

CANADA GOOSE MANAGEMENT PLAN For The BEND METRO PARK AND RECREATION DISTRICT



Living with Canada Geese in the
Bend Metro Park and Recreation District
Produced Cooperatively by:

The United States Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

And

Bend Metro Parks and Recreation District
Natural Resources Division



Cover Photo: Geese Feed in BMPRD's Drake Park.

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This Plan will be monitored for efficacy and will be periodically reviewed by Bend Metro Parks and Recreation District, USDA Wildlife Services, and the Oregon Department of Fish and Wildlife.

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1.0 INTRODUCTION

The resident Canada goose population in the United States has experienced tremendous growth in the last 30 years. The North American resident Canada goose population increased approximately 4 fold from 1 million birds in 1990 to over 3.9 million in 2008 (Dolbeer and Seubert, 2009). This growth is evident in Central Oregon, as Canada geese are abundant. In particular, year-round, resident Canada geese thrive in the City of Bend, Oregon. Conflicts occur daily as people encounter goose feces while walking or recreating in Bend's parks. The United States Fish and Wildlife Service (USFWS) identifies resident Canada geese as those that nest within the lower 48 States in the months of March, April, May, or June, or that reside within the lower 48 States in the months of April, May, June, July, and August.

These parks are managed by the Bend Metro Park and Recreation District (BMPRD). BMPRD regularly receives complaints requesting that Canada goose problems be addressed. Geese populations are generally highest in the parks along the Deschutes River. BMPRD is very proud to provide a healthy home to natural resources including wildlife. However, BMPRD also has a responsibility of managing its parks for multiple uses, including human recreation. BMPRD manages 11 different parks along the Deschutes River within the city limits of Bend. Geese thrive in the parks due to ample food supplies, safety from predators, and available nesting sites. While park visitors enjoy watching wildlife at BMPRD parks, resident Canada geese cause considerable conflict. This conflict is caused by unsightly and potentially unhealthy feces, landscape damage, and at times aggressiveness towards humans. This conflict results in public dismay over inability to use park areas due to feces, aesthetic deterioration, and significant expense to BMPRD in order to address goose damage.

In 2005, BMPRD continued an ongoing discussion with the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) about resident Canada goose control options, and it was decided that an integrated Canada goose damage management program should be officially developed. The result was the first version of this Management Plan. This Plan is being updated in 2009 to reflect the goose management activities of the past four years, changes to Bend's parks, consultation from Oregon Department of Fish and Wildlife (ODFW), and input from members of the public. This plan will document past and current goose damage at BMPRD, outline goose population objectives as determined by BMPRD after consultation with ODFW and WS, assess control techniques, and discuss permitting requirements. Based on the assessment of practical and effective goose damage control options, this plan will outline a course of action that BMPRD can take in order to reduce goose damage.

Many of the revisions and future recommendations included in this updated Plan will be based on the Canada goose survey that was conducted by WS in 2007-2008. WS conducted Canada geese surveys at sixteen sites throughout Deschutes County, including five sites at BMPRD parks. The purpose of the survey was to obtain data regarding the

abundance and movement patterns of resident and migratory Canada Geese, as well as site interaction and property nuisance and damage within Deschutes County.

It is important to note that Bmprd, along with the general public, recognizes that Canada geese have inhabited this region for many years, and it is a goal of this plan to insure they remain a permanent and important part of the Bmprd legacy. This plan is intended to be a means by which an appropriate population of geese can be maintained that will not adversely effect how its citizens can use the community's parks.

2.0 CANADA GOOSE BIOLOGY AND REGULATION

2.1 LOCAL CANADA GOOSE INFORMATION

Canada geese are very common throughout the State of Oregon; Bend in particular, maintains large populations of Canada Geese.

Canada geese can be migratory or resident. There are seven subspecies of Canada geese that reside in Oregon, and only one, the western Canada goose (*Branta canadensis moffitti*) is resident. The two most common subspecies found in Central Oregon are the western Canada geese and the lesser Canada geese (*Branta canadensis parvipes*), which migrate to the region in the winter. The western Canada geese (westerns), also known as Great Basin Canada geese and Moffitt's Canada geese, may migrate or be resident. Most westerns are resident in Central Oregon, and they are prone to living within the safe confines of urban areas. It is resident western Canada geese that wildlife damage management efforts will target at Bmprd.

In the past, ODFW and USFWS completed regional transects and localized surveys for geese in Deschutes County. In addition, WS conducted a year long survey of Canada geese in Deschutes County in 2007/2008. No formal statistical population analysis has been completed with this data because the data points may not fit into traditional population estimate models. However, in 2009, from the survey work completed and from anecdotal observations, WS conservatively estimates that 3,000 to 7,000 resident (western) Canada geese may reside in Deschutes County. In summary, the wildlife management community does not argue that resident Canada goose populations are healthy in Deschutes County.



Figure 1: Islands in Deschutes River next to Drake Park

These resident geese thrive in areas that have ample forage mixed with waterways and vegetation that provides safety and nesting areas. These habitat characteristics are especially important for nesting and subsequent safety of the goslings (Fig. 1). Humans utilize parks that provide excellent habitat for geese, which undoubtedly leads to goose-human conflicts.

It is important to note that Deschutes County is home to one of the largest concentrations of golf courses in the United States. This fact, combined with high concentrations of parks, resorts, and other recreational areas near water, results in ideal goose habitat throughout Deschutes County as well as the City of Bend. Ironically, the urbanization of the Bend area has significantly increased goose habitat while also decreasing the number of predators. This has caused the resident Canada goose populations to increase far beyond levels historically found in the area.

Within close proximity to Bend, there are considerable numbers of land owners and managers that suffer from goose damage, as has been reported to WS. There appears to be an ebb and flow of goose populations from one site to the next as geese travel locally. At BMPRD parks, the 2007/2008 WS survey data show increases in goose populations in late spring and early summer. This occurs because resident geese travel to the river area to nest and rear their goslings. The majority of geese nest in March, April, and early May, although some nesting occurs into the summer months. Their nests average 4-5 eggs. Adults and goslings use the parks as feeding areas as soon as the goslings hatch. Concurrently, many local golf courses and other landowners see a reduction in geese using their properties during the nesting season. This is logical because of the goose population boom at BMPRD during late spring and early summer. Then, as fall arrives, goose populations decline in BMPRD parks but increase at other non-BMPRD sites. For this reason, BMPRD has met with golf course and other property managers to discuss goose problems and possible solutions. These managers have united with respect to interest in goose control activities at BMPRD because some of these geese are the same that are a nuisance to them at other times of the year, as shown by our survey data.

2.2 CANADA GOOSE REGULATION / AGENCY ROLES

2.2.1 USDA Wildlife Services

WS is a federal agency under the U.S. Department of Agriculture that exists to provide federal leadership in managing wildlife damage across the United States. WS is a service agency and has no legal regulatory role in Canada goose management. However, WS works under Memorandum of Understandings and Interagency Agreements with ODFW and the USFWS. These agreements make WS agents of these regulatory agencies with respect to wildlife damage and conflict response. WS responds to complaints of wildlife damage through the use of integrated wildlife

damage management. This management includes the use of both non-lethal and lethal damage management methods. WS activities are supported by Congressional authorizations and appropriate National Environmental Policy Act documents.

WS has been very involved with management of Canada goose conflicts. In Oregon, WS administered a goose damage abatement program for farmers suffering from hundreds of thousands of Canada geese eating and damaging their crops. Oregon WS has also conducted a number of site-specific Canada goose capture programs for resident Canada geese. In other states, WS has also been very involved with intensive goose management programs. Nearest to Oregon, the Washington WS program conducts yearly resident Canada goose control programs in the Puget Sound area. Near Reno, Nevada, WS conducts yearly goose management in the Truckee Meadows area. In all cases, significant relief from goose damage has been provided.

2.2.2 U.S. Fish and Wildlife Service

All Canada geese, including resident Canada geese, are classified as migratory birds, and therefore Canada geese are protected under the Migratory Bird Treaty Act. The USFWS is the federal agency that is responsible for managing all migratory birds. The USFWS manages Canada geese by monitoring, conducting habitat management, hunt management and other actions. They are also responsible for issuing Depredation Permits when needed to control Canada geese. It is illegal for anyone to cause harm to birds covered by the Migratory Bird Treaty Act without a properly issued permit.

Wildlife Services operates under a USFWS depredation permit when lethal Canada goose control is conducted. This permit also allows relocation of geese and addling/oiling of eggs.

2.2.3 Oregon Department of Fish and Wildlife

Under state statute, ODFW is tasked with managing all wildlife within the state. Therefore, ODFW is involved with Canada goose management in cooperation with USFWS. Although, ODFW's regulatory management role for Canada goose management under the Migratory Bird Treaty Act is not as extensive when compared to USFWS. ODFW migratory bird managers are involved with various aspects of goose management in many advisory roles and are working with WS on evaluating goose conflict management options. ODFW administers legal goose hunting on behalf of the USFWS within management structures of the Pacific Flyway Council. ODFW maintains a seat on the Pacific Flyway Council, a regulatory body that helps govern management of waterfowl in the Pacific

Flyway. The USFWS typically consults with ODFW before depredation permits are issued for Canada geese.

2.2.4 National Environmental Policy Act Considerations

The National Environmental Policy Act (NEPA) requires all federal agencies to consider the impact of their activities on the environment. NEPA consideration can take one of three forms: an Environmental Impact Statement (EIS), Environmental Assessment (EA), or Categorical Exclusion (CE).

EIS's and EA's consider a range of alternatives to remedy a need for action. These documents also provide for a public input process, analysis of impacts, and an informed decision. Ultimately, activities can proceed when either a Finding of No Significant Impacts or a Record of Decision is issued.

CE's are a category of actions that are determined by the managing agency in its NEPA implementing regulations that exclude limited activities from the need for a further analysis in an EIS or EA.

WS issued a Final EIS on the national APHIS-Wildlife Services program (WS) (USDA, 1994) and Record of Decision published in 1995. The Final EIS received minor updates in 1997 (USDA, 1997a, revised).

The USFWS is responsible for the NEPA consideration of overall Canada goose management. The USFWS prepared an environmental impact statement in cooperation with WS in response to growing impacts from the overabundant populations of resident Canada geese. Alternatives were fully described and evaluated in the Final EIS (FEIS), and a Record of Decision (ROD) and Final Rule were published by the USFWS on August 10, 2006 (Federal Register Vol. 71, No. 154: 45964- 45993). In accordance with the CEQ regulations (40 CFR 1506.3) WS adopted the 2005 USFWS FEIS entitled Resident Canada Goose Management to support its program decisions for its involvement in the management of damages from resident Canada geese. In 2007 WS published a ROD, entitled Resident Canada Goose Management in the United States, adopting the 2005 USFWS FEIS.

The USFWS final rule and WS Record of Decision allows WS to take action under specific rules for depredation and control orders when designated by authorized parties, and/or to work under USFWS issued depredation permits and special Canada goose permits.

3.0 CANADA GOOSE BENEFITS AND CONFLICTS

Canada geese are included on a long list of wildlife that offers many benefits to humans yet can also cause significant conflict with humans. It is important to recognize that both positive and negative values can exist, and appropriate management can keep goose numbers in accord with human activities.

3.1 BENEFITS OF CANADA GEESE

In Bend, Canada geese are enjoyed by many and considered an area icon to some. Studies show that the American public understands the intrinsic value of wildlife. BMPRD management recognizes that Canada geese, along with other wildlife, provide the public with aesthetic enjoyment. The presence of wildlife indicates a healthy environment and ecosystem, which is also of value to the public. In rural areas goose hunting provides recreational opportunities.

3.2 SPECIFIC CONFLICTS WITH CANADA GEESE AT BMPRD PARKS

BMPRD conflicts with Canada geese involve the unaesthetic and unpleasant nature of goose feces, possible health concerns over the feces, landscape damage caused by excessive goose feeding, and aggressiveness of Canada geese toward humans.

3.2.1 DISEASE RISKS

WS conducted research (Clark, 2000) that assessed the prevalence of pathogens in Canada goose feces. Feces were collected from Oregon properties including one location at a BMPRD park. While Oregon samples had considerably less pathogens in goose feces than other states, some Oregon samples were found to contain Salmonella and Citrobacter pathogens. Other research has shown goose populations, in general, to commonly carry pathogens such as *E. coli* and Campylobacter. *E. coli* exists in many strains, some dangerous to humans and some not. Humans can also develop “swimmers itch” (as described by the Centers for Disease Control, www.cdc.gov) when swimming in goose-occupied waters, and other stomach illnesses and skin irritations are known to occur when humans contact goose feces. Swimmers itch is caused by a parasite that utilizes geese as hosts. It results in a short term immune reaction that causes mildly itchy spots to form on the skin. There have been incidences of Swimmer’s itch in Oregon (Macy, 1952).

This analysis of disease risk should not be used to stir panic. However, there certainly exists potential for human health issues to arise from coming in contact with goose feces, even though prevalence of highly pathogenic diseases in goose feces appears to be low in Oregon. Disease risk from goose feces varies from year to year and season to season.

Summer is the season when pathogens are most prevalent. This is also the season when most humans will interact with geese at BMPRD sites.

This section on disease risks would not be complete without discussing the highly pathogenic H5N1 Avian Influenza virus. To date, highly pathogenic H5N1 has not been detected in the United States. Most human infections by the virus have occurred when humans live in close contact with infected poultry, primarily in Asia. Two modes of virus transmission to the United States seem most likely. The first is illegal importation of poultry to the United States by humans. The second is natural migration of birds, primarily waterfowl, along the Pacific Flyway. Birds from infected regions of Asia and birds from the United States may mix in Alaska and the northern portion of the Pacific Flyway. If birds are infected in Alaska, their migration down the Pacific Flyway could possibly expose resident Canada geese in Bend to the virus. This is considered to be unlikely, but warrants mention here. WS is very active in disease sampling and has collected thousands of samples to test for H5N1 Avian Influenza.

3.2.2 AESTHETIC DETERIORATION

With or without disease risk, most park users consider goose feces unsightly and in conflict with other recreational uses of the park. Many articles and editorials in local Bend media indicate the public frustration over goose feces at recreational areas in BMPRD parks. Goose feces stain clothing very easily, as many BMPRD park users have complained of. According to BMPRD managers acres of park property are unusable by humans because of goose feces. Goose feces affects activities ranging from picnicking to “playing catch”. Canada geese also shed their primary feathers once yearly, and when this occurs in late May and June, these feathers can be unaesthetic and discourage the use of parks by the public.

BMPRD spends thousands of dollars annually for labor and equipment to remove goose feces and/or feathers from local parks.

3.2.3 LANDSCAPE DAMAGE

Canada geese become persistent at foraging in certain areas of a park. This persistent feeding behavior results in landscape damage that often requires significant re-seeding of lawn areas. Seed is difficult to get established because the geese feed on new grass growth and disturb the loose soil. Open areas are also prone to weeds, and when areas become de-vegetated; they are more prone to erosion and above-ground water runoff (some of which may carry goose feces). High nutrient runoff can create algal blooms, water quality problems, and fish die-offs. Geese also create and use trails when traveling to and from the river, contributing to

erosion. Geese often nest in very unusual locations, including rooftops, which can lead to maintenance issues for park facility management as well as surrounding land owners.

3.2.4 AGGRESSIVENESS/DANGER TOWARDS HUMANS

When Canada geese are nesting or rearing goslings, they can be especially aggressive towards perceived threats. This “fight-or-flight” instinct can cause humans, especially children, to be fearful of Canada geese when the geese choose to fight. Normally, this aggressiveness is an attempt to scare humans or other potential dangers away from goslings, but occasionally humans are “flogged” by goose wings and/or pecked at by the geese.

Geese can also cause human safety dangers when crossing roads. Motor vehicle accidents occasionally happen when drivers brake suddenly for crossing geese (Fig. 2).



Figure 2: Geese in roadway next to Drake Park

Bird species, especially waterfowl, pose a significant threat to aviation. Specifically, Canada geese present a large hazard to aircraft due to their abundance, size and flocking behavior. About 1,500 Canada geese strikes were reported with US civil aircraft from 1990-2008. Deschutes County is home to three public airports; Redmond Municipal Airport, Bend Municipal Airport and Sunriver Airport. As Canada goose numbers increase, so does the risk to aircraft.

4.0 GENERAL CANADA GOOSE DAMAGE CONTROL OPTIONS

There are many options for Canada goose damage management in many different settings. The inherent problem with controlling Canada geese is that they are very difficult to disperse away from conflict sites. Canada geese develop a strong affinity to specific sites, and they can be prolific. Some damage management methods are more suitable to particular sites than others due to practicality and efficacy.

4.1 NON-LETHAL CONTROL TECHNIQUES

Following is a list of available non-lethal Canada goose control methods, with associated information as to efficacy, practicality, and social impacts at BMPRD:

- Physical Harassment- This method has typically involved park staff herding the geese into the river. Repeated harassment, in theory, will cause the geese to move to areas in which they are not harassed. This method can draw attention from the public and has been looked upon negatively. It also required committing approximately one half of a fulltime employee to chase the geese and clean up after them. This is no longer practical or effective.
- Lights and Lasers- Several goose harassment tools involve the use of lights and lasers. A variety of lights and lasers have been shown to disperse geese. Many of the devices used are improvised, although some, like the barricade flashers, are available to purchase. Newer technology using lasers has shown some success in moving geese, especially for nighttime roost dispersal. One handheld laser device casts a green or red laser where geese may be roosting or loafing in the darkness. These units can cost over \$1,000 to purchase, and success of using the device is inconsistent. These lasers work at night or low light conditions, and are primarily designed to disperse birds from roosting or loafing sites. Other lights have shown to be mostly ineffective, especially as a long-term tool.
- Flags, Mylar Tape, and Balloons- Flagging, mylar flash tape, and scare-eye balloons can sometimes cause geese to move from areas. Although these methods are inexpensive, they typically only yield short-term relief.
- Sound-Making Devices- Sound-making devices can be effective for short to moderate time periods, but they must be evaluated for practicality including the potential to disturb other wildlife or humans and legality of using the devices in some locations. There are many sound-making devices on the market that are designed to discourage geese from areas:
 - Propane Cannons- These devices use a propane tank and fire cannon-like reports on a timer or by remote.

- Pyrotechnics- Several pyrotechnic devices are available for wildlife harassment. These devices fire from starter pistol size launches or shotguns, and produce loud bangs or a whistling/screaming sound.
- Electronic Harassment Devices- There are several electronic harassment devices available for attempting to deter geese from areas. Most devices elicit a distress sound (in this case the distress sound of a Canada goose). One product, the *Goosebuster*, can be effective for a specific area. However, resident geese that are acclimated to a site such as BMPRD don't generally respond well to electronic devices. In addition, these devices only cover a limited area and are prone to theft or vandalism. To cover BMPRD goose damage areas, approximately 10-20 units would need to be purchased at a price of \$900 each.

Sound-making devices can be expensive and are only practical in areas where the noise will not disturb other humans or wildlife. Like other harassment techniques, geese can habituate to noise making devices over time. Additionally, cannons and pyrotechnics face legal and social issues in some municipalities.

- Other Physical Harassment Devices- Paintball guns, rubber buckshot, remote-controlled toy boats, and water guns have been used with success to haze Canada geese. The benefit of using these methods is that geese feel or see a negatively-reinforcing stimulus, and this can yield increased results for scaring geese from areas. While using these methods can work as a hazing tool, one must consider the social issues of using these devices. Also, geese habituated to a site will not respond as well to these hazing devices. Paint ball use can result in geese being painted odd colors, which should be avoided. Clear paintballs are available and are recommended.
- Repellents- Multiple repellent products exist that repel geese from foraging areas. Many of these repellents incorporate the chemical known as Methyl Anthranilate, which is a grape flavored food additive. The repellent is applied to grass that geese feed on. The idea is that if grass in an area is not palatable, the geese will leave that area and find a location where the forage is more palatable. Although sometimes effective, rain and irrigation will wash the product from the grass blades. Also, blade growth can outgrow treated blade surfaces, reducing effectiveness. Even under ideal conditions, regular application is necessary. For these reasons, success of these products is inconsistent. The products are also relatively expensive at roughly \$100 per acre per treatment. Other products use different chemicals and maybe more successful, such as *Flight Control*.

- Dogs- Many golf courses have used dogs, primarily border collies, to haze geese with varying success. WS supports the use dogs to haze geese when properly implemented. Use of dogs effectively requires serious consideration of the following issues as identified by Castelli and Steggs (2000) in the Wildlife Society Bulletin and by WS field observation:
 - Most hazing dogs will not swim, and geese merely seek water for refuge. When the dogs leave, geese will often return to the lawn. If the dog does enter the water, it can easily be out-swum by the geese.
 - Hazing dogs may reduce goose use of a site, but goose use is increased in surrounding areas. This is an important issue to be considered in Bend given other landowners in Bend with goose problems.
 - Hazing dogs can be very expensive (several thousand dollars), and then the user has to maintain the dog at significant additional expense and with logistical problems.
 - The dog requires a handler, consistent training, exercise, and boarding year round that can contribute greatly to goose management costs.
 - Multiple dogs may be necessary at Bmprd to achieve sufficient coverage.
 - It is not recommended to use dogs during the molt due to the potential for dogs to catch and kill goslings or molting geese. Legal liabilities for the dog can be a concern.
- Fencing/Wire Grids- Fencing along waterways and wire grids over waterways has shown to reduce goose use of certain sites, especially use from juvenile geese. WS has extensive experience with these methods. Fencing inhibits the ability of geese to walk into protected areas, and the wire grids inhibit a goose's ability to fly in and out of water. Fencing and gridding can be relatively expensive and conflict with human user needs and aesthetics.
- Habitat Management- Goose numbers can be reduced from sites by changing landscaping and habitat features. Walls between water and lawn areas can inhibit the ability of geese to walk into and out of feeding areas. Brush rows between areas of water and grass can yield the same results. In addition to brush rows acting as a barrier, they also reduce the geese's ability to detect predators. Geese prefer open grassy areas where they can detect predators at great distances. Therefore, plantings of shrubs that break up sight lines along expanses of lawn areas may reduce goose use. Nesting areas can be manipulated to reduce vegetative cover. Areas of lawn consistently and severely used by geese can be re-landscaped with less palatable products. Habitat management can be quite

expensive and sometimes impractical if it conflicts with other desired uses of the area. Where practical, habitat management can be effective in reducing long-term goose use.

- Egg Addling/Oiling- Addling or oiling (with corn oil) of eggs prevents the embryo from developing. This method is considered by humane standards as being a non-lethal method. Addling or oiling of eggs is preferred over egg destruction because geese will commonly re-nest if their eggs are destroyed early in egg development. This method is highly effective at reducing recruitment of goslings, but one must find and have access to the goose nests. It is recommended that approximately three weeks after the eggs have been addled/oiled, the nest be revisited and the nest and eggs destroyed. Adult geese typically do not re-nest after incubating for three weeks, and this may trigger a molt migration. Some resident Canada geese undergo a molt migration in late spring when they migrate from the lower 48 states to Canada to molt. These molt migrating geese are primarily non-breeding subadults and failed-nesting adults. If molt migration can successfully be initiated by addling/oiling nests and then by destroying the nests, then there will be fewer geese present to cause human-geese conflicts until the geese return in the Fall. The molt migration will cause the geese to be more vulnerable to hunting during the return migration in the Fall. Egg oiling and addling is conducted by WS under a depredation permit issued by USFWS. WS recommends this work be conducted by official wildlife professionals to ensure the work is being conducted efficiently and at the appropriate stage of egg development, and because scrutiny can occur when the public observes this method being implemented. Recent changes by the USFWS allows qualifying entities to register online with the USFWS website to oil eggs without a traditional depredation permit. All individuals conducting egg oiling must be designated as agents through the website. Date and location of all eggs oiled must be recorded and reported to USFWS.
- Contraception- Bmprd and WS have used the contraceptive drug, Nicarbazin, to slow the growth rate of Canada geese populations. The nicarbazin product used is OvoControl G, manufactured by Innolytics, LLC. Bmprd participated in the 2004 initial study of OvoControl G. Results of the project showed that when applied correctly, geese that fed on bait treated with OvoControl G hatched less than 50 percent of the eggs laid. Because contraceptives focus on management of Canada goose recruitment, it is important to recognize that contraception does not remove geese, but will slow the growth rate of geese over time. Contraception is a tool to help maintain goose numbers once other control measures have reduced populations to acceptable levels. A primary advantage of using

OvoControl G is that it can reduce hatching of goose eggs when adult geese are feeding away from nests that humans can not find to oil/addle. Use of OvoControl G is relatively labor intensive, and therefore expensive.

4.2 GOOSE CAPTURE / PHYSICAL CONTROL METHODS

When geese become acclimated to certain locations, the only option for effective control is often the removal of geese. The removal of geese can enhance harassment and deterrent methods for remaining geese as well as newcomers. Removal of geese via capture can be either lethal or non-lethal. Due to high populations of Canada geese and associated damage complaints, relocation of geese is not ideal in most situations. Adult geese also tend to return to their original capture site, even when they are moved hundreds of miles away. For this reason, USFWS, ODFW, and WS biologists typically only support relocation of Canada goose juveniles. Juvenile geese are less likely to have imprinted on a particular area and thus tend to stay at a relocation site. When WS captures Canada geese, the disposition of those geese is determined by USFWS and ODFW. If these managing agencies require geese to be euthanized, then WS is required to follow those instructions.

Following is a list of goose capture methods:

- Funnel Traps- Once a year, Canada geese lose their flight feathers and grow new feathers in roughly one month. This loss of feathers is called molt which typically occurs in June. When this occurs, geese can be herded into drive trap pens. This method can raise public attention because of the noise and activity of the geese when penned. Therefore, some public relations issues may occur. Geese can be relocated or euthanized off site. This method is labor intensive due to the need for enough manpower to herd and surround the geese as well as load the geese into cages, etc. The public generally is receptive to this method because the geese can be utilized for human consumption. Local food banks have been identified that can receive geese.
- Alpha-Chloralose- Alpha Chloralose (AC) is an avian drug used by WS in waterfowl capture. The drug is administered in treated bread baits or on whole corn. The geese are anesthetized 20-45 minutes following ingestion of the treated bait. They can be relocated or euthanized, but they cannot be recovered for human consumption due to drug residues in the bird's tissues. AC is a flexible tool that can be used in many situations. The advantage of this tool is that it can potentially be used at any time of the year. Another advantage of AC is that it allows the user to remove a few geese at a time. Setting up a funnel trap to capture geese is too labor intensive for a small number of geese, but baiting a few bread baits is quick and easy. Few problems with public relations

occur with the use of this drug capture method, as this method typically draws less attention than funnel trapping. AC regulations state that the drug cannot be used to capture birds of a huntable population during or 30 days prior to a legal hunting season. AC can still be used if the risk of geese flying from the capture site after ingesting baits is insignificant. WS will assess this risk before use. AC will only be used by WS personnel that are certified AC applicators.

- Shooting- Shooting is an effective method for controlling geese. Shooting is normally best used as reinforcement for non-lethal hazing tools such as pyrotechnics. WS works closely with local law enforcement agencies. Oregon House Bill 2636 of 2009, which becomes effective January 1, 2010, exempts employees of USDA in the course of lawful taking of wildlife from criminal laws related to possession and discharge of firearms in all law enforcement jurisdictions in Oregon. This allows WS to use firearms within city limits in all Oregon cities. Safety is a top priority when WS is using firearms. WS has a firearms training and certification program and has an excellent safety record. Geese removed using this method can be recovered for human consumption.
- Netting/Net Gun/Rocket Nets- Canada geese can be netted in certain situations using hand-held nets. Also, WS uses air cannon nets to capture geese. The cannon net is set up in an appropriate area and geese are baited in front of the net. The net is fired remotely and compressed air sends the net over the geese. This method can receive a fair amount of public attention and requires cages to relocate or euthanize the geese off site. Geese captured using this method can be recovered for human consumption.

Appendix A includes a list of suppliers for goose control products.

5. PAST BMPRD GOOSE MANAGEMENT EFFORTS

Problems caused by Canada geese are not new to BMPRD. Documents from the 1930's show efforts by the Bend City Council to resolve goose problems in Drake Park. Efforts to manage Canada geese continued through the rest of the century, and in 1990, a wildlife damage management recommendation document was produced on behalf of BMPRD by the U.S. Department of Agriculture's Animal Damage Control (ADC) program and Pacific Power's Environmental Service Department. ADC is the former name of WS. This document was supported by the Bend Wildlife Advisory Group, a group of varying agency representatives and interest groups that are primarily interested in wildlife management at Bend's parks.

In 2000, WS began providing additional technical assistance to BMPRD regarding goose damage management. This led to WS conducting various techniques in the field to

reduce resident Canada geese numbers. WS has conducted three goose research projects on BMPRD parks. The first, in 2000, involved goose feces collection as part of a WS National Wildlife Research Center (NWRC) project to assess prevalence of specific pathogens in goose feces. In 2004, NWRC conducted a goose contraception project that WS Field Operations managed. This project involved feeding geese Ovocontrol G, a commercial available product that reduces egg hatch in Canada geese. The third project was a Deschutes County goose survey conducted in 2007/2008.

Some control of Canada geese occurred at BMPRD in the 1980's and early 1990's. Since then, no lethal goose control has occurred. Through the years, BMPRD has routinely made an effort to curb their goose problems, including:

- Hazed geese physically and with dogs
- Built and maintained retaining walls between parkland and the river. These walls inhibit the ability of juvenile Canada geese to access the grassy lawns.
- Encouraged, by use of flyers and other media, park users to refrain from feeding wildlife.
- Purchased and operated expensive machinery to vacuum goose feces.
- Paid employees for countless hours washing goose feces and repairing landscape damage.
- Rounded-up geese during their flightless stage, with the assistance of the ODFW, and translocated them.
- Administered cutting edge technology in goose control by using OvoControl G, a goose contraceptive drug.
- Used corn oil to oil goose eggs to prevent development.
- Applied non-toxic chemical goose repellants (Methyl Anthranilate) to lawn areas.

Every year BMPRD spends thousands of dollars addressing goose damage. Costs include labor for goose feces clean-up, equipment to sweep the turf areas and for services provided by WS. There are also additional expenses to repair landscape damage caused by geese and for other goose harassment tools. In 2009, BMPRD spent \$22,000 addressing Canada goose damage.

6.0 SITE DESCRIPTIONS AND SURVEY DATA / ANALYSIS

6.1 SITE DESCRIPTION

BMPRD manages many parks, of which eleven are adjacent to the Deschutes River. It is these eleven parks that are most susceptible to goose damage although most damage occurs in four primary parks. The eleven parks are listed below, from North to South along the Deschutes River:

Riverview Park- This Park is a small wayside park on a bluff above the river that suffers from little goose damage although geese inhabit the river area below.

Pioneer Park- Pioneer Park suffers from considerable goose damage. The park offers grassy lawns with direct river frontage. Public use is relatively high.

Pacific Park- Pacific Park (Fig. 3) is directly upstream from Pioneer Park, and although goose numbers are not extreme, damage is very extensive to the small grassy area. Public use is moderate.

Brooks Park- Brooks Park is just downstream and across the river from Drake Park. This small park suffers from moderate goose damage. Public use is moderate.

Drake Park- Drake Park (Cover photo, Fig. 1 and Fig. 2) is one of Bend's oldest parks and the center piece of the community. This is a large park with extensive lawns fronting the Deschutes River. Drake Park has a beach area that is utilized by geese and other waterfowl. Public use is extremely high, and goose numbers are extremely high. Most efforts at goose damage management begin in this park.



Figure 3: Pacific Park

Harmon Park/Pageant Park- These two parks border each other, directly across from Drake Park. These parks will be considered together. Although there is fencing between the recreational areas and the river, geese fly into the park area to feed on grass. Human use is high because of playground and other recreational opportunities.

Columbia Park- This Park is upstream from Drake Park between Drake Park and the Old Mill District. This park suffers little goose damage because of fencing, embankment, and trees. However, geese occasionally may use the park.

Clyde McKay Park- This Park is directly downstream of the Old Mill District Dam. This park experiences high use, especially during the summer. This park suffers from moderate to heavy goose damage. It has a heavily used sandy beach area that is highly susceptible to goose feces.

Riverbend Park- This new park was built in 2009 and is the largest river front park managed by BMPRD. It has extensive lawn area and has experienced high goose activity. Goose activity, as well as human activity, is expected to be high.

Farewell Bend Park- This Park is upstream from the Old Mill District, adjacent to the river. The elongated park is separate from the river by native vegetation and goose use is relatively low. Human use is high.

In addition to the above parks, the Old Mill District is also relevant to the goose control issue because it is located between BMPRD park lands. Geese using this private land area also contribute to problems for BMPRD, and vice-versa. This section of private land is operated as a business/shopping area with landscaping and habitat conducive to goose activity. The Les Schwab Amphitheater is present on the west side of the river, and the amphitheater area is largely grassy. There is ample nesting area in the Old Mill District area.

Most goose control activities will likely occur at Drake, Pioneer, Pacific, and McKay parks due to persistent activity at those particular parks. Brooks and

Riverbend parks also consistently have geese. However, any of the BMRPD parks are prone to damage.

6.2 OBSERVATIONAL, TRANSECT, SURVEY AND ANECDOTAL DATA

6.2.1 OBSERVATIONAL SURVEYS (Point-Counts)

WS has conducted numerous informal observational surveys of BMRPD goose populations. This survey data is recorded in WS Specialist Field Diary's and on the WS Management Information System database. While this sort of data is informal and not useful for official regional goose population estimating purposes, it has provided WS and BMRPD with an ongoing understanding of goose population dynamics throughout the BMRPD sites. These observations have served to prioritize goose damage management activities. Table 1 shows one example of a two-day point-count survey performed by WS on April 12 and 13, 2005. This survey was useful in demonstrating that geese in the area are hard to count during nesting season because of the broad areas that they nest in.

Table 1: Observational WS goose survey at BMRPD conducted in April, 2005.

Park/Area Name	4/12/05 Number of Geese	4/13/05 Number of Geese
Riverview Park	3	2
Pioneer Park	20	10
Pacific Park	8	4
Brooks Park	7	7
Harmon/Pageant Parks	35	0
Drake Park	38	35
Columbia Park	0	4
Clyde McKay Park	8	7
Farewell Bend Park	18	18
Old Mill District Area	32	33
Total	169	120

These informal point-count surveys have been performed for over five years and contribute to WS's institutional knowledge of goose biology in the area, including dynamics such as movements, nesting areas, production, and other valuable factors. This information has proven to be most useful in making day-to-day decisions on goose conflict management at BMRPD.

6.2.2 ODFW TRANSECT DATA

ODFW Headquarters manages a transect survey count, a survey that counts the number of specific wildlife individuals in a certain standardized acreage area. This system is one means of gathering data that can be

extrapolated to produce overall population estimates. Population estimates using transect data are only accurate when considering many transects over a large area. Transect data would be inaccurate if used to make a population estimate for a small area, such as Bmprd. While this data is collected and is valuable in large scale population estimates, WS and ODFW agree that it is not a suitable method for estimating local resident Canada geese numbers.

6.2.3 ODFW DESCHUTES RIVER SURVEY DATA

Between May 2003 and June 2005, local biologists from the Bend ODFW office conducted population surveys of geese along the Deschutes River in Bend. They conducted the surveys in four sections, and the overall survey area mostly encompassed Bmprd lands. Table 2 highlights the survey numbers¹.

Table 2: ODFW Deschutes River Goose Survey Data at Bmprd, May 2003-June 2005.

DATE	TOTAL GEESE	TOTAL ADULTS	TOTAL JUVENILES
13-May-03	173	105	68
21-May-03	376	310	66
17-May-04	333	272	61
26-May-04	606	547	59
02-Jun-04	654	584	70
11-Jun-04	644	610	34
16-Jun-04	794	744	50
08-Jul-04	472	0	0
04-Aug-04	100	0	0
05-Aug-04	142	0	0
08-Sep-04	141	0	0
21-Sep-04	24	0	0
06-Oct-04	104	0	0
19-Oct-04	55	0	0
03-Nov-04	217	0	0
16-Nov-04	330	0	0
30-Nov-04	498	0	0
12-Dec-04	41	0	0
31-Dec-04	818	0	0
14-Jan-05	427	0	0
29-Jan-05	107	0	0
13-Feb-05	99	0	0
26-Feb-05	202	0	0
22-Mar-05	89	0	0

¹ ODFW Deschutes River goose survey information provided by Chris Carey, ODFW High Desert (Bend) Regional Office.

06-Apr-05	127	0	0
20-Apr-05	172	147	25
04-Jun-05	716	658	58
15-Jun-05	632	614	18

6.2.4 WS GOOSE SURVEY 2007-2008

The 2007-2008 Deschutes County Canada Goose Survey conducted by WS is the most comprehensive goose survey in Deschutes County to date (Appendix C). Canada goose surveys were conducted for one year by WS beginning in July 2007 and ending in July 2008. The purpose of this survey was to obtain data regarding the abundance and movement patterns of resident and migratory Canada Geese, as well as site interaction and property nuisance within Deschutes County. The survey was conducted at sixteen locations throughout the county, including five Bmprd parks. Surveys were conducted once a week to record the number of geese present at each survey site. Some geese were banded before the survey with colored leg bands specific to the survey site where they were banded. These bands were documented during the surveys and provided data on movement patterns of the geese between survey sites.

It is important to note that geese move throughout the County amongst locations that were surveyed and some that were not. The survey was intended to provide general information about geese abundance through time and space. This survey provided accurate data on the number of geese present at the surveyed parks. In addition to the geese number data, trends were observed in the data and are discussed in this section.

WS survey data showed high numbers of resident Canada Geese in Bmprd parks. Drake Park had the highest goose numbers of any Bmprd park, averaging 136 geese per survey with a high of 473. Pioneer Park consistently had many geese. The average number of geese per survey was 24 and the high was 126. Farewell Bend Park averaged 18 per survey and had a high of 111. McKay Park had an average of 12 geese and a high of 99. Pacific Park averaged 7 geese per survey and had a high of 42.

For the purpose of the Deschutes County Canada Goose Survey, the surveyed geese were described as one of four groups; Core Residents, Local Residents, Regional Residents and Migrants. These are non-scientific terms that WS created during our analysis to better explain the geese behaviors that were observed during the survey. The surveyed geese exhibited different behaviors, some more detrimental than others. WS found that it was beneficial to the survey participants to describe different groups of geese in order to help manage the resident geese population to provide the most relief from conflicts.

Through this survey WS was able to observe seasonal fluctuations in Canada goose numbers at the various survey sites. We observed some interesting correlations. During the molt, goose numbers soared at Drake Park and goose numbers became relatively low at most other survey sites. This indicates that resident Canada geese in the area are attracted to Drake Park for protection during the molt. The molt typically occurs in June. This is also the time when successful breeders will have goslings. As would be expected, gosling numbers were by far highest in BMPRD river front parks.

Another interesting observation that the survey demonstrated was the consistent presence of specific geese at certain parks. The goose survey identifies these geese as 'Core Residents.' These geese were usually present at a particular site with great regularity throughout most or all of the year.

The weather seemed to influence geese at BMPRD parks. When Deschutes County experienced a severe weather system, such as very cold weather and significant snow fall, far fewer geese were observed at BMPRD. At the same time, much higher goose numbers were recorded in Redmond, which receives considerably less snow than Bend.

Based on banding data, geese were observed traveling between BMPRD parks and three locations in Bend, including the Old Mill District, Rock Arbor Villa and Awbrey Glen Golf Club. This shows that geese move between locations within Bend. Some geese banded at BMPRD parks were harvested during hunting season in the Bend area, Redmond area, Sisters area and one in south Washington State. This demonstrates that geese are moving throughout the county and utilizing different parks, golf courses and resorts. It also shows that geese banded in Bend can travel great distances from the area.

The survey results help us better understand the dynamics of Bend's Canada goose population and provides insight on how to best manage the geese, such as, when and where to target specific groups of geese and which management techniques are most appropriate in certain situations.

7.0 GOOSE CONTROL OBJECTIVE FOR BMPRD

The purpose of this plan is to enable BMPRD to manage the population of Canada geese to minimize conflicts between geese and park users and maximize the enjoyment of the parks by its users. BMPRD recognizes that philosophies vary from person to person regarding Canada goose damage management that includes reducing the number of geese using the park system. Therefore, a key aspect of this Plan is the identification of a goose population that is acceptable to BMPRD management, based on consultation with

ODFW, WS and public input. This, combined with quantification of goose conflict, will allow BMPRD managers to select a number of geese that need to be removed in order to accomplish BMPRD objectives. BMPRD must be able to manage goose numbers so that minimal conflict occurs with humans. A primary reason for development of this plan is indeed a result of public dismay and complaints regarding goose feces and other goose conflicts.

WS and BMPRD have continued to communicate about removal of Canada geese and what the associated number of geese removed should be. In 2006, there was consultation with ODFW and the approach at that time was to identify a maximum number of geese. Recently, it has become apparent that the most responsible approach is to identify the number of geese that need to be removed to meet BMPRD objectives, regardless of minimums or maximums of geese present. This approach is most responsible because WS has been able to identify approximate numbers of geese that tend to be “Core Resident Geese”. These are the geese that tend to either never leave a specific park or only leave that park for short periods of time. It is felt that these geese cause the most conflict because of their acclimation to and consistent use of the parks.

For purposes of this plan, BMPRD will begin with the intention of removing resident Canada geese, with special emphasis on core, resident Canada geese that cause the most persistent problems. Once this population is controlled, further goose control needs will be evaluated based upon reduction levels of conflict, park user complaints, etc. Initially, BMPRD will intend on removing up to 201 resident Canada geese through the first year throughout the BMPRD. This number was determined after considering the average number of geese present (based on the WS 2007-2008 Goose Survey) at BMPRD in the months of April, May, June, and August. Geese residing in the conterminous United States during these months are considered resident Canada geese by the USFWS. BMPRD intends to only target Core and Local Resident Canada Geese. The focus of control efforts will be in the four primary parks that suffer from the most goose damage.

These objectives will be periodically reviewed with respect to accomplishing the overall goal of reducing goose conflicts and damage costs, and the numbers identified in this plan may be adjusted upward or downward in the future in order to accomplish the alleviation of resident Canada goose damage. Changes will be presented to local ODFW management for concurrence, and a written letter of concurrence will be filed. This plan may be re-visited at any time, and Canada goose population objectives may be considered for adjustment if:

- Conflicts and related complaints from the public park users remain unacceptably high, as determined by BMPRD management.
- Costs incurred by BMPRD in cleaning up goose feces or repairing other goose-related damage have not significantly decreased from current estimates. This will also be determined by BMPRD management.

This document will be presented to ODFW and USFWS managers for concurrence that goose control activities resulting in this population level will not seriously jeopardize the existence of Canada geese in Central Oregon. Objectives of this plan will also be

presented in a public forum. See Appendix B for certification of ODFW management concurrence and certification of public meeting.

8.0 SPECIFIC GOOSE DAMAGE MANAGEMENT PLAN FOR BMPRD

Following is an integrated strategy of goose management methods chosen to be used by BMPRD to attempt to achieve the desired control of adult Canada geese on the river frontage parks. Experience has shown us that it is absolutely vital to use a variety of management tools to control Canada geese. These tools must be used regularly and in a manner to prevent habituation.

8.1 HABITAT MANAGEMENT

- Vegetation Management- Vegetation that is close to the ground will be reduced in those areas that have shown to be goose nesting areas. Such areas include those close to the river or other water as well as islands in the river. Vegetation management can include complete removal of certain shrubs or trees, mowing, or pruning upward from the ground for approximately two feet to eliminate nesting areas. Vegetation management, which will need to be coordinated with the City of Bend Water Overlay Zone, may begin upon approval of this plan. Landscaping can also be used to disrupt sightlines of geese utilizing an area. Geese may be less comfortable using an area if they have limited visibility to watch for predators, which primarily consist of dogs in BMPRD parks. Three foot high shrubs, as well as boulders, may be used along the shoreline at regular intervals to break up sightlines.
- Barriers- BMPRD may continue to construct new walls and maintain existing walls between the river and lawn areas. This can be accomplished as budget allows, but this method will not be practical in all parks. Priority parks for this method are Drake Park and Pioneer Park. Fencing will be evaluated as either a permanent or seasonal method for reducing access to park lawns by geese. Fencing will not be feasible in many parks due to its likelihood to diminish recreational enjoyment. Barrier installation will be ongoing.
- Landscape Design Changes- Landscape designs that are unattractive to geese should be considered at all new parks as well as existing parks that have significant goose damage. The use of landscaping substrates or vegetation that is less attractive to geese can be considered for parks. This could include removal of grass in favor of rock, bark chips, or other substrate, or it could include planting of shrubbery that would not create goose nesting habitat. Again, these methods could diminish recreational enjoyment and are not feasible in most cases. Farewell Bend Park has a strip of undeveloped native vegetation between the turf and the river. This seems to have been very effective at making the park less desirable for geese. Turf areas are preferred in park design because they offer tremendous recreational value for park users.

8.2 NON-LETHAL GOOSE MANAGEMENT TECHNIQUES

Non-lethal goose management techniques will be used in conjunction with more aggressive control techniques. Geese currently using BMPRD parks are extremely acclimated to the parks, and therefore the non-lethal methods are not likely to be effective during initial stages. However, once populations are reduced to the desired level, then non-lethal harassment methods will be used more intensively in order to deter new geese from becoming acclimated to BMPRD parks. Following is a list of non-lethal goose management tools for use by BMPRD:

- Egg oiling/addling- BMPRD will continue to oil or addle Canada goose eggs in order to reduce recruitment of new Canada geese to the parks. This non-lethal method will be implemented during the nesting period in order to reduce the number of geese needing to be controlled by other means. Eggs/nests will be destroyed approximately three weeks after they have been oiled/addled to encourage molt migration. Research has shown that urban park resident geese are less likely to molt migrate than geese living in other non-urban areas (Luukkonen et. al., 2004). However, nest destruction is an easy way to attempt to trigger a molt migration that is likely worth the effort, even if the number of molt migrants is low. The molt migration would result in fewer geese at BMPRD during the summer months (BMPRD highest public use season) and increased vulnerability to the geese from hunting on their return migration in the fall. BMPRD will ensure that egg oiling/addling is implemented legally in accordance with laws and regulations established by USFWS.
- Contraception- BMPRD will continue the use of Contraception as a goose management tool. OvoControl has been used at BMPRD during the nesting season with success. OvoControl is an EPA regulated product and requires a permit from USFWS.
- No Feeding Wildlife- Prohibit feeding of wildlife, including geese, and enforce this policy. Post signs informing park users of this ordinance. Update ordinance to include fines for feeding wildlife.
- Dogs- Use of official dogs to harass Canada geese from BMPRD grounds appears to be a promising option. Dogs are advantages because of minimal disturbances to park users and neighbors. This is in contrast to audio harassment techniques such as, pyrotechnics, propane cannons and distress call recordings. Dogs are not without their drawbacks including time investment, cost and area to be covered. Dogs can be part of an effective integrated Canada goose management plan.
- Repellents- Repellents will be used at problem areas as needed and appropriate. The repellent will be applied by sprayer or fogger. BMPRD may use the method as part of an integrated goose management program in the most heavily-damaged areas. However, cost of the product may reduce large-scale use of the repellent. Repellants, such as Flight Control Plus, can be used before park events to keep geese off the grass during these critical times.
- Lasers- Use of a laser device to harass any birds roosting on lawn areas is recommended as feasible. This technique is only effective in low light conditions and is designed to disperse geese from their nesting areas. Lack of nighttime employees could limit the effectiveness of this tool. If early laser use shows

success, then the laser will be used as part of a long-term goose management strategy.

- Electronic Harassment Devices- The *Goosebuster*, an electronic harassment device can be used where appropriate, such as high problem areas where the audio will not negatively affect park users or neighbors. Theft and vandalism are also concerns.
- Other Harassment Devices for Experimentation- Due to unproven efficacy or practicality, other harassment methods will occasionally be experimented with. BMPRD may choose to experiment with the use of paintball guns, water guns, scare devices, or any other harassment device that is available. Methods such as pyrotechnics, balloons, flash tape, lights, and effigies will generally not be used because of issues such as negative public receptiveness, researched ineffectiveness, and/or risk of theft or vandalism. A remote controlled boat is worth considering to further haze geese once they have entered the river, this can be used with other harassment techniques such as dogs. Full consideration of budgetary, social, environmental, and political aspects will occur prior to using other miscellaneous goose damage management tools.

8.3 CAPTURE AND REMOVAL OF CANADA GEESE

Because Canada geese are extremely habituated to the BMPRD parks, the initial response by BMPRD to goose damage will be to reduce Canada goose numbers by approximately 201 geese. Goose reduction will remove many of the most acclimated geese. These are geese that WS experience shows are not likely to positively respond to non-lethal harassment methods. Goose reduction will also remove geese that would likely return to the site even if hazing were to be successful. All goose capture requires a USFWS Depredation Permit. Disposition of captured Canada geese will be either relocation or euthanasia, dependent upon instruction from USFWS and/or ODFW. If relocation is authorized, then juvenile geese will be banded and relocated. Past experience relocating adults has proven ineffective. The adults have returned to BMPRD. Geese euthanized will be recovered for human consumption when possible and be given to local food banks. Providing food for the hungry was a topic that regularly came up during the BMPRD public input period.

Canada geese will be captured using the following methods:

- Funnel Traps – Around June adult Canada geese are flightless due to the molt and the juveniles have not yet fledged. BMPRD sees its highest geese numbers during this time. Funnel traps are very effective this time of year when geese are flightless and can be captured using a funnel trap. This method will be used in locations that are conducive to funnel trapping with respect to public interaction, vandalism, etc. This method will be used when larger numbers of geese need to be captured in a short timeframe. Use of funnel trapping will be best accomplished by wildlife professionals with experience, such as WS and/or ODFW and aided by BMPRD staff and volunteers. Geese captured using this method can be recovered for human consumption.

- Alpha-Chloralose (AC) - AC will be used by BMPRD to remove smaller numbers of geese, remove geese when they have the ability to fly, or when geese need to be removed over a period of time in a metered fashion. AC will only be used by WS personnel that are certified AC applicators. Geese captured using AC cannot be recovered for human consumption by law.
- Cannon Nets- Nets will be used opportunistically. If, for some reason, funnel trapping or AC is not effective, then use of a net gun, cannon net or rocket net can be used as an alternative capture method. Geese can be captured and relocated or euthanized and recovered for human consumption.
- Shooting- Use of precision firearms by WS may be used on a limited basis if geese using BMPRD properties need to be removed under the objectives of this plan and will not respond to other capture methods. If the use of firearms is deemed to be appropriate, any such use will be coordinated with the City of Bend Police Department prior to use and will be accomplished in discrete areas where no public or bystander safety issue arises. WS employees are authorized to use firearms and undergo biennial firearms safety training.

It is a BMPRD goal that Canada goose populations will be reduced per the objective by June 30, 2011, or shortly thereafter.

Consistent hazing using a variety of techniques will be necessary to discourage remaining geese from utilizing riverfront parks if lethal control is conducted. Due to the urban nature of most parks, audio scare devices are not a great choice. This results in fewer harassment options available and makes the feasible options that much more important. Dogs may be one of the best options, perhaps used in conjunction with a remote controlled boat. Other harassment techniques will be important and require experimentation. Paint ball guns may be a useful option. Habitat modification, where feasible, will be helpful as well.

8.4 MONITORING AND COST BENEFIT ANALYSIS

ODFW and WS will continue to monitor goose populations by tracking numbers and learning more about their habits related to local migration. BMPRD will continue to track costs related to goose damage to determine how these costs are affected over time by control activities. BMPRD will monitor the effects of control activities on park use and the level of satisfaction of the park users. It is expected that information about user satisfaction will be mostly anecdotal gained through conversations with park users and observations by staff.

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Appendix A

Source of Supplies

Note: This list may be incomplete as suppliers leave and enter the market. This list includes vendors of goose management supplies known to the Oregon WS program:

Electric Wire Systems

Avi-Away Division
Monard Molding, Inc.
P.O. Box 279
Council Grove, KS 66846

Electrepel
491-495 Bergen St.
Brooklyn, NY
(718) 783-5943

Netting/Plastic Wires

Phillystran, Inc
151 Commerce Dr.
Montgomeryville, PA 18936-9628
(215) 368-6611
www.phillystran.com

National Netting
1-800-233-7896
bruceking@mindspring.com

Benner's Gardens
6974 Upper York Rd.
New Hope, PA 18938
(800) 753-4660

A to Z Net Man
P.O. Box 2168
South Hackensack, NJ 07606

Almac Plastics, Inc.
6311 Erdman
Baltimore, MD 21205-3585
(301) 485-9100

Multiple Supplies (Companies that carry multiple supplies including above items, and/or pyrotechnics, scare effigies, electronic harassment, or other scare techniques)

Margo Supplies
P.O. Box 5400
High River, Alberta, Canada T1V 1M5
(403) 652-1932
www.margosupplies.com

Wildlife Control Technology, Inc.
2501 N. Sunnyside Ave.
Fresno, CA 93727
(800) 235-0262
www.wildlife-control.com

Reed-Joseph International
P.O. Box 894
Greenville, MS 38702
(800) 647-5554
www.reedjoseph.com

Bird-X
300 N. Elizabeth St.
Chicago, IL 60607
(800) 662-5021
www.bird-x.com

Sutton Ag Enterprises
746 Vertin Ave.
Salinas, CA 93901
(408) 422-9693

ECO LOGIC
310 Production Court
Louisville, KY 40299
(888) 828-9318

Weitech, Inc.
251 W. Barclay Way
P.O. Box 1659
Sisters, Oregon 97759
(541) 549-0205

Av-Alarm
675-D Conger St.
Eugene, OR 97402
(541) 342-1271

Gempler's
1210 Fourier Dr., Suite 150
P.O. Box 44993
Madison, WI 53744
(800) 382-8473
www.gemplers.com

Nasco
901 Janesville Ave.
Fort Atkinson, WI 53538-0901
(800) 558-9595
www.eNASCO.com

Bird Gard, LLC.
254 West Adams Ave.
Sisters, Oregon 97759
(888) 332-2328
www.birdgard.com

Bird-Tec
4074 155th Ave.
Hersey, MI 49639
(866) 247-3832

Western Wildlife Control
P.O. Box 932
Canby, Oregon 97013-0932
(800) 628-6529

Oregon Vineyard Supply
2700 St. Joseph Rd.
McMinnville, OR 97128
(503) 435-2700

Dogs

Mike and Jan Canaday
221 E. Cherry Lane
Coalinga, CA 93210
(559) 935-8309
www.GOOSEDOG.com
canadaybc@onemain.com

Geese Police
P.O. Box 656
Howell, NJ 07731
(732) 938-9093

Appendix B

Certification of ODFW Approval and Public Meeting

Certification of ODFW Approval of BMPRD Goose Management Plan

ODFW Regional Wildlife Manager, Bend, Oregon

Date

Certification of Public Meeting (File copy of sign-in sheet)

Authorized Manager, BMPRD

Date

Appendix C

Raw survey data for Bmprd – Overall goose numbers

	Pioneer BMP	Drake BMP	Pacific BMP	Farewell Bend BMP	McKay BMP
7/30/2007		116	0	0	
8/8/2007	12	73	1	0	0
8/13/2007	10	45	0	2	0
8/20/2007	0	36	0	1	0
8/27/2007	11	65	0	13	0
9/3/2007	0	42	0	0	0
9/10/2007	0	39	33	24	0
9/17/2007	0	34	0	1	0
9/24/2007	0	67	16	7	0
10/1/2007	0	71	0	1	
10/8/2007	1	125	0	0	11
10/15/2007	7	97	2	24	9
10/22/2007	81	102	0	37	13
10/29/2007	2	323	0	43	10
11/5/2007	22	307	8	111	15
11/12/2007	0	127	38	19	0
11/19/2007	57	211	21	22	74
11/26/2007	83	172	0	27	99
12/3/2007	25	110	19	53	23
12/10/2007	126	106	21	41	29
12/17/2007	76	139	42	81	31
12/24/2007	49	92	17	36	13
12/31/2007	27	92	0	14	7
1/7/2008	26	38	0	21	0
1/14/2008	40	52	8	15	12
1/21/2008	36	84	21	50	50
1/28/2008	54	73	9	62	8
2/4/2008	24	74	14	40	10
2/11/2008	21	87	28	34	9
2/18/2008	18	73	0	30	10
2/25/2008	17	84	8	39	11
3/3/2008	10	189	18	22	9
3/10/2008	30	315	0	15	19
3/17/2008	10	100	4	0	0
3/24/2008	2	73	6	0	0
3/31/2008	12	71	6	0	0
4/7/2008	12	85	4	1	0
4/14/2008	3	31	2	4	0
4/21/2008	1	33	6	0	0
4/28/2008	3	26	0	4	0
5/5/2008	4	85	0	0	0
5/12/2008	7	49	7	0	0
5/19/2008	30	98	2	0	57
5/26/2008	46	218	5	0	83

6/2/2008	24	319	0	0	9
6/9/2008	4	392	0	0	0
6/16/2008	63	473	0	0	0
6/23/2008	65	465	0	0	0
6/30/2008	44	389	0	0	0
7/7/2008	29	241	0	0	4
7/14/2008	7	169	0	23	2
	Pioneer BMP	Drake BMP	Pacific BMP	Farewell Bend BMP	McKay BMP
Total	1209	6743	365	915	627
Average	24.6	136.8	7.2	18.0	12.8
High	126	473	42	111	99
Low	0	26	0	0	0
Median	14.5	92	2	7	4