Committee
Thursday, March 7, 2013**

Approval of Public Agenda

Minutes of the meeting held on February 14, 2013.

Administration Reports

PW13-8 **PW13-8** Pesticide Use in Parks and Open Space

Recommendation

1. That the annual weed density measurements be used as the basis for the annual designation of parks with “herbicide-free” turfgrass.
2. That the three existing “pesticide free” parks be designated “herbicide free”.

PW13-9 **PW13-9** 2013 Flow Monitoring Program and Wastewater Model Calibration

Recommendation

1. City Council authorize the Deputy City Manager of City Operations to initiate the process to engage consulting and professional engineering services for the 2013 Flow Monitoring Program and Wastewater Model Calibration. The contract value to execute the program is expected to exceed \$500,000; and,
2. City Council authorize the Deputy City Manager of City Operations the authority to award, finalize the terms for the consulting and professional engineering services contract after review of the proposals from professional engineering firms, and amend such contracts after review of consultant and professional engineering proposals.

Adjournment

AT REGINA, SASKATCHEWAN, THURSDAY, FEBRUARY 14, 2013

AT A MEETING OF THE PUBLIC WORKS COMMITTEE
HELD IN PUBLIC SESSION

AT 4:00 PM

These are considered a draft rendering of the official minutes. Official minutes can be obtained through the Office of the City Clerk once approved.

Present: Councillor Sharron Bryce
Councillor John Findura
Councillor Bob Hawkins

Regrets: Councillor Terry Hincks
Councillor Barbara Young

Also in Attendance: Director, Roadways & Transportation Services, Adam Homes
Committee Assistant, Elaine Gohlke
Deputy City Manager, City Operations, Dorian Wandzura
Solicitor, Jayne Krueger

APPROVAL OF PUBLIC AGENDA

Councillor Hawkins moved, AND IT WAS RESOLVED, that the agenda for this meeting be approved, as submitted.

ADOPTION OF MINUTES

Councillor Findura moved, AND IT WAS RESOLVED, that the minutes for the meeting held on January 22, 2013 be adopted.

ENVIRONMENT ADVISORY COMMITTEE COMMUNICATION

PW13-7 Cloth Diaper Services

Recommendation

That City Administration be requested to include education about alternatives to conventional disposable diapers in current and future education, as well as recycling education programs and communications.

Jason Ash, representing the Environment Advisory Committee, addressed the Committee.

Councillor Hawkins moved, AND IT WAS RESOLVED, that this item be referred to the Administration for a report to the August meeting that includes further information and implications related to the recommendation with respect to alternatives to conventional disposable diapers and waste reduction at the landfill.

TABLED REPORTS

PW13-4 Traffic Bylaw #9900 Amendment (Tabled January 22, 2013)

Recommendation

1. The amendments to *The Regina Traffic Bylaw, #9900* contained within this report be approved.
2. The City Solicitor be requested to prepare the amending bylaws effective January 22, 2013.
3. That item #MN10-13 be removed from the list of outstanding items for the Public Works Committee.

Robert Klassen addressed the Committee.

Councillor Findura moved that the recommendation contained in the report be concurred in.

RECESS

Councillor Hawkins moved, AND IT WAS RESOLVED, that the Committee recess for 15 minutes.

The Committee recessed at 4:19 p.m.

The Committee reconvened at 4:34 p.m.

The main motion was put and declared CARRIED.

ADJOURNMENT

Councillor Hawkins moved, AND IT WAS RESOLVED, that the meeting adjourn.

The meeting adjourned at 4:40 p.m.

Chairperson

Secretary

March 7, 2013

To: Members,
Public Works Committee

Re: Pesticide Use in Parks and Open Space

RECOMMENDATION

1. That the annual weed density measurements be used as the basis for the annual designation of parks with “herbicide-free” turfgrass.
2. That the three existing “pesticide free” parks be designated “herbicide free”.

CONCLUSION

The key recommendation made by the Environmental Advisory Committee to the Public Works Committee was that, “the City of Regina adopt a policy of avoiding pesticides for cosmetic or non-essential use in the management of lands owned or administered by the City.”

In response, the Public Works Committee directed the Administration to provide further information on the recommendations made by the Environmental Advisory Committee “...in particular, adopting a policy of avoiding herbicides.”

The Administration considers the mosquito, cankerworm, Dutch elm disease, gopher and noxious weed control programs necessary.

Reducing the use of herbicides is a worthwhile objective; however it must be balanced with the prevailing public expectation that weeds on City-owned property be controlled.

Over the past eight years, the overall use of herbicides by the City has decreased, whereas the total area of parks has increased.

Weed density in park turfgrass is measured annually, and weed density thresholds have been established to identify acceptable levels of weeds in turfgrass. If the weed density threshold is exceeded, then herbicide application is considered to be warranted. If the weed density is below the threshold, a park will be considered for “herbicide-free turfgrass” designation.

In order to eliminate confusion between the three existing pesticide-free parks and the proposed herbicide-free parks, it is recommended that the designation of the pesticide-free parks be changed. The former pesticide-free parks would continue to be maintained without the use of herbicides.

BACKGROUND

The Public Works Committee considered the above-noted report and adopted the following resolution:

“That this matter be referred to the Administration for a report to a special Public Works meeting to be scheduled in late November 2012, that provides further information on the

recommendations made by the Environment Advisory Committee, in particular, adopting a policy of avoiding herbicides, including the following:

1. Budgetary implications;
2. Information on the precautionary approach and how it applies here;
3. Information on the former Integrated Pest Management Advisory Committee;
4. That Administration contact open space managers at Wascana Centre Authority, the Public School Board, and the Catholic School Board for information in their present weed regimes;
5. That Administration seeks further information on the partnership between the Saskatchewan Environmental Society and the City of Saskatoon with respect to their use of social marketing for pesticide reduction;
6. That Administration contact Regina Qu'Appelle Health Region, the Provincial Health Officer, the College of Physicians and Surgeons of Saskatchewan, and the Saskatchewan Watershed Authority for their opinion of the use of pesticides;
7. Discussion on how the City's use of pesticides is communicated; and
8. That Administration request information from the Pest Management Regulatory Agency regarding scientific information on pesticides."

DISCUSSION

Definitions

In order to understand the issue of pesticide use, it is important to be clear on the meaning of the terms being used. The Saskatchewan Ministry of Environment document, "A Guide to Reducing the 'Cosmetic Use' of Herbicides in Saskatchewan May 2009 (revised August 2012)", contains a glossary of terms. A condensed list of these definitions, most relevant to this report, is provided in Appendix A. It includes the following:

Pest – Any noxious or troublesome insect, fungus, bacterial organism, virus, weed, rodent or other plant or animal that adversely affects aesthetics, human or ecosystem health.

Pesticide – A chemical/substance that is intended, sold, or represented for use in preventing, destroying, repelling or mitigating any insect, nematode, rodent, predatory animal, parasite, bacteria, fungus, weed or other form of plant or animal life or virus.

Herbicide – A chemical substance or cultured biological organism used to kill or suppress the growth of plants. Also defined as chemical compounds used to kill or inhibit undesirable plant growth.

Cosmetic use – The use of chemical herbicides to control weeds strictly for aesthetic purposes.

Integrated Pest Management (IPM) – An ecological approach to suppressing pest populations (e.g. weeds, insects, diseases, etc) in which all techniques are consolidated in a unified program, so that pests are kept at acceptable levels while minimizing all potential economic, health and environmental risks.

Pesticides are used because they are typically the most efficient, effective, and economical means of controlling pests; however, as the Environmental Advisory Committee has noted, the concern over the health and environmental impacts of their use is increasing. This has led to a national trend for municipalities to move away from the use of pesticides. Many municipalities, and some provinces, have enacted bylaws banning the use of pesticides for “cosmetic use”. The Precautionary Principle is often cited as the rationale for this action:

"The Precautionary Principle states that if an action or policy has a suspected risk of causing harm to the public or the environment, a lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation (United Nations General Assembly, 1992).

There is extensive evidence on the serious negative health and environmental impacts from the use of cosmetic pesticides. Therefore, some dissenting views and a lack of full consensus on scientific evidence should not prevent action against the use of cosmetic pesticides. (“Recommendation for a Provincial Ban on the Cosmetic Use of Pesticides”. Manitoba Round Table for Sustainable Development. Background Paper. April 2011, page 3.)”

Perspective of Other Agencies

The sale and use of pesticides is regulated by the federal government through Health Canada’s Pest Management Regulatory Agency (PMRA) as described in Appendix B. At the provincial level, the Saskatchewan Ministry of Agriculture is responsible for “The Pest Control Act (Saskatchewan)” and “The Pest Control Product Regulations”. (Appendix C)

The Saskatchewan Ministry of Environment (MOE) also has a role in regulating the use of pesticides. The Ministry’s current policy, with respect to pesticide use, is not to ban the cosmetic use of pesticides, but to reduce their use by increasing public awareness and encouraging alternative methods, while allowing the responsible use of pesticides.

The Saskatchewan Ministry of Health provided a written statement of its position on the cosmetic use of pesticides (Appendix D), which summarizes the role of the PMRA:

“Health Canada’s Pesticide Management Regulatory Agency (PMRA) is responsible for performing a health risk assessment prior to registering a product for use in Canada. Provincial and territorial governments rely on the expertise of the PMRA in assessing the safety of these products.”

The Saskatchewan Ministry of Health statement also states:

“The Ministry of Health has reviewed existing scientific literature regarding cosmetic use of pesticides and cancer. While the ministry supports best management practices to reduce usage of chemicals in the environment, current scientific literature does not cause us to believe that Saskatchewan regulatory interventions are required at this time. Public Health Officials currently focus their efforts on public education to reduce exposure to pesticides and advising municipalities that are considering enacting bylaws restricting the usage.”

The Regina Qu’Appelle Health Region (RQHR) also provided a written statement on the cosmetic use of pesticides (Appendix E). The statement concludes: “The Region is supportive of efforts to reduce pesticide exposure in all forms where practiced and reasonable to do so. Use of

non-pesticide solutions to pest problems is encouraged and supported where this is available and practiced. Further education of the public on the prudent use of products where needed, is supported.”

The College of Physicians and Surgeons of Saskatchewan is responsible for the conduct of physicians and surgeons in the province. They responded that they have no expertise or informed response to this issue and that they have no position on the subject.

The Regina Public School Board has no formal written policy on weed control. In response to a petition, presented to the Board in 2007, traditional chemical herbicides are no longer used. Weeds are managed by providing additional maintenance, including cutting. Ecoclear, an alternative herbicide composed of vinegar and citric acid, is used when needed.

The Regina Separate School Board provided the following description of their weed control practices:

“For more than the past decade our school playgrounds and turf fields have been mowed and trimmed only. We stopped spraying for dandelions and other weeds when hazard information became more widely available and application procedures more restrictive. The school division decided to err on the side of safety given the number of children using the playgrounds daily.

We use trimmers and mowers on the fence and bike rack areas and have researched alternate solutions for weed control on grassed areas (corn gluten fertilizer on front lawns and a soap/vinegar/salt solution).

On occasion we have well-intentioned school councils providing chemical weed control at some locations but through education and explanation have limited the exposure and prevented a continued use.

As you can appreciate we do receive a number of unhappy phone calls in the spring generally concerning dandelions blooming and again later in the season when they start seeding. We keep our crews busy with a program of cutting and trimming but sometimes the weather and Mother Nature win.”

Wascana Centre Authority also has no formal weed policy and uses chemical herbicides including Killex, Round up and Linuron (pre-emergent), as well as others. The decision to spray herbicides is based on visual monitoring of weed populations and complaints. Although Wascana Centre Authority is funded by three agencies (the City of Regina, the Province of Saskatchewan and the University of Regina) the funding parties do not “co-manage” the park. Wascana Centre Authority is governed by a board which includes representation from each of the funding partners. The City of Regina is represented by two City Council members.

In 1994, the City of Saskatoon discontinued their herbicide spraying program and implemented a “Weed and Feed” program in order to improve the health of the turf, while reducing broadleaf weeds. “Weed and Feed” is a dry, pellet type product that was applied by a commercial fertilizer spreader. This practice ended in 2000 as a result of negative feedback from the public and the City of Saskatoon’s Environmental Advisory Committee recommendation to discontinue the program. Since 2000, no herbicides have been applied to turf, however “Round-up” continues to be used to control weeds in shrub beds.

In 2011, after receiving numerous complaints from the public and city officials regarding dense concentrations of dandelions, the City of Saskatoon implemented a dandelion control program at the entrances to the City. It was felt that there would be minimal public impact in these areas and that this would create a more attractive entrance to the city. A Public Service Announcement was issued prior to implementation, however after receiving a large number of negative responses from the public and visitors, the City of Saskatoon abandoned this program before it commenced.

Recently, the City of Saskatoon requested information from the City of Regina regarding the costs associated with an herbicide program. While there is no intention of re-establishing an herbicide program, Saskatoon City Council wanted to know what other municipalities spent on their herbicide programs. The intention is to create a reserve to fund enhanced cultural practices for turfgrass. They have estimated that \$250,000 would be placed in this reserve.

From 2006-2011, the City of Saskatoon partnered with the Saskatchewan Environmental Society (SES) in the Saskatoon Pesticide Reduction Project (SPRP). The project objectives for 2011 were:

- To inform the Saskatoon public about health and environmental risks involved in using cosmetic pesticides.
- To provide information on low-toxicity alternatives to pesticides.
- To achieve a reduction in the use of cosmetic pesticides among Saskatoon residents.

SES uses a definition that is in agreement with the definition set out by the Health Canada's Pest Management Regulatory Agency (PMRA). For the purpose of the program, SES isolated the focus of the program on reducing/eliminating the use of synthetic chemical-type cosmetic pesticides.

Council's Motions Regarding Pesticides (2003)

The issue of pesticide use in Regina came to the forefront in 2002. At the request of the former Parks & Recreation Board, the Administration of the day prepared the "Report on Pesticides – December 2002" which made a number of recommendations. In May 2003, Council passed 13 motions incorporating the Administration's recommendations (Appendix F).

The Former Integrated Pest Management Advisory Committee

One of the 13 recommendations made by Council in 2003, resulted in the establishment of the Integrated Pest Management Advisory Committee in 2004.

The Terms of Reference for the IPM Committee were:

- To provide comments and advice to the City Administration on the quality and effectiveness of the city's pest control programs, products, policies, and procedures.
- To provide comments and advice to the City Administration on public communication initiatives aimed at educating City residents about Integrated Pest Management.
- To provide comments and advice to the City Administration on the practice to be used for the management of various horticultural assets in City parks and open space areas.
- To provide individuals and organizations with a venue to offer comments and advice on the City's Integrated Pest Management programs, products, policies, and procedures.

Committee representation included two citizen representatives, the Regina Qu'Appelle Health Region, the pest control industry, the Regina Board of Education, the Regina Catholic Schools, the Regina Urban Environmental Advisory Council, the University of Regina, Communities of Tomorrow, the Government of Saskatchewan, City Administration and a Council member.

The IPM Advisory Committee was dissolved in 2008 as an outcome of the Committee Structure Review. Since then, pesticide-related issues have been directed to the Environment Advisory Committee.

Current State

The City adopted the integrated pest management (IPM) approach in 1990. The principle underlying integrated pest management is that pest control should be based on an understanding of the life cycle of the pest and should target the stage in the life cycle when it will be most effective. Mechanical, and biological controls are used as a first choice; chemical pesticides are only used as a last resort or when other methods are not effective or economical.

The City delivers a range of pest control programs to meet the prevailing public expectation that certain pests be controlled. These pests include: mosquitoes, cankerworms, elm bark beetles, gophers and weeds (listed in order of annual program expenditure).

The mosquito and cankerworm programs use a biological control (a bacteria), which is considered to be the best practice approach for controlling both these pests. The gopher program uses rodenticides which are placed in the gopher burrows. Beginning in 2010, at Council's request and with increased funding, efforts in both the cankerworm and gopher control program were significantly increased due to increased funding. The Dutch elm disease program currently involves the use of an insecticide which is sprayed onto the base of tree trunks.

Herbicides are used to control weeds in turfgrass, shrub beds, crusher dust and pavement. As a landowner, the City of Regina must be in compliance with the provincial Weed Control Act which requires that invasive weed species (referred to as "noxious weeds") be eradicated. These noxious weeds include scentless chamomile, leafy spurge and purple loosestrife. (In 2012, the City of Regina participated in a project to collect leafy spurge beetles, a natural predator of the plant. Thirty thousand beetles were collected in a rural area and released in a leafy spurge infested area in the city.)

The Administration considers the mosquito, cankerworm, Dutch elm disease, gopher control and noxious weed programs necessary. Mosquitoes are controlled for human comfort and health. The cankerworm and Dutch elm disease programs contribute to the preservation of the urban forest. Gophers and noxious weeds are provincially declared pests that the City of Regina is required to control.

Generally speaking, when reference is made to the cosmetic or non-essential use of pesticides, the criticism is directed towards the use of herbicides to control weeds. In keeping with the direction given by the Public Works Committee and in order to narrow the scope of this report, the focus will be on the avoidance of the use of herbicides to control weeds, and specifically, weeds in park turf. It is worth noting that, while there are many weed species to be found in parks, the single species that generates the majority of the complaints is the dandelion.

Summary of Efforts to Reduce Reliance on Chemical Herbicides

The Administration agrees that avoiding the use of herbicides is a worthwhile objective; however it must be balanced with the public expectation that weeds on City owned property be controlled. Simply abandoning the use of herbicides generally results in a steady decline in the quality of turfgrass. If environmental conditions for turf are not ideal, and they seldom are, weeds will compete with and often overtake turf. Newly developed parks are especially susceptible as the turf tends to be shallow-rooted, due to subsoil that has been heavily compacted during park construction.

Over the past few years, the City of Regina has made a concerted effort to reduce its reliance on herbicides. This commitment to reduce reliance on pesticides, and specifically herbicides, was identified in the 2008-2013 business plan of the former Parks & Open Space Department.

Municipalities committed to reducing or eliminating the use of pesticides, generally adopt what can be referred to as a Plant Health Care (PHC) approach. While IPM is focused on alternative pest management techniques, Plant Health Care is based on the premise that healthy plants are their own best defence against weed and insect infestations.

The City's current premium sports field maintenance program is a PHC program, as is the maintenance program for golf course fairways. These programs include scheduled turf maintenance practices such as irrigation, fertilization, aeration, dethatching, over-seeding and topdressing. The result is a healthy stand of turfgrass which easily out-competes weeds and is able to resist insect infestations.

A PHC program was implemented in Victoria Park in 2011 to address the heavily compacted, thin turf. The "cultural practices" that were increased were aeration, top-dressing and over-seeding, and fertilization. This has improved the overall health and look of the turf in the park significantly. Herbicides have not been used in Victoria Park for a number of years.

Due to cost constraints, the level of maintenance for most park turf does not include sufficient cultural practices to create turf that can out-compete weeds, without occasional herbicide intervention. Having said that, turf maintenance practices throughout the park system have been adjusted to improve turf health.

Mowing heights in parks have been increased from 2" (the previous standard) to 3". Taller turf is more effective in competing with weeds, in coping with drought, and in shading the soil surface to reduce evaporation. Mandatory parks also receive some fertilization and aeration. The regular use of irrigation systems in Class A and B parks contributes significantly to improving the quality of the turf grass.

Specific areas within parks (e.g. steep slopes which are a safety hazard for mower operators), that had been mowed in previous years, have been left to naturalize. Constant mowing results in a poor stand of grass which allows weeds to establish. When the grass is allowed to fully head out and ripen before mowing, the seed drops to the ground and starts filling in the space, resulting in a better stand of grass with less weeds. This does not happen in a single season but improves year by year.

In recent years, the City of Regina has placed more emphasis on the naturalization of existing parks and on introducing low maintenance, natural areas as part of new park design. Naturalization is used to enhance existing natural features (e.g. water courses) or to landscape difficult-to-maintain areas such as steep slopes or naturally wet areas. Naturalized buffer areas

not only add to the diversity and character of the park site, they also reduce maintenance costs, and reduce the need for pesticide and fertilizer applications. Lower maintenance fescue sod areas have also been introduced in some new parks.

The City has participated in the ongoing investigation of new technology and new (alternative) products to determine their effectiveness and economic viability for small or large scale applications and to expand these efforts within the current operating budget. Along with a number of other western Canadian cities, the City partnered for several years with the Prairie Turfgrass Research Centre (Olds, Alberta). Local field trials were done to evaluate the use of agricultural by-products (e.g. corn gluten) as herbicides; however, no consistently effective products resulted from this research.

Alternative products, which may be practical on the residential scale, are typically impractical on a large scale; however, these products may be useful for small scale issues. The City of Regina is considering developing a list of allowable herbicides for this purpose. The allowable herbicide list would contain a list of products that could be used regularly by the City of Regina. The list could also be shared with the public, as part of an education campaign. The allowable herbicide list would contain herbicides that have been approved by the PMRA and are considered to pose a lower risk to humans and the environment based on toxicity, persistence in the environment, and ability to build up, or bioaccumulate, in living organisms.

The City has also been exploring alternate approaches to weed control. As an example, for the last two years herbicide treatment has virtually been eliminated in large-scale hard surface areas such as crusher dust fields and pathways through the use of mechanical cultivation (landscape rakes and box blades). Wood chip mulch has been added to many shrub beds as it inhibits weed growth and conserves moisture.

In 2011, staff implemented the best-practice approach of establishing weed-density thresholds for parks and open space. The principle underlying this approach is that turf does not have to be 100% weed free to be acceptable. The thresholds, which vary for different classes of park space, define what is considered to be an acceptable level of weed infestation, expressed as x weeds/m². If the weed density threshold is exceeded, then herbicide application is considered to be warranted (Appendix H).

The overall result of these efforts to reduce reliance on herbicides has been a steady decline in the amount of herbicide used, in spite of the fact that the area of park land has increased significantly over the same period of time (Appendix I).

Pesticide Free Parks

In 2012, three parks were designated as being pesticide-free. This pilot project was the outcome of a Council motion to establish “biocide-free” park spaces, recognizing that some people have extreme sensitivity to biocides (which were defined in the motion as “pesticides, herbicides, fungicides, etc.”). Given the intent of the motion, a decision was made to not use pesticides of any kind to control any pests in these parks.

Pesticides are not used in the majority of City parks. Pesticide use in parks is typically limited to applying herbicides to control weeds in turfgrass, shrub beds, crusher dust surfaces and along fence lines. Mosquito and gopher control is not required in most parks. This activity typically occurs in unirrigated, rough grass open spaces (e.g. road, rail and utility corridors). Most cankerworm and elm bark beetle spraying is done on City-owned street trees, not on park trees.

Having said this, there are some parks that do receive pesticide treatment for weed, mosquito, cankerworm and gopher control.

In 2010, Gordon Park, Al Pickard Park and Queen Elizabeth Court were selected from a list of parks which had not needed pesticide applications of any kind in the previous few years. The turfgrass was in a healthy state, there were few elm trees, no mosquito breeding sites and no need for gopher control. It was anticipated that there would be no need for any form of pest control at these sites in 2010. The pesticide-free designation was subsequently extended to include 2011 and 2012. During these three years, the turfgrass in these parks was irrigated, fertilized and aerated. These “cultural” practices contributed to a healthy stand of turf that could resist invasion by weeds. Weeds in shrub beds were controlled by rototilling and/or hand hoeing/pulling. It was understood that, in the unlikely event of a pest infestation that could not be controlled using an alternate means, the option existed to use pesticides as a last resort to ensure that health, safety or economic value was not compromised. However, in the past three years, it has not been necessary to apply any pesticides in the Pesticide Free Parks.

Pesticide Communication

The City of Regina communicates its use of pesticides in a variety of ways. Pesticide use is seasonal. Each year, at the start of each major pest control program, a Public Service Announcement (PSA) is released to the media. The major pest control programs are the mosquito, gopher, cankerworm, Dutch elm disease and weed control programs. As well, information on each of these programs is provided on the City of Regina’s website. For some pest control programs (e.g. Dutch elm disease, cankerworms), an online map of the city is updated daily to show where activity will occur by neighbourhood and where it has occurred. A telephone information service, known as the Pesticide Advisory Line provides information about pesticide application in specific parks or street locations and is updated daily. For programs in which tree spraying occurs along the street in front of residences, notices are delivered to each door (DED program) or signs are set up on the ends of each block (cankerworm program).

Areas treated with pesticides in parks and open space are identified by the use of temporary “lawn” signs (e.g. mosquito, gopher and weed control). An exception to this approach is identified in The Weed Policy (2005) which states:

“Passive Open Space areas include areas such as tree wells, shrub beds, light standards, fence posts, center medians, side boulevards, traffic islands and walkways. These areas are exempt from on-site signage and Pesticide Advisory Line notification, provided that the area selectively treated does not exceed 5,000 sq. ft. and treatment is not within 100 feet of Active Open Space Areas.”

Recommended Option:

The Administration recommends that the City of Regina adopt an approach comprised of the following recommendations:

That the annual weed density measurements be used as the basis for the annual designation of parks with “herbicide-free” turfgrass

This recommendation proposes that the park turfgrass weed measurement exercise undertaken annually by staff be used as the basis for identifying parks which have acceptable weed levels. These parks would be designated as having herbicide-free turf in the following year. Based on

the 2012 weed density survey, 80 parks could be designated as having “herbicide-free” turf in 2013.

In 2014, the annual weed survey would again be the basis for determining whether a park would keep its herbicide-free designation, or lose it if weed levels have increased to an unacceptable level. On the other hand, parks that received a herbicide application in the previous year, may have a lower weed density level and now be eligible for designation. The key is that the annual weed measurement will enable good decision-making as to whether or not herbicide treatment is warranted.

It should be noted that the “herbicide-free” designation refers to the parks turfgrass only and not to shrub beds. Weeds in shrub beds are typically controlled by rototilling, string trimming or by hand removal. The latter is labour intensive and, on a parks scale, is not always practical. While herbicides would continue to be part of the “tool list” for managing weed growth in shrub beds, efforts to use alternative products and approaches will continue to be explored.

That the three existing “pesticide free” parks be designated “herbicide free”.

In order to eliminate confusion between the three existing pesticide-free parks and the proposed herbicide-free parks, it is recommended that the designation of the pesticide-free parks be changed. The former pesticide-free parks would continue to be maintained without the use of herbicides.

Alternative Options to Consider

Option 1 (Status Quo)

The Administration considers the status quo to be a viable option. As previously outlined the City has, over the past eight years, implemented a number of practices that has resulted in a steady decline in the overall use of herbicides, while the total area of parkland has increased. If the status quo is adopted, the commitment to reducing the reliance on herbicides would continue and the following efforts would also continue:

- The three Pesticide Free Parks
- Practice of herbicide application in parks being guided by the weed density measurements.
- Current levels of aeration and fertilization.
- Large scale crusher dust areas and pathways maintained via mechanical means.
- Herbicide treatment on small scale hard/aggregate surfaces and in shrub beds (paving stones, crusher dust, red shale, and mulch).
- Ongoing investigation of new technology and new products to determine their effectiveness and economic viability for small or large scale applications and to expand these efforts within the current operating budget.

There is no budget implication to this option.

Option 2 (Plant Health Care)

This option is presented as a means of taking a more aggressive approach to reducing herbicide use. This option includes the Recommendation. In addition, it provides funding for the implementation of the Plant Health Care approach in the parks that would be designated as

having herbicide-free turf. Implementing the PHC approach to the maintenance of the turfgrass in these parks would greatly increase the likelihood that they would not see an increase in weed density and would therefore meet the criteria that would result in a continued, annual designation of having herbicide-free turfgrass.

Implementing a PHC program for the parks with “herbicide-free” turf will require additional resources in the area of staffing, equipment and materials. The estimated annual budget requirement to implement the PHC program in 80 parks is noted below.

- Additional staff would be required to implement the PHC program to undertake activities including turf aeration, verticutting (dethatching), topdressing, additional fertilization.
- While the City has some of the equipment needed to implement the PHC program, additional equipment will be needed. This has both capital and operating costs.
- Implementation of the PHC program would also require an increase in material (e.g. fertilizer and mulch).

	2014
Staffing	\$68,000
Materials	\$60,000
Equipment	\$42,000
Operating Subtotal:	\$170,000
Capital Equipment Total:	\$200,000
Total Funding Required:	\$370,000

The Plant Health Care program is scalable (i.e. 160 parks in total). Expanding the herbicide-free park designation to include 80 more parks would cost an additional \$370,000 to implement, and would require \$170,000 in annual operating costs.

RECOMMENDATION IMPLICATIONS

Financial Implications

None with respect to this report.

Environmental Implications

The implementation of the recommendation will demonstrate the City’s commitment to environmental stewardship.

Policy and/or Strategic Implications

The City’s current strategy, to *Narrow the Gap* between citizens’ service expectations and the City’s capacity to deliver is a consideration in these recommendations. The recommendation will allow the City to increase the number of parks it can designate as herbicide free, based on annual weed density measurement data. Park turfgrass will be managed within existing resources. However, if, weeds exceed the measurement targets, herbicides will be applied in the subsequent year and the park will no longer be considered herbicide free.

Based on the 2012 weed density survey, 80 parks could be designated as having “herbicide-free” turf in 2013. Through annual weed density measurements, continuation of current cultural practices, and targeted herbicide application when weed densities exceed targets, it is expected that in any given year, 80 or more parks can be designated as having “herbicide-free” turf.

There is an increased cost to the City to reduce the use of herbicides on park turfgrass and increase the level of cultural practices as an alternative means of managing weeds. If citizens have an increased expectation that herbicides should not be applied if weeds exceed density targets, it will require increased spending through a reduction in services from some other city delivered service. The only other alternative if citizens do not want herbicides used in parks, and do not want to increase spending is to permit more weeds in parks.

Other Implications

None with respect to this report.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

The Community Development, Recreation and Parks Department will work with Communications to develop a plan to inform residents of the change. Signs will be posted at each park site indicating that the park is herbicide-free and encouraging users to access the City website for more information.

DELEGATED AUTHORITY

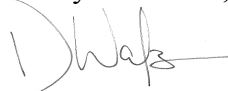
Disposition of public issues relative to land use operations falls within the authority of the Public Works Committee.

Respectfully submitted,



Neil Vandendort, Director
Open Space & Environmental Services

Respectfully submitted,



W. Dorian Wandzura, Deputy City Manager & COO
City Operations



Chris Holden, Director
Community Development, Recreation & Parks

APPENDIX A

Glossary

Bacteria – Single celled organisms that are part of the natural make-up of soil. Bacteria decompose dead plant material in soil and can cause root and foliar diseases in plants or animals. Bacteria are sometimes called “*bioherbicides*”.

Biological Control – The use of living organisms (parasites, predators, pathogens) to eliminate, reduce or maintain pest populations to acceptable levels.

“Cosmetic Use” – The use of chemical herbicides to control weeds strictly for aesthetic purposes.

Cultural Practices – Management practices that focus on the prevention of pests by use of proper planting, pruning, mulching, and sanitation practices.

Fungicide – A chemical substance or cultured biological organism that is used to kill, suppress or prevent the development of fungi.

Herbicide – A chemical substance or cultured biological organism used to kill or suppress the growth of plants. Also defined as chemical compounds used to kill or inhibit undesirable plant growth.

Insecticide – A chemical substance or cultured biological organism used to kill or suppress the growth of insects.

Integrated Pest Management (IPM) - An ecological approach to suppressing pest populations (e.g. weeds, insects, diseases, etc) in which all techniques are consolidated in a unified program, so that pests are kept at acceptable levels while minimizing all potential economic, health and environmental risks.

Invasive - A non-native plant species that adversely affects the habitat they invade.

Noxious (weed) - Weeds that spread rapidly with major potential of economic, environmental, or ecological impacts. Weeds in this category are required by legislation to be controlled to prevent their spread.

Organic – Materials made from living organisms (plants or animals) or their products and involving carbon-based compounds.

Pest - Any noxious or troublesome insect, fungus, bacterial organism, virus, weed, rodent or other plant or animal that adversely affects aesthetics, human or ecosystem health.

Pesticide – A chemical/substance that is intended, sold, or represented for use in preventing, destroying, repelling or mitigating any insect, nematode, rodent, predatory animal, parasite, bacteria, fungus, weed or other form of plant or animal life or virus.

Rodenticide – A chemical/substance or cultured biological organism used to kill or used to control or prevent the development of rodents.

Weed – A plant growing at a place where it is not wanted or desired.

APPENDIX B



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The Regulation of Pesticides in Canada

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Pesticides are carefully regulated in Canada through a program of pre-market scientific assessment, enforcement, education, and information dissemination. These activities are shared among federal, provincial/territorial and municipal governments, and are governed by various Acts, regulations, guidelines, directives and by-laws. Although it is a complex process, regulators at all levels work together towards the common goal - helping protect Canadians from any risks posed by pesticides and ensuring that pest control products do what they claim to on the label.

Distribution of principal responsibilities

Federal (Pest Management Regulatory Agency of Health Canada)

- *Pest Control Products Act* (PCPA) and Regulations
- Pesticide registration and re-evaluation
- Human Health and Safety
- Environmental impact
- Value/efficacy assessment
- Alternative strategies
- Compliance and enforcement

Provincial/Territorial

- Transportation, sale, use, storage/disposal
- Training/certification and licensing of applicators/vendors
- Spills/accidents
- Permits/use restrictions
- Compliance and enforcement

Municipal

- By-laws for municipal (and, in some cases, private/residential) lands only

The Federal role

The Pest Management Regulatory Agency (PMRA) of Health Canada has the mandate to protect human health, safety and the environment by minimizing risks associated with pesticides, while providing Canadians access to the pest management tools they require for agriculture, forestry, industry, and personal use.

Pesticides imported into, sold or used in Canada are regulated nationally under the *Pest Control Products Act and Regulations* (PCPA). The PMRA is responsible for administering this legislation, registering pest control products, re-evaluating registered products and setting maximum residue limits under the *Food and Drugs Act*.

Companies that wish to have the right to sell a pest control product in Canada must submit detailed information and data to be evaluated by the PMRA. Companies must provide all the scientific studies necessary for determining that the product is acceptable in terms of safety, merit and value. Depending on the complexity of the submission, a complete evaluation can take anywhere from a number of weeks, to a year or more. The



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evaluation results either in the product being granted registration and allowed for sale and use in Canada, or in the product being refused registration.

The PMRA registration process

Screening:

Before a submission is evaluated for health and environmental considerations, and for its value, (including efficacy), it is first examined by Screening Officers of the PMRA's Submission Management and Information Division (SMID). The purpose of the initial screening is to make sure that submissions meet the format, content and fee requirements of the Agency before they are sent for detailed evaluation. The screening process ensures that only complete, accurate and standardized submissions are brought forward for assessment. To this end, the Agency provides to industry detailed pre-submission guidance on administrative procedures and data requirements. In the Screening Unit, preliminary analyses of the studies are also carried out in order to determine if they are acceptable and whether they comply with international protocols.

Reviews:

Health

The PMRA's Health Evaluation Division (HED) has three main areas:

The **Toxicological Evaluation Sections** (Fungicides, Herbicides, Insecticides and Antimicrobials) identify possible human health effects of pesticides, and establish the levels at which humans can be exposed to the products without any harm. Studies assessed include short and long-term, carcinogenicity (the capacity to cause cancer), genotoxicity (the capacity to cause damage to chromosomes), and teratogenicity (the capacity to produce fetal malformations), among others. These toxicology sections are responsible for setting Acceptable Daily Intakes (ADI) -- the amount of a compound that can be consumed daily for a lifetime with no adverse effects. ADIs always have safety factors built in, ranging from 100 to 1000. These safety factors are designed to take into account the potential differences in response, both within the same species (i.e., adults versus children) and between species (i.e., animals versus humans).

The **Occupational Exposure Assessment Section (OEAS)** performs exposure assessments on all new active ingredients and all major new uses of a pesticide in order to determine how much exposure to a pesticide could occur in a typical day. These assessments take into account the different exposures that people could have to pesticides, such as those who work with the pesticides (formulators, applicators, and farmers) and bystanders (people working or living near where a pesticide is used). They also take into consideration the differing exposures that adults and children would have. Data considered include residues found in air and on surfaces indoors and outdoors following application in domestic, commercial, and agricultural situations. Routes and duration of exposure, and the species tested in toxicity studies are also considered. Assessments of the effectiveness of personal protective equipment are often performed, and wearing such equipment can be required as a condition of registration.



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The **Food Residue Exposure Assessment Section (FREAS)** evaluates every submission where a product could come in contact with food, including field crops, meat and dairy products, and processed foods. These evaluations are conducted in order to set the maximum residue limits (MRLs) for pesticides on food, both domestic and imported under the *Food and Drug Act*. Dietary Risk Assessments (DRAs) are also carried out to assess the potential daily intake of pesticide residues from all possible food sources. DRAs take into account the different eating patterns of infants, toddlers, children, adolescents and adults, and so include a detailed evaluation of the foods and drinks that infants and children consume in quantity such as fruits and fruit juices, milk and soya products.

Environment

The Environmental Assessment Division (EAD) evaluates data on the environmental chemistry and toxicology of products, as well as their environmental fate i.e., what happens to the pesticide once it enters the environment. To address environmental concerns that may arise from the intended use of a product, EAD also makes recommendations for restrictions on use that would lessen risk. This could include label statements outlining buffer zones, timing and frequency of applications, rate at which the product can be applied, etc. As with the other PMRA divisions, EAD maintains contact with their counterparts in other federal and provincial government departments and in other countries so that they have access to the most up-to-date information, standards and protocols.

Laboratory Services

The PMRA's Laboratory scientists evaluate the product chemistry data that companies must provide as part of submissions for registering any pest control product. This ISO-accredited laboratory also performs approximately 1500 guarantee, formulation and residue analyses every year in support of the PMRA's compliance investigations and microcontaminant, guarantee, and misuse inspection programs.

Value/efficacy assessments

An applicant for registration of a pesticide must establish that the product has merit and value for the purposes claimed when the product is used according to label directions. Product Sustainability and Coordination Division (PSCD) evaluators carry out these assessments, which include determining the efficacy or effectiveness of the product at various doses. This helps establish the lowest effective rate at which pesticides can be applied, and contributes to the minimizing of risks to health and the environment, crop damage and resistance problems. These assessments have led to many Canadian products having up to 50 per cent lower label use rates than the same products in other countries. Efficacy assessments also help protect users from deceptive claims regarding the effectiveness of pest control products. The "value" aspect of the assessment is linked to efficacy, and looks at whether the product improves crop yield, reduces damage by pests etc., depending on the intended use of the product.

Decisions

New Products: Once all the component parts of a submission have been evaluated, PMRA determines whether or not a product should be granted registration. Only if there is



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sufficient scientific evidence to show that a product does not pose unacceptable health or environmental risks and that it serves a useful purpose will a decision to register be made. A registration is normally granted for a term of five years, subject to renewal. However, the term will be limited to less than five years where it is determined that the risks or value should be reviewed after a specified period. In all cases, conditions of registration are specified, including detailed use instructions, so that the product can be used safely. PMRA can also recommend to the Minister that registration be refused.

Registered Products: After a product is registered, PMRA may re-evaluate the products resulting in changes to the use pattern, label statements, or classification of a product in order to ensure that the risks and value of that product remain acceptable. Where it is determined that the risks to human health or the environment are no longer acceptable, or that the product is without value for its intended purpose, the registration is refused.

Other PMRA Responsibilities

Alternatives and Regulatory Affairs

PMRA's Alternative Strategies and Regulatory Affairs Division develops and implements federal policy and legislation for pest control products, and works with other government bodies, grower groups, research facilities and industry to facilitate information exchange and to promote risk reduction. Cooperative efforts include:

- Integrated Pest Management Partnership Projects;
- Initiatives to facilitate access to new technologies (e.g. microbials, pheromones);
- Participation within international bodies such as the North American Free Trade Agreement (NAFTA) and the Organization for Economic Cooperation and Development (OECD) for the development of risk reduction policies, joint reviews and the harmonization of data requirements; and for cooperation with international initiatives such as Persistent Organic Pollutants (POPs) and Prior Informed Consent (PIC) policies.
- Working with other governmental departments and the Federal/Provincial/Territorial Committee on pesticide-related issues;
- Active involvement with agriculture, forestry, aquaculture and other sectors to identify and manage problems using sustainable pest management practices.

Compliance and Regional Operations

Working with other federal and provincial ministries, PMRA regional offices promote and verify compliance with the *PCP Act* through investigations, inspections and consultations. They have the mandate to investigate the use, sale and importation of products; perform on-site inspection of usage and storage of products; do soil, crop and product sampling; and to educate individuals, local officials and grower groups as to regulatory requirements. Where contraventions of the Act or regulations occur, appropriate enforcement measures may be taken.



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Consultation/Communications

The PMRA is committed to providing an open, transparent and participatory process for the regulation of pesticides. The agency seeks the advice of Canadians by frequent consultations with its advisory bodies, including a federal-provincial-territorial committee. It solicits public comment on proposals for new policies and programs as well as on major pesticide registration decisions. Information on the the PMRA's extensive involvement in international pesticide-related efforts, notably the NAFTA Technical Working Group (TWG) on Pesticides and the OECD's Pesticide Programme is circulated broadly and regularly, and a consultation meeting with stakeholders is held prior to the yearly full meeting of the NAFTA TWG.

The [Agency's Web site](http://www.hc-sc.gc.ca/PMRA-arla/) at www.hc-sc.gc.ca/PMRA-arla/ contains all of the publications issued by the PMRA and a wide range of information and data useful to the general public and industry. The PMRA also operates a toll-free information line to answer pest management-related inquiries. The number is 1-800-267-6315 (613-736-3799 outside of Canada). The PMRA Publications Coordinator can be reached at:

Pest Management Regulatory Agency
2250 Riverside Drive
Ottawa, Ontario K1A 0K9
Fax: (613) 736-3798
E-mail: pminfoserv@PMRA-arla.hc-sc.gc.ca

The Provincial/Territorial role

Only pesticides that are registered for use under the PCPA may be imported into, sold or used in Canada. However, the provinces and territories may regulate the sale, use, storage, transportation and disposal of registered pesticides in their jurisdictions as long as the measures they adopt are consistent with any conditions, directions and limitations imposed under the PCPA or other federal legislation. For example, a province or territory may prohibit the use of a registered pesticide in its jurisdiction, or it may add more restrictive conditions on the use of a product than those established under the PCPA. However it may not authorize the use of a product that has not been approved under the PCPA, and may not relieve the user of the obligation to comply with conditions, directions and limitations imposed under the PCPA.

Provinces and Territories administer a pesticides management program that includes education and training programs, the licencing/certification of applicators, vendors and growers, and issuing permits for certain pesticide uses. Other important roles - carried out in cooperation with PMRA regional offices - are those of enforcement and compliance monitoring, and response to spills or accidents.

Listed below are some of the areas of regulatory responsibility that can be held by provinces and territories. Please consult provincial/territorial officials (see list attached) for specific legislation and requirements.



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Classification of pesticides for sale and use

Pesticide product class designations (domestic, commercial, restricted) are reviewed and/or products are assigned to schedules to limit the sale and use of certain products to the appropriate individuals/operators who are trained to use them.

Vendor/dispenser licensing; applicator certification, training and licensing

Retail pesticide vendors and pesticide applicators are required to be trained and licensed to ensure that products are used responsibly.

Grower and vendor certification

Growers and representatives of vendor outlets must be trained and certified to ensure responsible purchase and use of products.

Permits

Applicators can be required to obtain use permits for restricted class pesticides (e.g. for application by air, fumigation, or for aquatic use), that set out strict conditions for use in the province/territory (e.g. the requirement for buffer zones).

Posting/notification

Pesticide applications on public land, and by Pest Control Operators (PCO) on residential property, require the posting of signs in most provinces.

Transport, storage and disposal

Provincial/territorial regulatory departments can establish additional requirements for the safe handling and management of pesticides to meet local needs/conditions.

Compliance and enforcement

Provincial authorities set fines, revoke/refuse licences, issue warnings, issue control orders etc.

The Federal Provincial Territorial Committee on Pest Management and Pesticides (FPT Committee)

This committee brings together federal and provincial/territorial pesticide officials together to exchange information and expertise. The FPT Committee provides advice and direction to governments on programs, policies and issues relating to pesticides and actively pursues solutions to shared issues of concern through the activities of its working groups. Progress is being made toward enhancing sustainable pest control practices in



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Canada and harmonizing wherever possible the pesticide-related programs and policies of the federal and provincial/territorial governments.

Contact your provincial/territorial agency for questions regarding use permits and classifications

Prince Edward Island: Department of Agriculture and Forestry

British Columbia: Ministry of Environment, Lands and Parks

Nova Scotia: Department of the Environment

Saskatchewan: Sustainable Production Branch, Saskatchewan Agriculture and Foods

Alberta: Pesticide Management Branch, Alberta Environmental Protection

Northwest Territories: Environmental Protection Service, Resources, Wildlife and Economic Services

New Brunswick: Department of the Environment

Québec: Ministère de l'Environnement et de la Faune

Nunavut: Environmental Protection, Department of Sustainable Development

Yukon: Department of Renewable Resources

Newfoundland: Department of Environment and Labour; Department of Forest Resources and Agrifoods

Ontario: Pesticides Section, Ontario Ministry of Environment and Energy

Manitoba: Manitoba Agriculture

Municipal/Local role

Provincial/territorial jurisdictions may allow cities, towns, and municipalities to enact by-laws which set further conditions on the use of pesticides, such as when and where certain types of pesticides (usually lawn, turf and garden products) may be used.

Pesticide Terminology

Active Ingredient: That ingredient of a pesticide that actually controls the targeted pest.

End-Use Product: A control product that has been manufactured, packaged and labelled in a form that is usable by the consumer.



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Formulant: Ingredients that serve a purpose other than the actual control of the targeted pest (e.g. solvents to dissolve solids, emulsifiers to prevent the settling of liquids in the container, carriers to deliver the active ingredient uniformly to the site, etc.)

Guarantee: The amount of active ingredient contained in a product, expressed as either a percentage or weight. The *PCP Act* requires that the guarantee be stated on the label.

Label: The product label which is approved as part of the registration process contains the conditions of registration which, along with the PCPA and regulations, govern the use of the product. In effect, therefore, the label is a legislative document. Use of a product in a manner that is inconsistent with the directions or limitations on the label is prohibited. Any control product offered for sale in Canada must bear the approved label. Advertisements for the product must relate only to the claims carried on the label.

PCPA Registration Number: A four or five digit number assigned to each registered pest control product by the PMRA. Unless expressly exempt by regulation under the Act, all pest control products must be registered and be issued a PCPA registration number before being permitted for sale, import or use in Canada.

Pest: Any injurious, noxious or troublesome insect, fungus, bacterial organism, virus, weed, rodent or other plant or animal.

Pesticide/Pest Control Product: Any product, device, organism, substance or thing that is manufactured, represented, sold or used as a means for directly or indirectly controlling, preventing, destroying, mitigating, attracting or repelling any pest. Control products include active ingredients used in the manufacture of end-use products and the end-use products themselves. Includes herbicides, insecticides, fungicides, antimicrobial agents, pool chemicals, microbials, material and wood preservatives, animal and insect repellents, and insect- and rodent-controlling devices.

Registrant: Organization or individual that holds the certificate of registration and is thereby responsible for the product. A registrant can be a chemical company, federal or provincial agency, importer or any person wishing to market a pest control product in Canada. The registrant's name and address must appear on the product label.

Uses: The specific pest(s) the product is designed to control and the sites where the product can be used. Each pest/site combination constitutes a use (e.g. dandelions on lawns; fleas on cats; fungi on potatoes etc.)

For complete, legal definitions of these and other terms, please refer to the [PCP Act and Regulations](http://canada.justice.gc.ca/STABLE/EN/Laws/Chap/P/P-9.html), available from the PMRA, or at <http://canada.justice.gc.ca/STABLE/EN/Laws/Chap/P/P-9.html>

APPENDIX C

Cosmetic Use of Pesticides Saskatchewan Ministry of Agriculture Backgrounder

Some public interest groups have called for the Saskatchewan government to ban Domestic/Cosmetic/Urban/non-essential pesticides on public and private lands. Generally, the group of pesticides is often referred to as home and garden products for urban use, and encompasses many end users from private homeowners to city parks and golf courses. The Ministry of Agriculture does not support a pesticide ban. The current body of scientific evidence does not support the necessity for a pesticide ban for either health or environmental reasons.

The Ministry supports the science-based regulatory regime employed by Health Canada's Pest Management Regulatory Agency (PMRA), the federal agency responsible for the regulation of pest control products in Canada, to evaluate new pest control products and re-evaluate existing pest control products. Any organization or jurisdiction implementing a ban implies that they have the expertise and ability to evaluate pesticide safety.

Often the public is led to believe that there is no agency regulating pesticide use. However, Canada does have one of the most thorough, rigorous and stringent regulatory systems. The PMRA's mandate is to prevent unacceptable risks to people and the environment from the use of pest control products. The PMRA has the expertise and resources necessary to carry out this mandate. Pesticides are carefully regulated in Canada through a program that includes pre-market scientific assessment, enforcement, education and information dissemination, and product re-evaluation.

The scientific assessment of pesticides is a complex process that includes a number of areas of study and investigation, including long-term toxicity and carcinogenicity studies. The cancer risk assessment includes occupational/bystander assessment, as well as food residue, and accounts for the potential variability in response between adults, children and nursing mothers, and typically builds in a safety margin of 100 times (often times greater) the levels found in normal use.

A summary of the areas of study can be provided by the PMRA.

The PMRA's regulation of pesticides also includes a re-evaluation program. Under this program, pest control products that were registered before January 1, 1995, are currently being re-evaluated to ensure their continued use, assessed against current standards for health and environmental protection in both agricultural and urban settings, poses no threat to persons and the environment. Recent re-evaluation projects have included an assessment of the common herbicides used in lawn and garden products.

The Ministry is concerned that public interest groups often dismiss existing education programs and integrated pest management tools geared toward reducing the use of pesticides and using pesticides safely, and do not acknowledge the role of Health Canada's PMRA in regulating pesticides. The Ministry does not believe that emotion or biased polls should determine regulatory/policy decision making or direction.

The Saskatchewan Ministry of Agriculture is responsible for *The Pest Control Act (Saskatchewan)* and *The Pest Control Products Regulations*. Saskatchewan Agriculture promotes the responsible use of pesticides. It agrees with recommended best management principles that promote practices to reduce pesticide user exposure and the reliance on pesticides. The Ministry participates in federal/provincial/territorial programs and initiatives such as the Healthy Lawns Strategy and the Pesticide Reduced Risk Initiative, actions that will assist urban and agricultural users to reduce their reliance on pesticides, and the Ministry supports research into alternative methods of pest control.

We support recommendations that promote practices, such as Integrated Pest Management (IPM), that reduce our reliance on pesticides and reduce applicator and general public exposure. The Ministry believes that a chemical option is an important tool for the homeowner to use along with the physical, mechanical and biological options of IPM to deal with weeds and other pests.

Ultimately, the safe and proper use of pesticides is the responsibility of all users. As stated earlier, the Saskatchewan Ministry of Agriculture does not support banning pesticide usage. The Ministry's rationale includes, but is not limited to:

- Bans would result in a patchwork of pesticide regulations, consumer confusion, and unnecessary duplication of effort from a number of levels of government.
- The costs of a pesticide ban outweigh the benefits.
 - Anecdotal evidence shows there will be some people who continue to use pest control products after a ban has been implemented. Combined with the fact that products will still be available for purchase on store shelves, this leads to a potential need for resources for enforcement action.
 - Regulatory negligence on the part of the municipality if there is minimal or no enforcement action.
- Pest control products within the scope of the ban can include everything from bleach to antibacterial soaps to common household pesticides, such as Raid, to mosquito repellents, such as Off, through to the lawn and garden formulations (commercial and domestic) of herbicides for weed control.
- The potential impact of the ban on the municipality's mosquito control initiatives leading to health concerns.
- The municipality's compliance with the provincial *Weed Control Act* and the responsibility to respond effectively to eradicate invasive species of weeds.

APPENDIX D

Ministry of Health Position

Ministry of Health's position on cosmetic use of pesticides is also agreed to by the Regional Health Authorities in Saskatchewan.

Health Canada's Pesticide Management Regulatory Agency (PMRA) is responsible for performing a health risk assessment prior to registering a product for use in Canada. Provincial and territorial governments rely on the expertise of the PMRA in assessing the safety of these products.

The Ministry of Health has reviewed existing scientific literature regarding cosmetic use of pesticides and cancer. While the ministry supports best management practices to reduce usage of chemicals in the environment, current scientific literature does not cause us to believe that Saskatchewan regulatory interventions are required at this time. Public Health Officials currently focus their efforts on public education to reduce exposure to pesticides and advising municipalities that are considering enacting bylaws restricting the usage.

We are aware of PMRA's planned prohibition of the sale of herbicide-fertilizer combination products which is scheduled to come into effect on January 1, 2013. This planned restriction is due to these products not supporting the goals of best practices for pest management in turf. The Ministry of Health will monitor the effectiveness of this restriction as well as any future scientific studies that link cancer to cosmetic pesticide products. Should the restriction be determined inadequate, and future studies support the need, we will consider proposing additional Saskatchewan restrictions.

APPENDIX E

Regina Qu'Appelle Health Region Comments

BACKGROUND

Pesticides typically refer to chemicals formulated to control a variety of pests including weeds, fungi, insects and rodents. In specific terms it can be referred to as herbicides, insecticides, fungicides and rodenticides.

Cosmetic use of pesticides typically refers to the application of pesticides for aesthetic purposes. Most commonly it is seen in the application of pesticides in lawn care outdoors but includes pesticide application to indoor settings for plants as well. The term does not apply to the agricultural setting where types, volumes and concentrations, frequency and conditions for application are at significant variance to the aesthetic use setting.

The Pest Management Regulatory Authority of Health Canada regulates and approves pesticide products including those for cosmetic purposes for sale in Canada. When these approved and registered pesticide products (for cosmetic purposes) are used as directed, they are considered appropriate for home use as deemed necessary by the consumer. No product will be registered and made available if it has not undergone the processes required by the Federal Agency. The Regulatory Authority will not register any product which it does not consider safe for use as per directions.

LITERATURE SUMMARY

An extensive review of literature of current and past studies on residential pesticide exposures and links to various forms of cancer was done by environmental epidemiologists at the Ministry of Health of Saskatchewan during 2011. Overall the evidence directly linking the cosmetic use of pesticides and cancer is weak.

Almost all studies rely on self -reported exposures to pesticides with few where actual measurements were done. Indoor exposure seems to be more significant for pesticide exposures. This may be as a result of higher concentrations occurring and remaining when pesticides are used indoors.

Individual pesticide exposure varies. Exposure from cosmetic use of pesticide use is very small. Most individual exposures to pesticides come from food ingestion and indoor exposures to insecticides. Highest exposures occur in the occupational settings such as in agriculture and horticulture. More evidence of causative links to adverse health effects are shown in the occupational settings. Here exposures occur frequently, to a wide range of products and in higher concentrations.

LEGISLATIVE ASPECTS

In most provinces where a province wide legislation is in effect, it has been enacted through the Ministry of Environment for environmental protection purposes versus health protection. In Saskatchewan the Ministry of Environment is responsible for the file on pesticides and would be the sponsoring Ministry of any Provincial legislation. If a legislative approach is considered, the Regina Qu'Appelle Health Region (RQHR) believes that this is best done at a Provincial level to encompass a Province wide approach in this matter.

It should be noted that the RQHR is not calling for a legislative approach in the control of cosmetic use of pesticides. Should the City wish to pass a bylaw, the Health Region is not in a position to assist with the enforcement thereof.

CONCLUSION

The Region is supportive of efforts to reduce pesticide exposures in all forms where practical and reasonable to do so. Use of non –pesticide solutions to pest problems is encouraged and supported where this is available and practicable. Further education of the public on the prudent use of products where needed is supported.

APPENDIX F

Council Motions #1-13 Passed May 2003

1. The City not develop a bylaw to restrict or ban the use of pesticides at this time.
2. The Administration be requested to prepare a report to the Parks and Recreation Board which will recommend the establishment of a Pesticide Advisory Committee, define the terms of reference for the Committee, and be comprised of representatives of the following:
 - Regina Qu'Appelle Health Region
 - Pesticide industry
 - School Boards
 - RUEAC
 - University of Regina
 - City Administration
 - Citizen Members
 - Other individuals or groups as required
3. The City lead by example in reducing the reliance on pesticides in the management of public parks and open space areas by setting annual measurable reduction targets.
4. The City develop a public communication strategy that focuses on lawn, tree and garden care that will place an emphasis on:
 - Pest prevention;
 - The use of reduced risk products or alternatives; and
 - Application of pesticides only when necessary
5. The City continue to research and experiment with alternative methods of pest management that do not involve the use of pesticides.
6. The City monitor public attitudes and behaviour around the use of pesticides
7. The City continue to network with municipalities and other appropriate agencies and various organizations and businesses to stay current on pesticide related developments.
8. The Administration be requested to identify a specific green space as a three-year pilot project with no use of chemicals as a means of weed maintenance and provide a follow-up report to the Parks and Recreation Board.
9. City Council recommend to the Premier that the provincial government establish a Provincial Council on Urban Integrated Pest Management under the Department of Environment and Resource Management to ensure education and promotion of Integrated Pest Management.
10. By November 2003, the Administration provide City Council with a report outlining current improper uses, storage uses and disposal of pesticides and the potential health and environmental risks of these improper uses.

11. By November 2003, the Administration develop for City Council a list of indicators of the residential and non-residential use of pesticides in Regina along with annual target reduction levels in relation to these indicators for the period of 2004 to 2009; and that the annual reports be provided to the City Council stating these indicator results in relation to the target levels set.
12. The Administration provide a report which outlines the City of Calgary Integrated Pest Management plan and similar programs from other Canadian cities.
13. The Regina Qu'Appelle Health Region be invited to contribute financially to co-ordinate a public communication strategy.

APPENDIX G

2012 Total Parks Weed Survey

Final - July 31, 2012

Introduction

During 2012, Pest Control Services undertook a complete weed density survey for city of Regina class A, B and C parks including the Athletic fields. The survey was conducted from June 4, 2012 to July 25, 2012. This was the first measured and scientifically based survey of its kind where all of the major City of Regina parks were evaluated during one summer season.

Survey Method

For the 2012 survey, all of the class A, B and C parks along with athletic fields. The source list for the parks was the INSITE posted list. For each park, total area was determined in Hectares (Ha). A total of 25 sample counts were taken per hectare of space, with the minimum distance between samples being 20 metres.

A hula hoop (area = 0.8 m²) was dropped at each sample location and all the weeds inside the hoop were counted. If the count within the hoop reached 30, the count was then stopped and recorded as 30+. For the record, this is the same practice as the Olds College alternative herbicide trials previously conducted in Regina. With the exception of clover, all species of weeds were counted in the survey. Individual species of weeds (ex: dandelion, plantain) were not identified, as this was to be a total count only.

Data was entered into a data base for analysis. As the hula hoop did not entirely reflect 1 m², the database was instructed to correct the area by a factor of 1.2.

The threshold to determine if treatment is required is essentially a two part process. First weed density must meet a minimum average count of X weeds per square meter. Second, once the minimum average density threshold is met, the density must apply to over a certain minimum as a percentage of space. Both conditions must be met if met herbicide treatments are to proceed. The Pesticide Reduction Committee (PRC) determined to establish the following thresholds for the differing class of park space and are as follows:

- Athletic fields – 5 weeds/m² covering 25% of space
- Class A Parks – 5 weeds/m² covering 50% of space
- Class B Parks (On Central Irrigation System) – 7 weeds/m² covering 50% of space
- Class B Parks (Not on Central Irrigation system) – 10 weeds/m² covering 50% of space
- Class C Parks – 20 weeds/m² covering 50% of space.

Once the survey counts were obtained the data was then analyzed. All athletic fields and parks are reported by individual class. “Pesticide Free” parks are reported both as their own group and shown within their respective parks class.

Results

Pesticide Free Parks

Depending on the individual park space the pesticide free parks are either Class A or Class B space. However regardless of class if the parks were “permitted to be treated” the following condition must be met:

- 5 weeds/m² covering 50% of space (Class A space)

Results of survey indicate that all three pesticide free parks currently exceed the minimum density of 5 weeds per square meter. Further to this point, for all of the parks weed density has increased from 2011 to 2012 (Chart 1). However, percentage park space covered by weeds well below the minimum 50% (Chart 2). As a result, if the parks were not considered as pesticide free, none of the spaces would qualify for herbicide treatments.

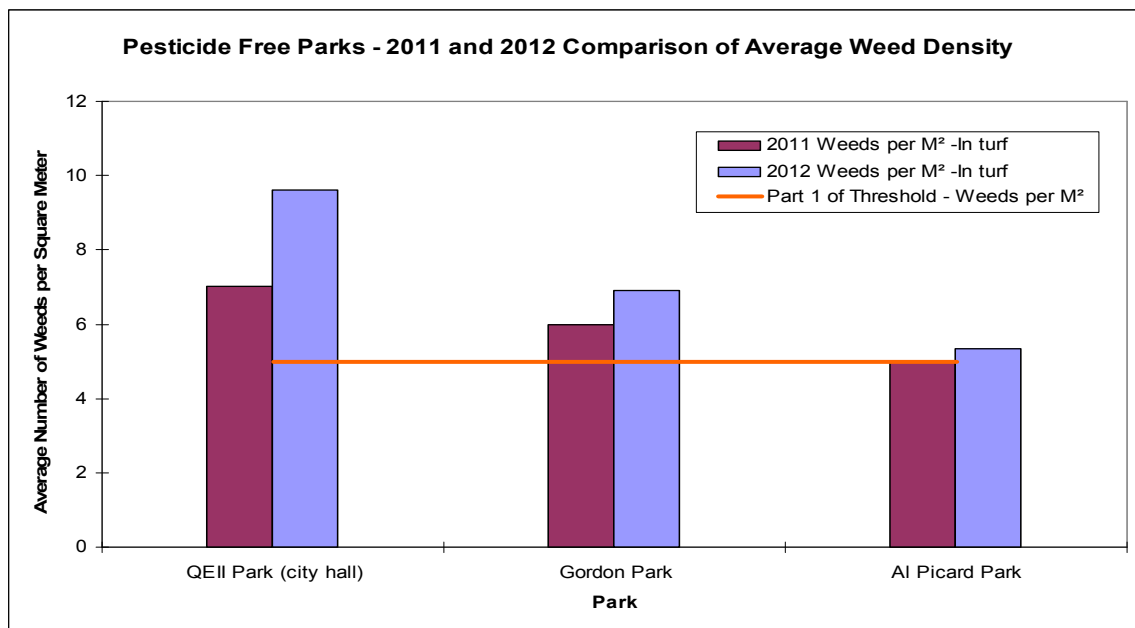


Chart 1 – Pesticide Free Parks – Part 1 of Threshold - Average weed density. For illustrative purposes only - QEII City Hall park is a class A space - The threshold bar is set at 5 weeds / m².

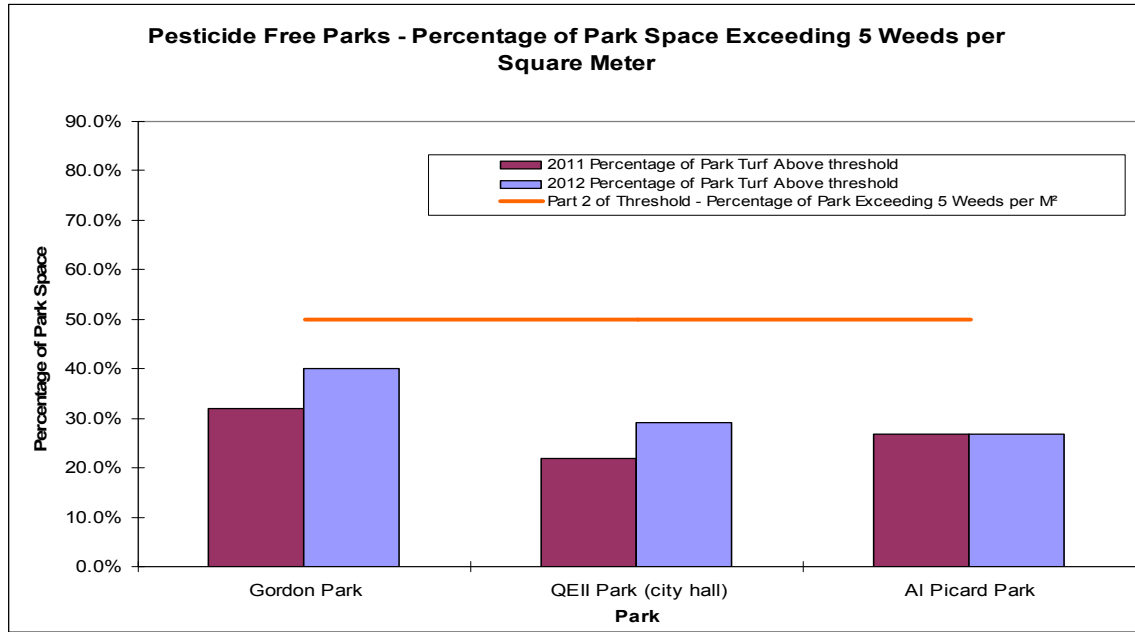


Chart 2 – Pesticide Free Parks – Part 2 of Threshold - Percentage of space where weed density exceeds 5 weeds per square metre. Please note that none of this space exceeded threshold.

Athletic Fields

As determined by the PRC, for an Athletic Field to qualify for treatment the following conditions must be met:

- 5 weeds/m² covering 25% of space

A total of 71.9 Ha of Athletic Field Space was surveyed. Results indicate that 11 locations totaling 25.7 Ha require treatment. (Charts 3 & 4)

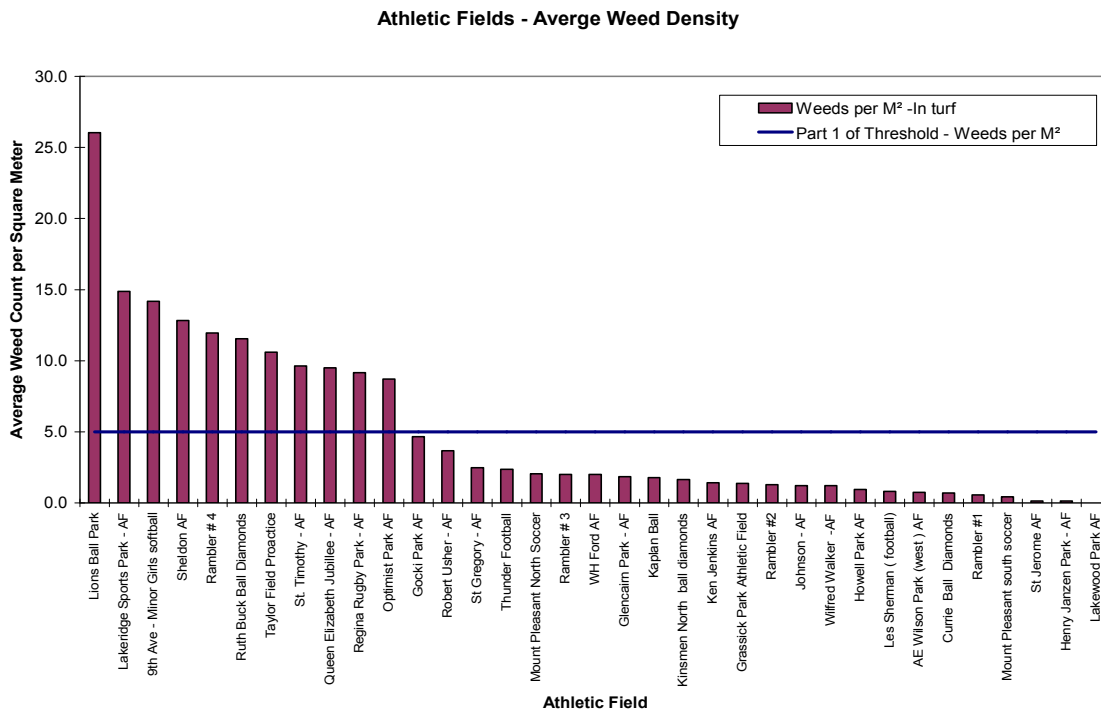


Chart 3 – Athletic Fields – Part 1 of Threshold - Average weed density. All locations surveyed.

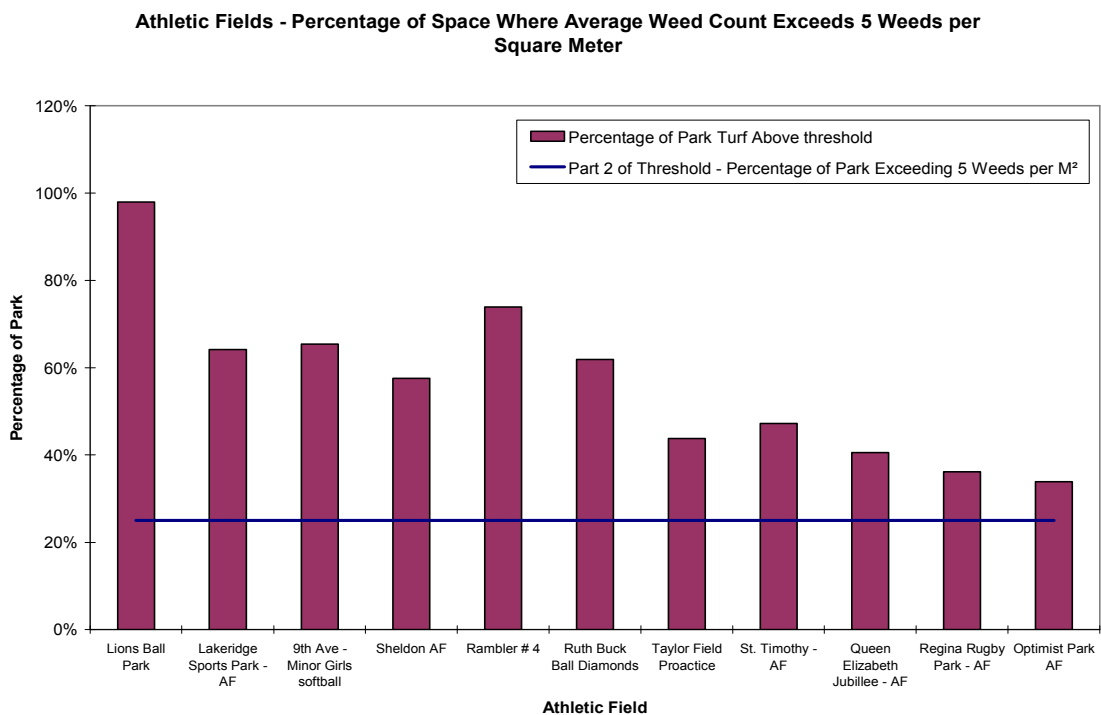


Chart 4 – Athletic Fields – Part 2 of Threshold - Percentage of space where weed density exceeds 5 weeds per square metre. Only fields where space density exceeded Part 1 of the threshold is shown.

Class A Parks

As determined by the PRC, for a Class A to qualify for treatment the following conditions must be met:

- 5 weeds/m² covering 50% of space

A total of 79.9 Ha of Class A park space was surveyed. Results indicate that only one location, Rotary Park totaling 1.6 Ha requires treatment. (Chart 5 & 6)

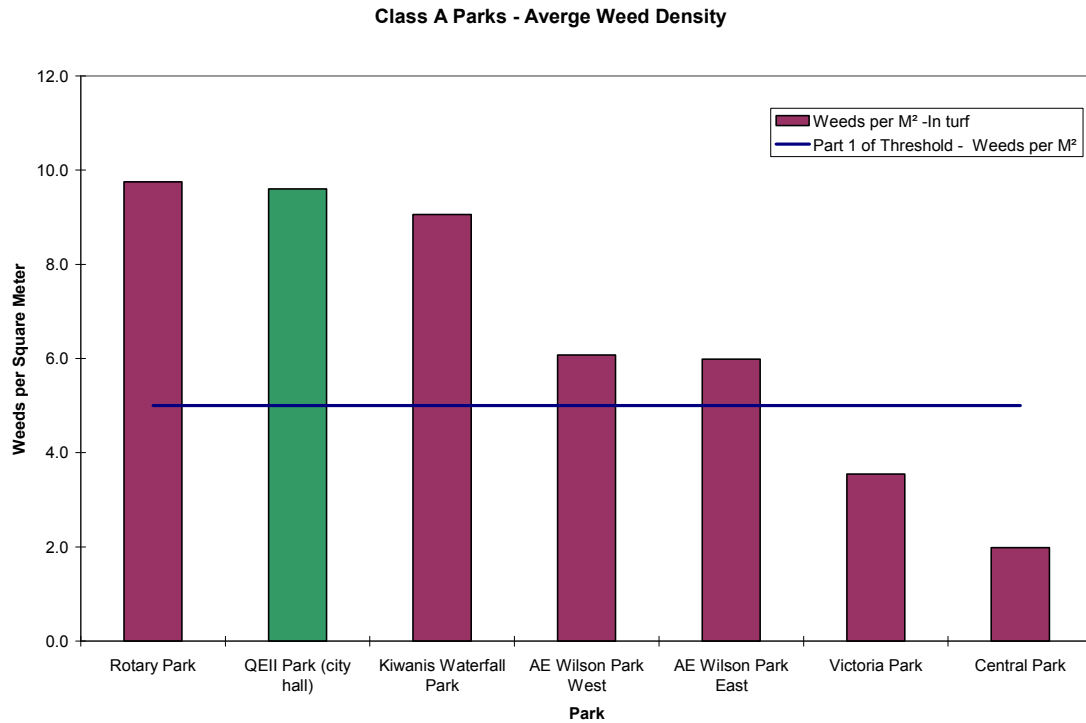


Chart 5 – Class A Parks – Part 1 of Threshold - Average weed density. All locations surveyed. The pesticide free park Queen Elizabeth II Court Park (City Hall Grounds) is shown (green) as a comparison.

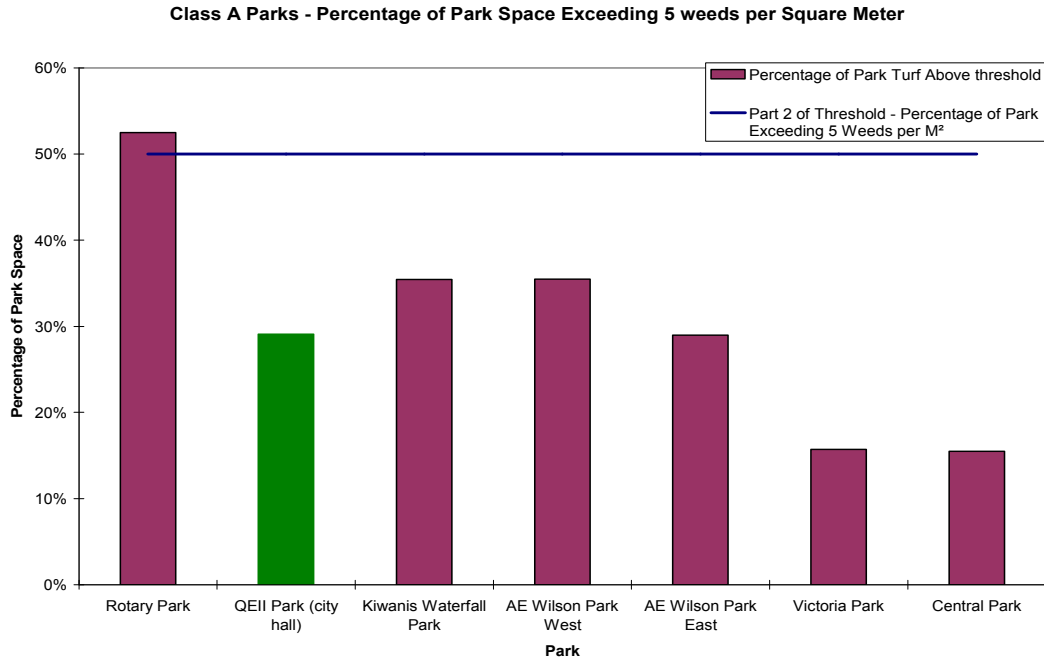


Chart 6 – Class A Parks – Part 2 of Threshold - Percentage of space where weed density exceeds 5 weeds per square metre. Only parks where density exceeded Part 1 of the threshold is shown. Pesticide free park Queen Elizabeth II Court Park (City Hall Grounds) is shown (green) as a comparison. Rotary Park is only park exceeding part 1 and part 2 of the threshold.

Class B Parks (Central Irrigation System)

As determined by the PRC, for a Central Irrigation System Class B park to qualify for treatment, the following conditions must be met:

- 7 weeds/m² covering 50% of space

A total of 199.9 Ha of Class B, centrally irrigated park space was surveyed. Results indicate that 27 parks totaling 99.9 Ha requires exceed threshold. (Charts 7 & 8)

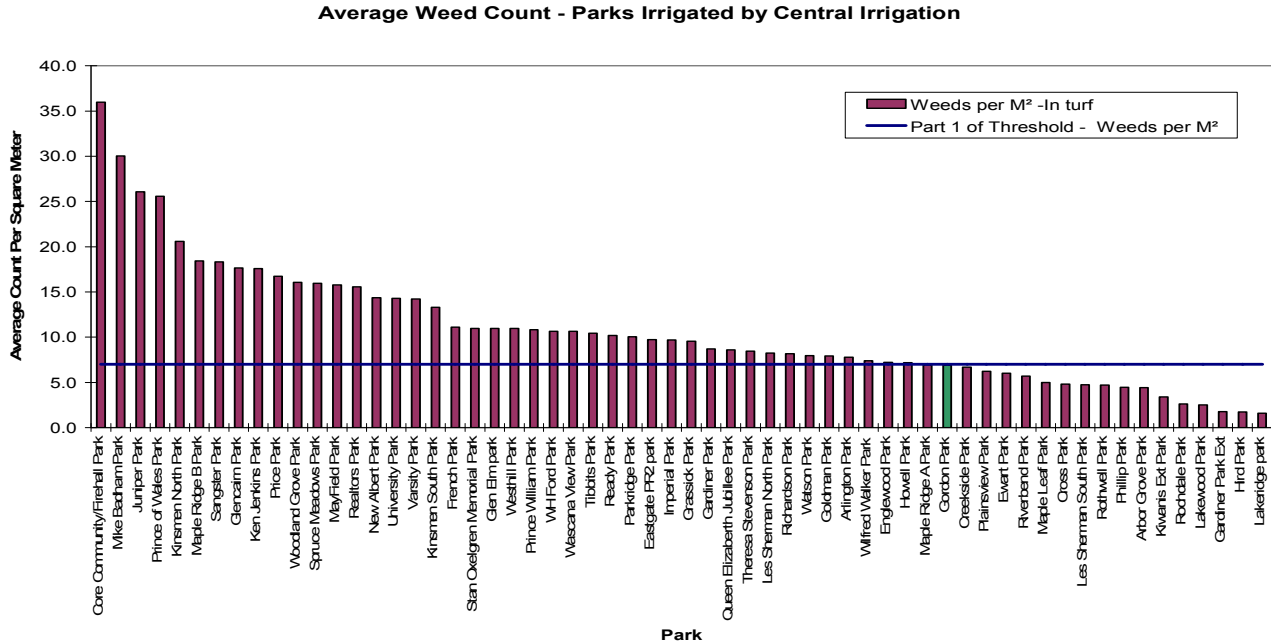


Chart 7 – Class B Parks on Central Irrigation System – Part 1 of Threshold - Average weed density. All locations surveyed. Pesticide Free Park, Gordon Park is shown (green) as a comparison and is below part 1 of the threshold.

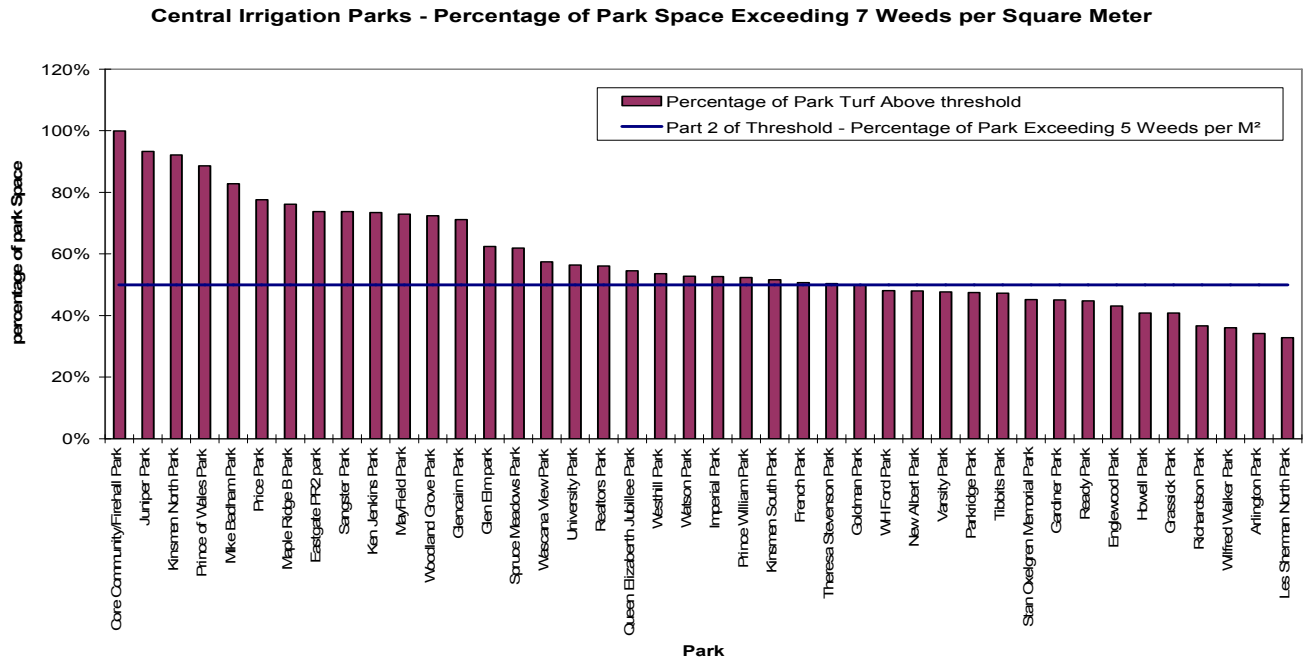


Chart 8 – Class B Parks on Central Irrigation System – Part 2 of Threshold - Percentage of space where weed density exceeds 7 weeds per square metre. Only parks where density exceeded Part 1 of the threshold is shown.

Class B Parks (Not on Central Irrigation System)

As determined by the PRC, for a Class B park not on the Central Irrigation System (AKA Quick coupler) to qualify for treatment the following conditions must be met:

- 10 weeds/m² covering 50% of space

A total of 207 Ha of class B, non-centrally irrigated park space was surveyed. Results indicate that 20 parks totaling 22.4 Ha requires exceed threshold. (Chart 9 & 10)

Class B Parks (Not on Central Irrigation) - Average Weed Density

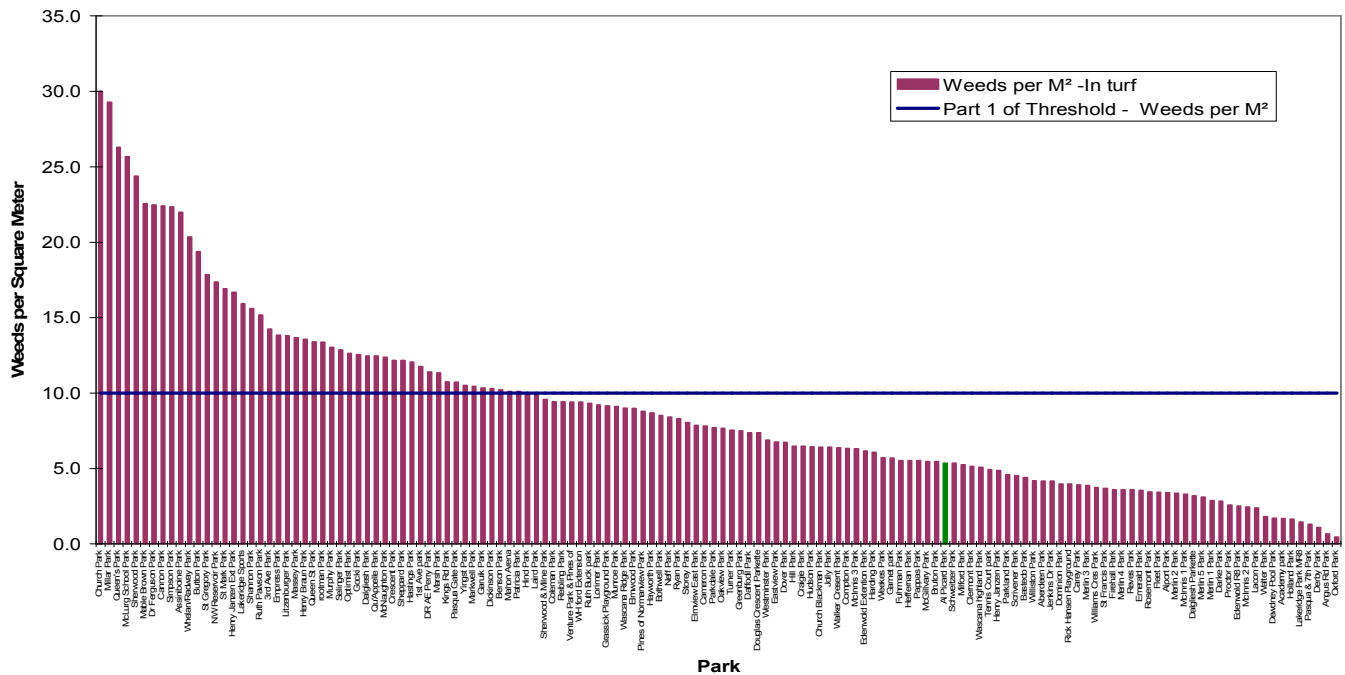


Chart 9 – Class B Parks (AKA quick coupler parks) – Part 1 of Threshold - Average weed density. All locations surveyed. Pesticide Free Park, Al Picard Park is shown (green) as a comparison and is below part 1 of the threshold.

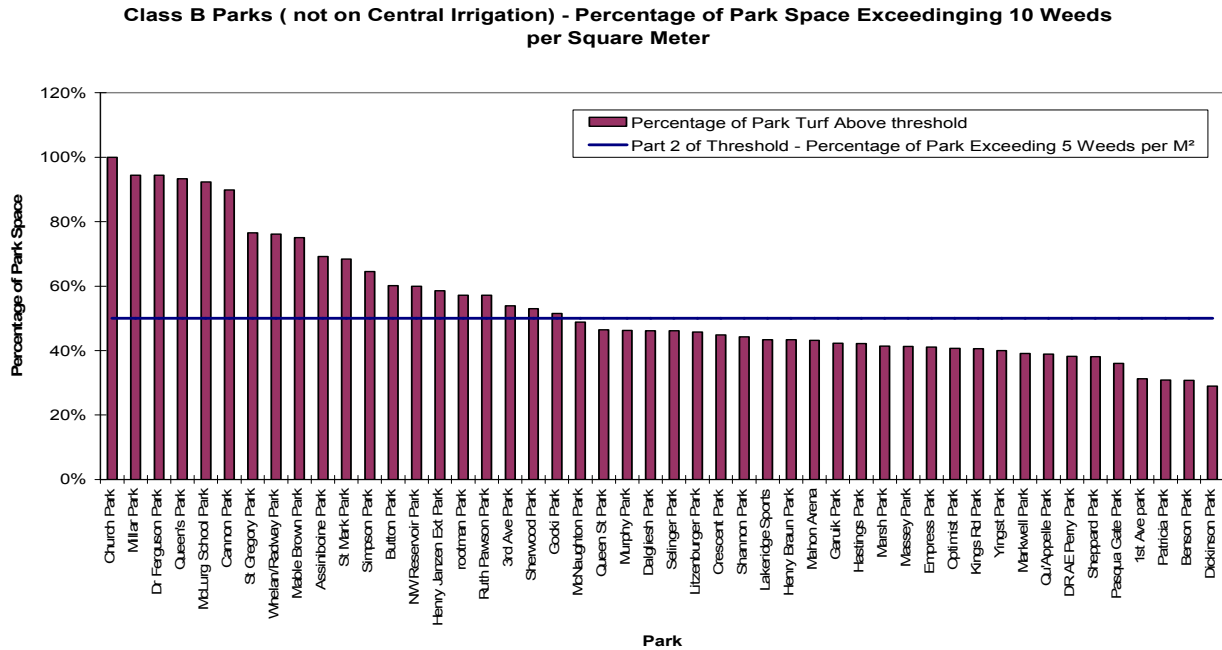


Chart 10 – Class B Parks (AKA quick coupler parks) – Part 2 of Threshold - Percentage of space where weed density exceeds 7 weeds per square metre. Only parks where density exceeded Part 1 of the threshold is shown.

Class C Parks

As determined by the PRC, for a Class B to qualify for treatment the following conditions must be met:

- 20 weeds/m² covering 50% of space

A total of 74.99 Ha of Class C park space was surveyed. Results indicate that 19 parks totalling 33.4 Ha requires exceed threshold (Charts 11 & 12). Of note; all parks which exceeding 20 weed/m², the percentage of space covered by weeds also exceeded 50%.

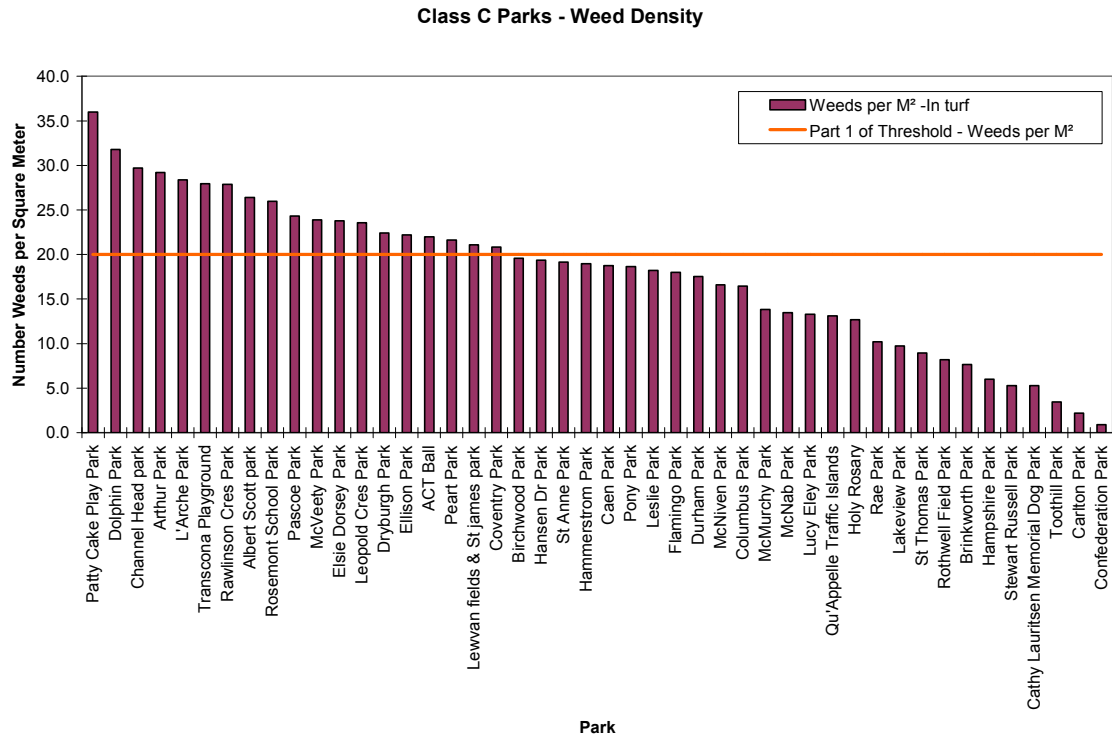


Chart 11 – Class C Parks – Part 1 of Threshold - Average weed density. All locations surveyed.

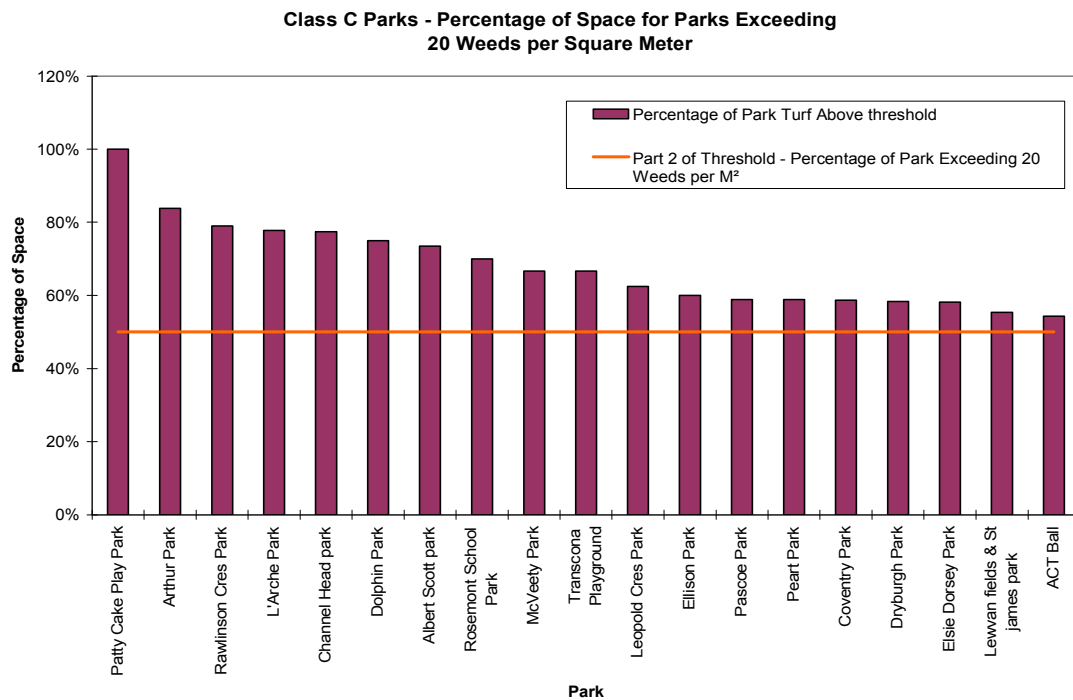


Chart 12 – Class C Parks – Part 2 of Threshold - Percentage of space where weed density exceeds 20 weeds per square metre. Only parks where density exceeded Part 1 of the threshold is shown. A total of 19 parks exceed part 1 and part 2 of the threshold. As a side note all parks that exceeded 20 weeds per square metre also exceeded 50% of park space.

Miscellaneous Open Space

Chart 13 shows additional space not identified in the Insite parks list. This space is visible and as such was used to demonstrate other areas not specifically surveyed. No threshold had been selected both weed density and percentage of weed cover is shown in the same chart.

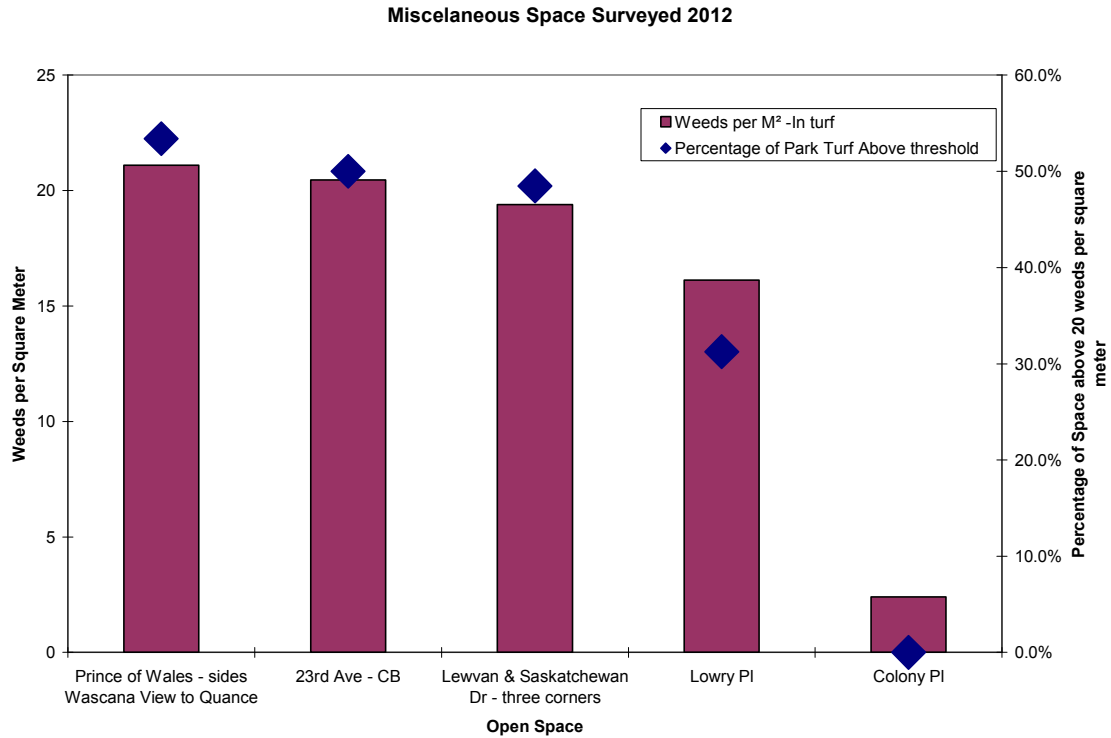


Chart 13 – Miscellaneous space. Weed density is shown in the column. Percentage of park space exceeding 20 weeds/m² is shown with the blue diamond.

Survey Results Comparison of Parks Treated During 2011 Herbicide Program

During 2011, 20% of total park space was surveyed to determine if a weed survey was possible. Results from that survey were used to identify the areas which required treatment. The following chart (14) compares average weed density from 2011 to 2012 survey for the parks treated during fall 2011.

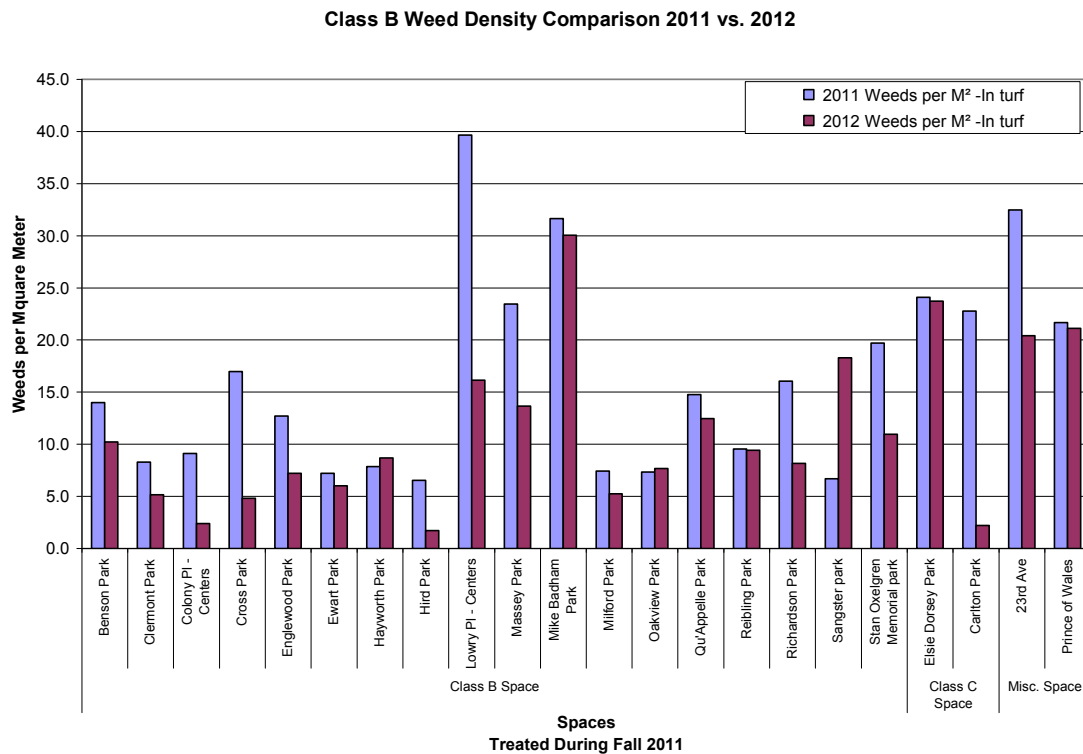


Chart 14 – 2011 vs. 2012 weed density per square meter comparison

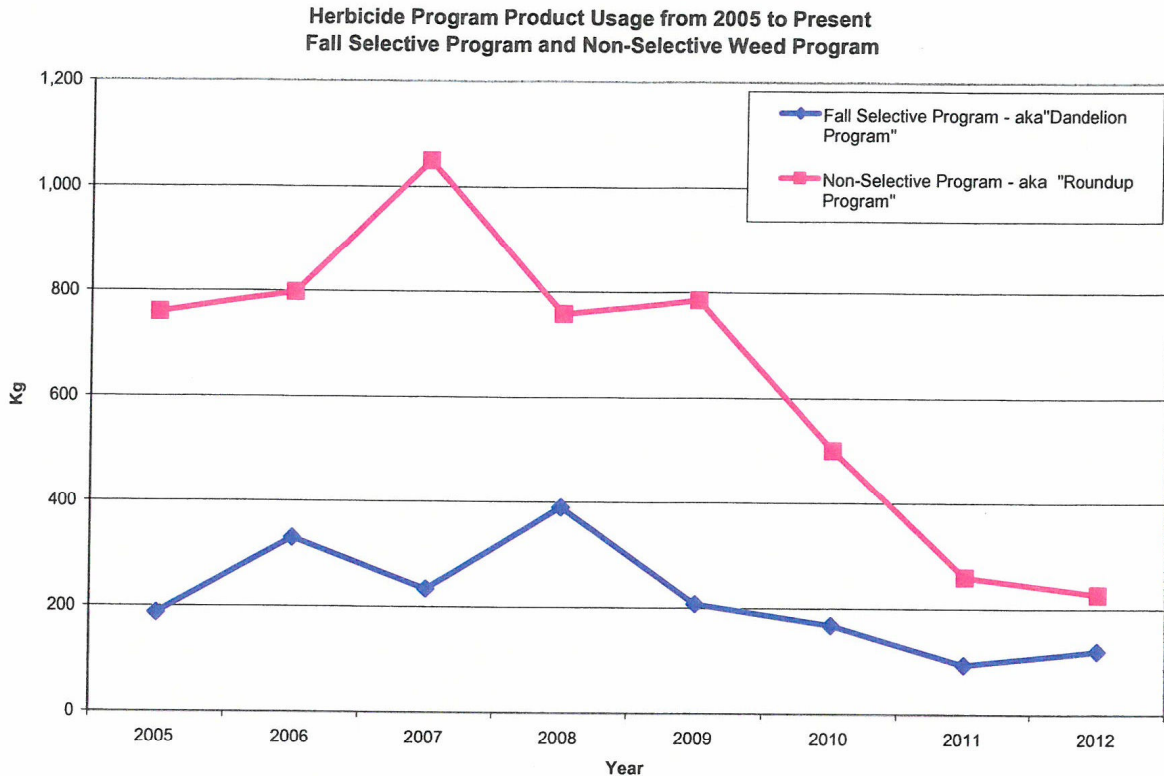
Points for Note

The intent for this section is for consideration to improve the survey process going forward. This section is for illustrative purposes in decision making.

1. A total of 654 Ha of Open Space areas have been surveyed.
2. A total of 13,426 samples were generated for this report.
3. Total walking distance between each sample point 268.5 Km.

APPENDIX H

Herbicide Program Reduction Product Usage



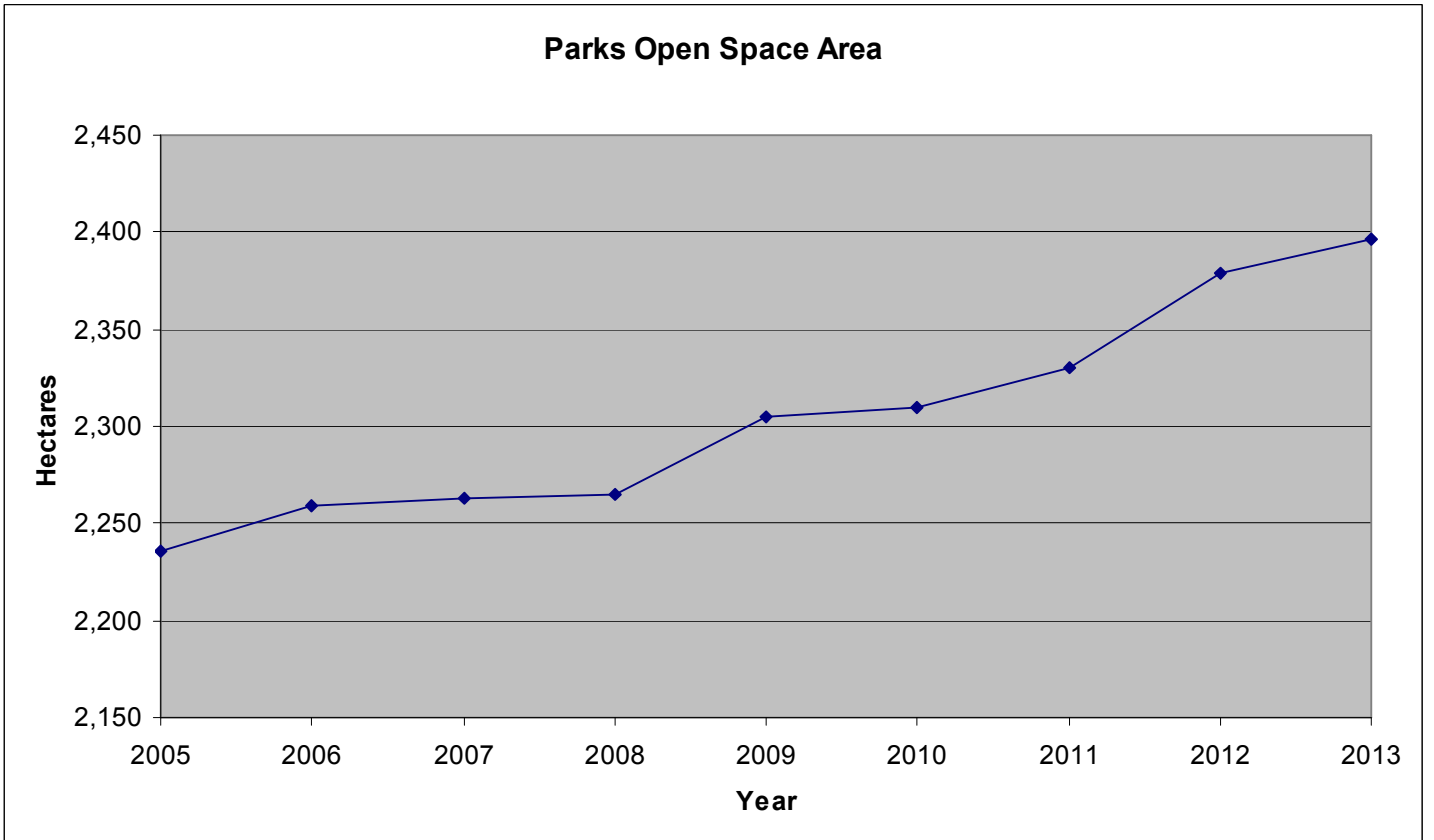
Notes:

1. Fall Selective Program – aka “Dandy Lion Program” – The line in Dark Blue indicates total 2,4-D usage by total weight of active ingredient used by year. Examples of products that utilize 2,4-D include Killex™ and Trillion Turf Herbicide™. A by weight comparison allows differing brands of products or those with differing concentrations of active ingredient, to be accurately compared for total chemical usage. From 2005 to 2011 – The primary 2,4-D product used was Killex 500. During 2012 the 2,4-D product was Trillion Turf, due to changes in manufactured supply.
2. Non-Selective Program – aka “Round-up Program” – The line in purple indicates total glyphosate usage by total weight of active ingredient used by year. Examples of products that utilize glyphosate include Roundup™ and Vantage Herbicide™. A by weight comparison allows differing brands of products or those with differing concentrations of active ingredient, to be accurately compared for total chemical usage. From 2005 to 2011– The primary glyphosate product used was Roundup. For 2012, due to vendor supply approximately half of the glyphosate used was Vantage.

APPENDIX I

Parks Open Space Area

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Hectares	2,236	2,259	2,263	2,265	2,305	2,309	2,330	2,379	2,397



March 7, 2013

To: Members,
Public Works Committee

Re: 2013 Flow Monitoring Program and Wastewater Model Calibration

RECOMMENDATION

It is recommended that:

1. City Council authorize the Deputy City Manager of City Operations to initiate the process to engage consulting and professional engineering services for the 2013 Flow Monitoring Program and Wastewater Model Calibration. The contract value to execute the program is expected to exceed \$500,000; and,
2. City Council authorize the Deputy City Manager of City Operations the authority to award, finalize the terms for the consulting and professional engineering services contract after review of the proposals from professional engineering firms, and amend such contracts after review of consultant and professional engineering proposals.

CONCLUSION

In order to effectively manage the sanitary sewer and drainage collection systems, reduce sanitary sewer overflow, evaluate the impact of development on system capacity, and minimize operational and capital investment costs, the City's Administration requires more comprehensive and accurate data on actual flows within the two systems. To obtain this data, engineering consultants are required to install and monitor the necessary equipment, and calibrate computer models which City engineers and planners utilize in their work. As the estimated cost for this consultant commission is anticipated to be in excess of \$500,000, City Council approval is required.

BACKGROUND

In 2011, the City of Regina experienced significant spring melt and summer rain events which resulted in flooding and impacts to property. To better mitigate such impacts in the future, consultants were commissioned to develop a Flow Monitoring Program for the entire underground sanitary sewer collection system, and to instrument and gather flow monitoring data within the downtown area.

The 2012 Flow Monitoring Program has been completed and was successful in providing improved data required for determining optimal, and more cost effective, servicing requirements for the Evraz Place/Stadium site. The consultants also identified areas of the underground sanitary sewer system that require closer investigation for inflow and infiltration from the drainage collection system. Recommendations were made to fully implement flow monitoring within the remaining areas of the City's sanitary sewer system.

In 2012, the City also undertook a preliminary drainage design study of Area #13, which is located in north central Regina and includes the neighbourhoods of Northeast and Coronation

Park. This area has historically experienced extensive impacts during major storms. Additional flow monitoring data of the drainage system is required to properly complete the detailed design of capital drainage improvements planned for 2015.

Currently, City Administration has several other key initiatives underway that will benefit from more robust data and predictive modelling. These planning, engineering and operational initiatives include the Design Regina Initiative, Regina Revitalization Initiative, Downtown Serviceability Study, and various ongoing assessments of operational and maintenance programs.

DISCUSSION

Flow monitoring and model analyses are best asset management practices, identified in both the National Guide to Sustainable Municipal Infrastructure (NGSMI) InfraGuide Multi-discipline report and, the NGSMI Infiltration/Inflow Control/Reduction for Wastewater Collection Systems report.

The proposed Flow Monitoring Program for 2013 involves the:

- Re-installation of seven permanent monitors, which were purchased in 2012, in the sanitary sewer system.
- Purchase and installation of twenty-nine temporary monitors in the sanitary sewer system.
- Purchase and installation of eight temporary monitors in the storm water system within Area #13.
- Calibration of the City's existing wastewater model using data collected during 2012 and 2013.
- Provision of training to City staff to enable them to carry on with maintenance and evaluation of the model on an ongoing basis.

OPTIONS

Option 1 - 2013 Monitoring Flow Program as Proposed

Proceeding with the proposed monitoring program will ensure collection of comprehensive data and, a robust and reliable prediction of how the sanitary sewer and drainage systems may respond to changes, additions or upgrades. Combining the two monitoring programs (sanitary and drainage) will provide an overall reduction in overhead, engineering fees and equipment procurement by taking advantage of economies of scale. The estimated cost of this option is \$725,000.

Option 2 - Reduced Flow Monitoring Program

This option would include only flow monitoring of the sanitary sewer system and calibration of the model in 2013. Flow monitoring within Area #13 would be postponed until a later date. The estimated cost for this option is \$525,000 at this time and \$250,000 for monitoring Area#13 in the future. Impacts of this option involve a total incremental cost of \$50,000 and the potential for delays in delivering drainage improvements to Area #13.

Option 3 - Deferred or Absence of Flow Monitoring Program

A decision to defer or not implement the flow monitoring programs and model calibration would result in significantly less reliability and confidence in the planning and engineering evaluations determined with or from the model. In turn, this may have significant impacts on the effectiveness and costs of recommendations and decisions made in relation to the initiatives discussed within this report, particularly in regards to effects within the existing collection system. Decisions made on some of these key initiatives have the potential for longer term cost impacts many times larger than the proposed cost for Options 1 or 2. The exact scope and cost implications are dependent on the degree of error in the current model, which is unknown at this time. Preliminary flow modelling in 2012 resulted in significant changes to the evaluation of servicing options for the Evraz Site, resulting in a better solution that is better accommodated within the existing system.

RECOMMENDATION IMPLICATIONS

Financial Implications

The estimated fees for the proposed flow monitoring programs are:

Domestic Flow Monitoring Program	\$450,000
Storm Drainage Area #13 Flow Monitoring Program	\$200,000
Calibration and Training	\$75,000
Total	\$725,000

The Regina Administrative Bylaw No. 2003-69 stipulates that a project with consulting fees exceeding \$500,000 requires City Council approval.

It is expected that the City shall realise significant cost savings by combining these programs and reducing duplication of overhead, administration and a portion of program costs. It should also be noted that this project will facilitate more effective evaluation and decision making of projects, which will carry costs many times larger than this investment.

Funding for this work is available and was approved in the 2012 Capital Budget. A portion of the budget was spent on the 2012 Flow Monitoring Program, with the remaining funds carrying over for work in 2013.

Environmental Implications

This project will improve the City's ability to: minimize inflow and infiltration into the sanitary sewer system; reduce sanitary sewer overflows; and, protect public health and the environment.

Policy and/or Strategic Implications

This project supports the City's Strategic Focus by providing better data and tools to understand and narrow the gap between service levels and our ability to provide them.

It will provide needed data to comprehensively evaluate the impacts on, and needs of, infrastructure required to support community growth, infill, and urban intensification initiatives.

It will also provide information that will directly inform, optimize and reduce operating and capital investment decisions.

Other Implications

None with respect to this report.

Accessibility Implications

None with respect to this report.

COMMUNICATIONS

None with respect to this report.

DELEGATED AUTHORITY

The Public Works Committee decision on this matter requires City Council approval.

Respectfully submitted,

A handwritten signature in purple ink that reads "Stella Madsen". The signature is fluid and cursive, with a long horizontal stroke at the end.

Stella Madsen, Director
Water and Sewer Services

Respectfully submitted,

A handwritten signature in purple ink that reads "W. Dorian Wandzura". The signature is fluid and cursive, with a long horizontal stroke at the end.

W. Dorian Wandzura, Deputy City Manager & COO
City Operations