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RECORDING REQUIREMENTS

If your project has triggered the need to record a BMPP you must acknowledge that you have read this plan and agree to comply with the directions set forth herein by Recording a Notice to Title.

The Notice To Title Recording is a one (1) page document that you will need to complete by adding the Parcel number (or Parcel numbers), print, sign, date and then have recorded with the Auditors Office.

A copy of the blank Recording Page is available for download from the Permit Portal Page or by selecting the link below. CLICK HERE BMPP RECORDING PAGE

Upon recording, the document it will be labeled with the Auditors File Number (AFN#) - A COPY OF WHICH WILL NEED TO BE UPLOADED THROUGH THE PERMNIT PORTAL AS A SUBMITTAL FOR THE BMPP PERMIT APPLICATION.

PLEASE NOTE: There are seperate fees associated with recording a document, please contact the Auditor's Office directly if you have any questions. For questions about the BMPP permitting process and/or requirements, please contact Environmental Health.

BEST MANAGEMENT PRACTICES PLAN

for property located in unincorporated Grays Harbor County, Washington

SECTION 1.0 INTRODUCTION

This Best Management Practices Plan (BMPP) describes control methods and on-going management guidelines to be employed by residents, landowners, and landscape maintenance personnel of developed property in unincorporated Grays Harbor County, Washington. The intent of the BMPP is to provide property owners and maintenance personnel with residential landscaping and common area landscaping best management practices, hazardous material best management practices, and integrated pest management practices that are environmentally responsible, safe, and cost-effective.

SECTION 2.0 LANDSCAPE BEST MANAGEMENT PRACTICES

A major goal of the BMPP is to limit the amount of pesticides used in the maintenance of individual landowners and common open space areas within the development. Successful implementation of the BMMP will require on-going communication and cooperation between landowners, homeowners' associations, and landscape professionals. The homeowners' association or commercial property management company will typically retain a landscape professional trained in integrated pest management who has a working knowledge of this type of pest management to assure the implementation of the BMPP.

Section 2.1 Plan components

Integrated pest management (IPM) suppresses pest populations below a certain population or damage level by using combined strategies that may include biological, cultural, chemical, mechanical, or other control methods. IPM does not necessarily attempt to eradicate the pest, since in some instances it may be desirable to allow the pest to survive at a low level in order to maintain the presence of natural enemies. The BMMP is structured to avoid adverse environmental impacts or injuries to non-target organisms that may result from the use of chemical pesticides.

The BMMP, by nature, is dynamic and may change over time as control strategies are implemented and evaluated. As a consequence, the on-going implementation of a BMMP should involve periodic review of the following five principal components:

- Prevention of pest problems
- Pest and symptom identification
- Regular surveying for pests
- Action thresholds and guidelines
- Sound management methods.

These components are described in greater detail in the following sub-sections.

Section 2.2 Prevention of pest problems

Many problems in residential and commercial landscapes can be avoided by careful yard design, preparing soil properly before planting, and proper planting, irrigating, and mulching. Many insect and disease problems are caused by over-watering or under-watering, over-fertilizing, or other improper care. Problems caused by poor care of landscape plants may be incorrectly blamed on pests, resulting in unwarranted pesticide applications.

Section 2.3 Pest and symptom identification

Proper identification of the pest or symptom affecting a landscape component is essential for choosing the proper control action. Closely related pest species often require different management strategies. Accurate identification of symptoms or organisms requires a combination of knowledge, observation, and available resources. For homeowners and property managers, consulting with a landscape professional whom is trained in, and possesses a working knowledge of, integrated pest management may be the best resource. Otherwise, reference books are available that describe common problems. Other resources include the Washington State University Cooperative Extension Master Gardener Program and the Grays Harbor County Master Gardener Program.

Section 2.4 Regular surveying for pests

Systematically checking the landscape for pests and damage symptoms is important, and should be performed on a regular basis. Frequency of inspection will vary by season, potential problems, and plant value. Property owners need to familiarize themselves with common indicators of pest problems, or consult with their landscapers. A landscape professional will provide assessments of plants in common areas.

Section 2.5 Action thresholds and guidelines

In a residential or commercial landscape setting, the point at which some action must be taken to prevent unacceptable damage can be difficult to define. Many pests do not actually kill their host but simply make it unsightly. Many property owners will reach an *aesthetic threshold*, at which time action seems necessary. This point may be reached sooner for a favorite plant in a conspicuous setting. Knowing when a plant is approaching such a

threshold may also influence its treatment, since the problems are best treated at a particular time of year, or by a particular combination of fertilizing, pruning, or irrigating.

The best professional judgment of the trained landscaper will be most useful in determining the action threshold for the common areas of the community and individual properties. The landscape professional will evaluate the situation by reviewing injury levels, pest population levels, current cultural management practices, season, and current weather conditions.

Other sources of information include the Washington State University Cooperative Extension Master Gardener Program and the Grays Harbor County Master Gardener Program.

Section 2.6 Sound management methods

Before applying any insect pest management (IPM) control methods, the property owner or landscaper must determine whether action is needed and likely to be effective. It may be too late for a control to be effective, or the problem may be minor and threatening plant health. In some situations, no action may be the best alternative. If action is needed, control methods may often be used in combination for better control. Whether the decision requiring action is made by the individual property owner or by the landscape professional, priority should always be given to non-chemical methods. Several groups of controls are outlined below.

Mechanical methods include such labor-intensive actions as mowing, hoeing, mulching, and hand weeding. Physical controls manipulate the plant environment through practices such as pruning or covering. Cultural controls include knowledge of the culture of individual ornamental or native landscape plants or turf grasses, adequate site preparation, timing and use of water, need for aeration, and timing and use of fertilizers. It is always better from a pest management standpoint to landscape using native plants that are resistant to local pest populations. Biological controls include naturally occurring organisms such as predators and parasitoids, as well as naturally occurring and introduced microbial products. Chemical controls include insecticides, fungicides, herbicides, and other substances that may control, prevent, or repel pests if used properly. If chemicals are used incorrectly, it is possible to do more harm than good by reducing or eliminating "friendly" organisms. Pesticide controls should be used as a last resort and in accordance with the BMMP framework.

Section 2.7 Evaluating treatment strategies

Evaluating treatment strategies is essential in any modification of the BMPP. Comprehensive records should be kept by the landscape professional for all phases of common area management. Complete records will be kept for all treatment strategies in order to evaluate both short and long term success.

Information to be recorded should include the following:

- Identification of the pest
- Location and size of affected areas
- Recent weather, including rainfall and temperature
- Previous control methods
- Control method to be implemented
- Dates of implementation

- Observed changes in condition after treatment

Such detailed record keeping will aid subsequent landscape professionals in fine-tuning treatment strategies.

Section 2.8 Management area objectives

From the standpoint of the BMPP, property is comprised of two distinct management units. These include the individual properties and the common open space areas. The individual property owners typically manage their own landscapes, or have a landscape professional accomplish the same. A professional landscaping contractor hired by a subdivision association or property management company would manage the common open space areas within a development, such as along roadways, sidewalks, and other improved open spaces.

Section 2.8.1 Residential development construction

Adequate site preparation is essential for the successful implementation of the BMPP. Upper layers of topsoil should be removed from foundation and road areas, and stockpiled. This topsoil may then be reapplied to residential lawns and open spaces. In areas of thin or inadequate topsoil, soil amendments such as compost or well-aged manure should be added in a layer between 6-inches and 12-inches thick. This organic material should then be thoroughly tilled into the soil. The added organic material will serve to enrich the nutrient value of the soil and help retain moisture. Topsoil storage should include the use of erosion control best management practices (BMP) to prevent the eventual discharge of sediment into streams and other water bodies.

In areas with existing infestations of nuisance plant species, such as Scotch broom and Himalayan blackberry, plants will either be removed to an approved off-site disposal location dump or mulched to avoid spreading viable plant fragments. These plants will be mechanically pulled prior to excavation in order to remove as much of the below ground root system as possible.

Section 2.8.2 Irrigation and other water uses

Effective pest management includes the identification of appropriate practices concerning the use of water. The BMPP is structured to avoid adverse environmental impacts or injuries to non-target organisms that may result from inappropriate water use.

A BMPP, by nature, is dynamic and may change over time as control strategies are implemented and evaluated. As a consequence, the on-going implementation of a BMPP should involve periodic review of the following two principal components:

- Individual landowner water use
- Common open space area water use

These components are described in greater detail in the following sub-sections.

Section 2.8.3 Individual landowners

Excess watering may leach nutrients from fertilizer applications into groundwater before plants can benefit. In addition, nutrients and pesticide residues may end up in groundwater or low-lying areas where their effects are felt long after application. Property owners should attempt to conserve water use for this reason alone, even when conservation measures during drought periods have not been mandated.

Property owners may water lawns to maintain green growth, up to a limit of 1-inch per-week during the summer months. Water should be applied in a few, relatively heavy waterings if deeper-rooted plants are involved.

(a) Sprinkler systems should be properly adjusted to only water plants.
(b) Watering should occur during early morning hours to reduce evaporative losses and minimize fungal problems in turf grasses.
(c) Use low-water use plants when possible to reduce irrigation needs.
(d) During extreme drought conditions, watering may be restricted to priority plantings such as trees and shrubs.

Section 2.8.4 Common areas

Common area maintenance personnel will be subject to the same water restrictions as individual property owners. In both cases, water delivery systems must be well adjusted in applying water only to plants and not to impervious surfaces, such as pavement or sidewalks.

Section 2.8.5 Fertilizer and chemical applications

Effective pest management includes the identification of appropriate practices concerning the use of fertilizers and chemicals. The BMPP is structured to avoid adverse environmental impacts or injuries to non-target organisms that may result from inappropriate fertilizer and chemical use.

Section 2.8.6 Individual property owners

The effectiveness of the BMPP is based upon the consistent management of fertilizers and chemicals.

Section 2.9 Fertilizers

Plants need a supply of nutrients in addition to light, air, water, and space for roots. Certain nutrients are needed in relatively large amounts, especially when not available in the soil due to leaching from rainfall or irrigation. The three major nutrients are nitrogen, phosphorus, and potassium. To a lesser extent calcium, magnesium, and sulfur are also needed. Most commercial fertilizers are based on the three major nutrients. In high rainfall areas such as the Pacific Northwest, leaching readily depletes both nitrogen and sulfur. Fertilizers should be added in May or June and again in September and November to promote healthy growth. To the extent possible, natural fertilizers should be used on lawns and in landscaped areas to increase nutrients.

Excess applications of nutrients may have adverse effects in nearby water features, such as wetland areas or drainageways, by supporting algae blooms and weedy growth.

Groundwater supplies used for drinking water may also be contaminated by readily leached nutrients. Landscaping within 100-feet of wells should be minimal and require low maintenance. Applications of fertilizers or pesticides in these areas, natural or otherwise, is discouraged in an effort to reduce the potential of contaminating drinking water. In addition, no source of contamination, including fertilizers, may be constructed, stored, disposed of, or applied within the sanitary control area of public water system wells without the permission of the Grays Harbor County Division of Environmental health and the system, owner.

Nitrogen

Fertilizer applications should be strictly limited during the *high* rainfall winter season. Of the commonly applied lawn fertilizers, soluble nitrogen (N) forms applied in excess constitute the most serious risk to groundwater supplies and nearby wetlands. Applications of immediately soluble forms of N, such as ammonium salts, nitrates, or soluble urea, most readily leach into the groundwater. When possible, application of slow-release nitrogen fertilizers, such as formal-urea or isobutylidene urea which release nutrients slowly as they are needed by the vegetation, is preferable to fertilization with immediately soluble nitrogen fertilizers.

(a) Time fertilizer applications to coincide with active growth periods during spring, summer, and early fall. Avoid heavy application of soluble N fertilizers in late fall or winter when grass is less actively growing and prolonged heavy rains are likely to occur.

(b) Apply lighter rates of fertilizer more often, rather than applying heavy rates less often. As an example, 1-pound of soluble N per 1,000-square-feet applied once a month poses less risk to groundwater than 2-pounds of soluble N per 1,000-square-feet applied every two months. It is recommended to apply no more than 4-pounds of nitrogen per 1,000-square-feet per-year.

(c) No more than 3-pounds of soluble N per 1,000-square-feet should be applied during the drier months of May to November. Applications during the high rainfall period from November to April should be limited to under 2-pounds of N per 1,000-square-feet. No more than ½-pound of soluble N per 1,000-square-feet should be applied in any single application. It is recommended to apply no more than 4-pounds of nitrogen per 1,000 square-feet per-year.

(d) Avoid over-watering lawns immediately after applying fertilizer. A preferred alternative is to irrigate the lawn thoroughly a day or two before fertilizing, then water briefly after application just enough to wash the fertilizer off the leaves and into the soil.

(e) Reduce the need for regular fertilizer applications by returning grass clippings to the lawn. Heavy clippings can be partially removed, with some clippings raked back into the turf.

(f) Slow-release N tablets should be applied at the end of the rainy season and will provide a steady supply of nutrients through the growing season.

Phosphates

Phosphate fertilizer is less mobile in most soils than nitrogen fertilizer, but should be used sparingly to avoid overloading the soil or water with excess nutrient. The most effective method of applying a fertilizer containing phosphate is to concentrate it within the root zone. When fertilizing lawns, the fertilizer should be in small quantities near the surface.

(a) No more than 1-pound of orthophosphate per 1,000-square-feet should be applied in any one year.

(b) When planting a new tree or shrub, however, it is preferable to include the fertilizer around the root ball, preferably in a slow-release tablet form.

Sulfur

Soils are often deficient in sulfur in high rainfall areas in the Northwest, being readily leached away in similar fashion to nitrogen. Sulfur fertilizers are more mobile than phosphate within the soil and should not be applied in single large doses.

(a) No more than ½-pound of sulfur per 1,000-square-feet per-month should be applied from May to October, and none should be applied between November and April.

Section 2.10 Weed control

Controlling weeds by mechanical means, such as by hand, is preferred to using herbicides, since these may harm desirable plants and contaminate groundwater supplies. Mechanical weed control may include regular hand pulling, tilling or cultivation, weed barriers and/or thick layers of organic mulch. Regimes of watering and fertilization suited to the needs of desirable plants may help keep weed growth from becoming too invasive.

If chemical weed control is used, the following guidelines should be followed:

(a) Local applications of short-lived herbicides, such as glyphosate, without lasting residues are recommended for situations where mechanical control is inadequate.

(b) Application of herbicide should be timed to provide for the best control, such as the control of Himalayan blackberry in September. See label directions.

(c) No pre-emergent herbicides such as those found in weed-and-feed type fertilizers should be used on lawns.

(d) Applications should be made during windless periods at least between 12-hours and 24-hours before probable rainfall and early in the morning before the heat of the day.

(e) Any use of herbicides shall be used by strictly following product label directions.

Section 2.10.1 Fungicides

Fungicides should not be applied to vegetation until the effects of fungal infestation become apparent. The timing of watering can reduce many fungal infestations of plant foliage; watering in the early morning will allow water standing on leaf surfaces to evaporate during the day and prevent the propagation of many leaf fungi. Careful attention to the level of soil moisture and irrigation regime can reduce root rot fungi in the soil.

Mineral-based fungicides, such as copper formulations and elemental sulfur or polysulfide formulations, are permitted for fungal control. These should not be applied at doses or frequencies higher than the label recommendations.

(a) Sulfur applications should not exceed the doses recommended for fertilizer, typically 3-pounds per 1,000-square-feet per-year.

(b) Metallic fungicides should not be used at rates higher than ½-pounds per 1,000-square-feet per-year.

Preferred fungicides are those that are less persistent in the environment and break down quickly following application. The fungicides listed in Table 1 below are preferred for use in unincorporated Grays Harbor County and are listed fin a descending order from least toxic to most toxic.

TABLE 1
PREFERRED FUNGICIDES

Fungicide	Uses
Fungicidal Soap (Safers)	Used the same as sulfer
Lime Sulfer Inorganic	Used for powdery mildew, anthracnose, apple scab, brown rot
Sulfer Inorganic	Used for brown rot, peach scab, apple scab, Powdery mildew and downy mildew
Basic Copper/Sulfate Inorganic	Used for early and late blights, scab, fire blight, Downey mildew, leaf spot and anthracnose
Bordeaux Mix Inorganic	A slurry of hydrated lime and copper sulfate

From “Common Sense Gardening” by Thurston County Hazardous Waste Program

Section 2.10.2 Insecticides

Insecticides should only be used when the level of infestation becomes a real threat to the life of the host plant. Maintenance of insect predator populations, such as birds, bacteria, fungi, nematodes, and other insects, is the preferred method of control for injurious insects.

(a) The availability of predatory insects, fungi, and nematodes should be explored as possible means of control for pest insects.

(b) Surfactants that modify the plant cuticle properties are an effective way to keep injurious insects off plant surfaces. These include horticultural oils, insecticidal oils, and bicarbonate salts.

(c) Botanical insecticides, such as neem, pyrethrum, or its synthetic analogs, are permitted if predator or surfactant applications are inadequate.

(d) Growth regulators that alter the development of insect larvae or their reproductive behavior are preferred to agents with a broad range of toxicity, since these can kill both insect predators and pests.

Preferred pesticides are those that are less persistent in the environment and break down quickly following application. The pesticides listed in Table 2 below are preferred for use in unincorporated Grays Harbor County and are listed in a descending order from the least toxic to the most toxic.

TABLE 2
PREFERRED PESTICIDES

Pesticide Name	Type	Uses
Insecticidal Soap (Safers)	Soap	Used for mites, aphids, adelgids, fleas, mealy bugs, scale crawlers, white fly thrips, and other soft bodied insects
Bacillus thuringiensis	Microbial	Used for many larval species depending on the type of B thuringiensis used.
Neem Extract (Bio-neem)	Plant Derivative	Used for controlling more than 123 insects, 3 mites and 5 nematodes. It is not currently registered for use on food crops.
Summer Spray Oil (Ultrafine Summer Spray Oil)	Petroleum	Used for a wide variety of insects; aphids, adelgids, gall mites, leaf beetle larvae, mealy bugs, immature scale, sawfly larvae, immature psyllids, whitefly and spider mites.
Superior Oil	Petroleum	Used of overwintering insects and eggs.
Sabadilla	Plant Derivative	Used for leaf hoppers, caterpillars, some thrips but is toxic to honey bees.
Pyrethrum	Plant Derivative	Broad spectrum of pests including aphids, beetles, moth larvae, thrips and mealy bugs.
Ryania	Plant Derivative	Used for coding moth and thrips.
Rotenone	Plant Derivative	Used for brown rot, apple scab, anthracnose, downey mildew, fore blight and peach leaf curt. Contract and stomach poison, controls beetles, weevils, loopers and thrips.

From “Common Sense Gardening” by Thurston County Hazardous Waste Program

Section 2.10.3 Products to avoid

All recommendations regarding the residential use of fertilizers as pesticides, as outlined in this BMPP, must also be followed by landscape contractors. Despite the possession of a Washington State pesticide applicator's license, with the legal ability to apply restricted pesticides, landscape contractors will be required to adhere to this BMPP. Landscape contractors will use only the allowable materials described herein when working within unincorporated Grays Harbor County. A number of pesticides listed in the 1988 United States Environmental Protection Agency (EPA) National Pesticide Survey's Leach List are unrestricted chemicals readily available to property owners as well as professional landscapers. These have high potential for leaching into groundwater and, thus, constitute a risk to nearby wells.

The most likely pesticides on the EPA list to be purchased by property owners are included in Table 3. Their use, or the use of other less readily available leach-prone pesticides, is discouraged within unincorporated Grays Harbor County. Product labels should be consulted before purchase to determine whether these chemicals are present.

TABLE 3
COMMON LEACHABLE COMPOUNDS FOUND IN HOMEOWNER FORMULATIONS

Name	Synonyms
Acephate	75 SP; Acephat; Acephate; Chevron RE 12420; ENT 27822; Orthene;
CAS #30560-19-1	Orthene-755; Ortho 12420; Ortran; Ortril; O,S-Dimethylacetylphosphoro-amidothioate; Phosphoramidothioic acid, n-Acetyl-, o,s-dimethyl ester; RE 12420
Amitrol	Amitrol-T; 3-Amino-1,2,4-Triazole; Amerol; Amizine; Amizol; Azolan; Azole; Diurol; Weedazol; ATA; 3-Amino-lH-1,2,4-Triazole; Amino Triazole; ENT 25445; Cytrol; 3-Amino-s-Triazole
CAS #61-82-5	
Atrazine	A 361, Aatrex, Aatrex 4L, Aatrex 80W, Aatrex Nine-O, 2-aethylamino-4-chlor-6-isopropylamino-1,3,5-triazin 2-aethylamino-4-isopropylamino-6-chlor-1,3,5-triazin, Aktikon, Aktikon PK, Aktinit A, Aktinit PK, Argezin, Atazinax, Atranex, Atrasine, Atratol A, Atrazin, Atrazine, Atred, Atrex, Candex, Cekuzina-T, 2-chloro-4 Ethylamineisopropylamine-s-triazine, 1-chloro-3-ethylamino-5 Isopropylamino-2,4,6-triazine, 1-chloro-3-ethylamino-5-isopropylamino-s-triazine, 2-chloro-4-ethylamino-6-isopropylamino-1,3 5-triazine, 2-chloro-4-ethylamino-6-isopropylamino-s-triazine, 6-chloro-n-ethyl-n[1]-(1-methylethyl)-
CAS #1912-24-9	

	1,3,5-triazine-2,4-diamine, 2-chloro-4-(2-propylamino)-6-ethylamino-s-triazine, Crisatrina, Crisazine, Cyazin, Farmco Atrazine, Fenamin, Fenamine, Fenatrol, G 30027,Geigy 30027, Gesaprim, Gesoprim, Griffex, Hungazin, Hungazin PK, Inakor, Oleogesaprim, Primatol, Primatol A, Primaze, Radazin,Radizine, Strazine, Triazine A 1294, S-Triazine, 2-chloro-4-ethylamino-6-isopropylamino-1,3,5-triazine-2,4-diamine, 6-chloro-n-ethyl-n^1-(1-methylethyl)-, Vectal, Vectal SC, Wedex A, Wonuk, Zeazin, Zeazine
Name	**Synonyms**
Baygon	Aprocarb, Arprocarb, Bay 39007, Bay 9010, Bayer 39007, Baygon,
CAS #114-26-1	Bifex, Blattanex, Boygon, Brygou, Carbamic acid, methyl-, 2-(1 Methylethoxy)phenyl ester, Chemagro 9010, ENT 25,671, Hydroxy-n,n-Dimethylcrotonamide, O-IMPC, Invisi-Gard, Isocarb, 2-isopropoxyphenyl Methylcarbamate, O-isopropoxyphenyl methylcarbamate, 2-Isopropoxyphenyl-n-methylcarbamat, 2-isopropoxyphenyl n-Methylcarbamate, O-isopropoxyphenyl n-methylcarbamate, 2-(1-Methylethoxy)phenol methylcarbamate, N-methyl-2-Isopropoxyphenylcarbamate, OMS-33, PHE, Phenol, o-isopropoxy-, Methylcarbamate, Propoksuru, Propotox M, Propoxur, Propoxure, Propyon,Sendran, Suncide, Tugon fliegenkugel, Unden
Bentazon	Basagran, Bendioxide, Bentazon, Bentazone, 1 h-2,1,3-benzothiadiazin-4
(Basagran)	(3h)-one-2,2-dioxid, 3 -isopropyl- , 3-isopropyl-2,1,3-benzothiadiazinon -
CAS#25057-89-0	(4)-2,2-dioxid, 3-isopropyl-1 h-2, 1-3-benzothiadiazin-4(3h)-one-2,2-dioxide, 3-(1-methylethyl)-1h-2,1,3-benzothiazain-4(3h)-one,2,2-dioxide
Carbaryl	Arylam, Carbamine, Carbaril, Carbaryl, Carbatox, Carbatox-60, Carbatox
CAS #63-25-2	75, Carpolin, Carylderm, Cekubaryl, Crag sevin, Denapon, Devicarb, Dicarbam, ENT 23,969, Gamonil, Germain's, Hexavin, Karbaryl, Karbaspray, Karbatox, Karbosep, Methylcarbamate 1-naphthalenol, Methylcarbarnate 1-naphthol, Methylcarbamic acid, NA 2757, NAC, Alpha-aftyl-n-methylkarbamat, 1-naphthol n-rnethylcarbamate, 1-Naphthyl ester, 1-naphthyl methylcarbamate,1-naphthyl n-Methylcarbamate, Alpha-naphthyl n-methylcarbamate, 1-naphthyl-n-Methyl-karbamat, N-methylcarbamate de 1-naphtyle, N-methyl-l-naftyl-

	Carbamaat, N-methyl-l -naphthyl-carbamat, N-methyl-l -naphthyl Carbamate, N-methyl-alpha-naphthylcarbamate, N-methyl-alpha-Naphthylurethan, N-metil-l-naftil-carbammato, OMS-29, Panam, Ravyon, Rylam, Seffein, Septene, Sevimol, Sevin, Sok, Tercyl, Toxan, Tricarnam, UC 7744, Union carbide 7,744

Name	Synonyms
Chlorpyrifos ***CAS #2921-88-2***	Brodan, Chlorpyrifos, Chlorpyrifos-ethyl, Detmol u.a., Dowco 179, Dursban, Dursban F, ENT 27311, Eradex, Ethion, dry, Lorsban, NA 2783, OMS-0971, O,O-diaethyl-o-3,5,6-trichlor-2-pyridylmonothiophosphat,O,o-diethyl o-3,5,6-trichloro-2-pyridyl phosphorothioate, Phosphorothioic acid, o,o-diethyl o-(3,5,6-trichloro-2-pyridyl) ester, Pyrine
Dicamba ***CAS #1918-00-9***	Banex, Banlen, Banvel, Banvel 4S, Banvel 4WS, Banvel CST, Banvel D, Benzoic acid, 3,6-dichloro-2-methoxy-, Brush buster, Dianat, Dianate, Dicamba, Dicambe, 3,6-dichloor-2-methoxy-Benzoeizuur, 3,6-dichlor-3-, ethoxy-benzoesaeure, 3,6-dichloro-o-Anisic acid, 2,5-dichloro-6-methoxybenzoic acid, 3,6-dichloro-2-methoxybenzoic acid, MDBA, Mediben, Metambane, 2-methoxy-3,6-dichlorobenzoic acid, NA 2769, Velsicol 58-CS-11
2,4-D ***CAS #94-75-7***	Acetic acid, (2,4-dichlorophenoxy)-, Acide 2,4-dichloro Phenoxyacetique, Acido(2,4-dicloro-fenossi)-acetico, Agrotect, Amidox, Amoxone, Aqua-kleen, BH 2,4-D, Brush-Rhap, B-Selektonon, Chloroxone, Crop Rider, Crotilin, 2,4-D, D 50, Dacamine, 2,4-D Acid, Debroussaillant 600, Decamine, Ded-Weed LV-69, Desormone, (2,4-dichloor-fenoxy)-azijnzuur, Dichlorophenoxyacetic acid, 2,4-dichlorophenoxyacetic acid, Dichlorophenoxyacetic acid, 2,4-2,4 dichlorphenoxyacetic acid, (2,4-dichlor-phenoxy)-essigsaeure, Dicopur, Dicotox, Dinoxol, DMA-4, Dormone, 2,4-dwuchlorofenoksyoctowy kwas, Emulsamine BK, Emulsamine E-3, ENT 8,538, Envert 171, Envert DT, Esteron, Esterone four, Estone, Farmco, Fernesta, Fernimine, Fernoxone, Ferxone, Foredex 75, Formula 40, Hedonal, Herbidal,

Name	Synonyms
	Ipaner, Krotiline, Lawn-keep, Macrondray, Miracle, Monosan, Moxone, NA 2765, Netagrone, Netagrone 600, NSC 423, Pennamine, Pennamine D, Phenox, Pielik, Planotox, Plantgard, Rhodia, Salvo, Spritz-Hormin/2,4-D, Spritz-Horrnit/2,4-D, Transamine, Tributon, Trinoxol, U 46DP, U-5043, Vergemaster, Vidon 638, Visko-Rhap, Weed-Ag-Bar, Weedar-64, Weedatul, Weed-B-Gon, Weedez, Wonder Bar, Weedone LV4, Weed-Rhap, Weed Tox, Weedtrol
Dichlorvos ***CAS #62-73-7***	Astrobot, Atgard, Atgard V, Bay-19149, Bibesol, Brevinyl, Brevinyl E50, Brevinyl Weedat 0002, Canogard, Cekusan, Celcusan, Chlorvinphos, Cyanophos, DDVF, DDVP, DEDEVAP, Deriban, Derribante, Dichlorman, 2,2-Dichloroethenyl phosphate, 2,2-Dichloroethenyl Phosphoric Acid, Dimethyl Ester, Dichlorophos, Dichlorovas, 2,2-Dichlorovinyl Dimethyl Phosphate, Dichlorovos, Dichlorphos, Dichlorvos, Dimethyl 2,2-Dichloroethenyl Phosphate, Dimethyl dichlorovinyl phosphate, Dimethyl 2,2-Dichlorovinyl Phosphate, Divipan, ENT 20738; Equigard, Equigel, Estrosel, Estrosol, Ethenol, 2,2-Dichloro-, Dimethyl Phosphate, Fecama, Fly-die, Fly fighter, Herkal, Herkol, Krecalvin, Mafu, Marvex, Mopari UN NA 2783, NCI-C00113, Nerkol,Nogos, Nogos 50, Nogos G, No-Pest Strip, NSC-6738, Nuva, Nuvan, Nuvan 100EC, OKO, OMS 14, O,O-Dimethyl Dichlorovinyl Phosphate, O,O-Dimethyl O-2,2-Dichlorovinyl Phosphate, Phosphoric Acid, 2,2-Dichloroethenyl Dimethyl Ester, Phosphoric Acid, 2,2-Dichlorovinyl Dimethyl Ester, Phosvit, SD1750, Szklarniak, Tap 9VP, Task, Task Tabs. Tenac, UDVF, Unifos, Unifos 50 Astrobot, Atgard, Atgard V, Bay-1 9149, Bibesol, Brevinyl, Brevinyl E50, Brevinyl Weedat 0002, Canogard, Cekusan, Celcusan, Chlorvinphos, Cyanophos, DDVF, DDVP, DEDEVAP, Deriban, Derribante, Dichlorman, 2,2-Dichloroethenyl phosphate,2,2-Dichloroethenyl Phosphoric Acid, Dimethyl Ester, Dichlorophos, Dichlorovas, 2,2-Dichlorovinyl Dimethyl Phosphate, Dichlorovos, Dichlorphos, Dichlorvos, Dimethyl 2,2-Dichloroethenyl Phosphate, Dimethyl dichlorovinyl phosphate, Dimethyl 2,2-Dichlorovinyl Phosphate, Divipan ENT 20738 Equigard, Equige, Estrosel, Estrosol, Ethenol, 2,2-Dichloro-, Dimethyl Phosphate, Fecama, Fly-Die, Fly fighter, Herkal, Herkol, Krecalvin, Mafu, Marvex, Mopari

	UN NA2783, NCI-C00113, Nerkol, Nogos, Nogos 50, Nogos G, No-Pest Strip, NSC-6738, Nuva, Nuvan, Nuvan 100 EC, OKO, OMS 14, O,O-Dimethyl Dichlorovinyl Phosphate, O,O-Dimethyl O-2,2-Dichlorovinyl Phosphate, Phosphoric Acid, 2,2-Dichloroethenyl Dimethyl Ester, Phosphoric Acid, 2,2-Dichlorovinyl Dimethyl Ester, Phosvit, SD1750, Szklarniak, Tap 9VP, Task, Task Tabs. Tenac, UDVF, Unifos, Unifos 50 EC, Vapona, Vapona II, Vapona Insecticide, Vaponite,Verdican, Verdipor, Vinyl alcohol, Vinylophos

Name	**Synonyms**
Diazinon	Alpha-Tox; Basudin; Dazze1; Dianon; Diaterr-fos; Diazjet; Diazatol;
CAS #333-91-2	Diazol Dimpylate, Dipofene, Dizinon, Dyzol, Garedentox, Kayazinon, Kayazol, Knox Out, Neocidol, Nipsan, Nucidol, Sarolex, Spectracide, O,O-Diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl)-Phosphorthioate
Dieldrin	Alvit; Compound 497; Dieldrex; Dieldrin; Dieldrine; Dieldrite; 1,4:5,8-
CAS #60-57-1	dimethanonaphthalene; 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7, 8,8a-octahydro, endo,exo-; ENT 16,225; Heod; Hexachloroepoxyoctahydro-endo,exo-dimethanonaphthalene; 3,4,5,6,9,9-hexachloro-la,2,2a,3,6,6a,7,7a-octahydro-2,7:3,6-dimethanonaphth; (2,3-b)oxirene; Illoxol; NA 2761; NCI-C00124; Octalox; Panoram D-31; Quintox
1,2 Dichloropropane	Propane, 1,2-dichloro-; Propylene dichloride; 1,2-dichloropropane;
CAS #78-87-5	A13-15406; Alpha,beta-dichloropropane; Alpha,beta-propylene dichloride;

	Bichlorure de propylene [french]; Caswell No, 324; CCRIS 951; Dichloro-1,2 propane [french]; Dichlorure de propylene [french]; Dicloruro de propileno [spanish]; Dwuchloropropan [polish; ENT 15,406; EPA Pesticide Chemical Code 029002; HSDB 1102; NCI-C55141; Propylene chloride
1,3 Dichloropropene (and isomers) ***CAS #542-75-6***	3-chloroallyl chloride; Alpha-chloroallyl chloride; Gammachloroallyl chloride; 3-chloropropenyl chloride; DCP; Dichloropropene; 1,3-dichloropropene-1; 1,3-dichloropropene; 1,3-dichloro-2-propene; Dichloropropene, 1,3-; 1,3-dichloropropylene; Alpha,gamma-dichloropropylene; NCI-C03985; Propene,1,3 Dichloro-; RCRA waste number U084; Telone II

Name	Synonyms
Picloram ***CAS #1918-02-1***	Amdon grazon; 4-amino-3,5,6-trichloropicolinic acid; 4-amino-3,5,6-Trichloro-2-picolinic acid; 4-amino-3,5,6-trichlorpicolinsaeure; ATCP; Borolin; Chloramp K-pin; NCI-C00237; Picloram; Picolinic Acid, 4-amino-3,5,6-trichloro-; Tordon 10k; Tordon 22k; 3,5,6-Trichloro-4-aminopicolinic acid
Prometon ***CAS#1610-18-0***	2,4-bis(isopropylamino)-6-methoxy-s-triazine; 2,6-diisopropylamino-4-methoxytriazine; G-31435; Gesafram; Gesafram 50; 2-methoxy-4,6-bis(isopropylamino)-1,3,5-triazine; 2-methoxy-4,6-bis(isopropylamino)-s-triazine; Methoxypropazine; Ontracic 800; Ontrack; Ortrack-We-2; Pramitol; Primatol; Primatol 25E; Prometon; Prometone; S-triazine, 2,4-bis(isopropylamino)-6-methoxy-
Simazine ***CAS #122-34-9***	A 2079; Aktinit S; Aquazine; Batazina; 2,4-bis(aethylamino)-6-chlor-1,3,5-triazin; 2,4-bis(ethylamino)-6-chloro-s-triazine; Bitemol; Bitemol S 50; CAT; CDT; Cekusan; Cekuzina-S; CET; 1-chloro, 3,5-Bisethylamino-2,4,6-triazine; 2-chloro-4,6-bis(ethylamino)-1,3,5-Triazine; 2-chloro-4,6-bis(ethylamino)-s-triazine; 6-chloro-n,n' Diethyl-1,3,5-triazine-2,4-diyldiamine Framed; G 27692; Geigy 27,692; Gesaran; Gesatop 50; H 1803; Herbazin 50; Herbex; Herboxy; Hungazin DT; Premazine; Primatol

	S; Princep; Printop; Radocon; Radokor; Simadex; Simanex; Simazin; Simazine; Symazine; Tafazine 50-W; Taphazine; Triazine A 384; 1,3,5-triazine-2,4,6-triamine, n-cyclopropyl-; W 6658; Zeapur
2,4,5-T ***CAS #93-76-5***	2,4,5 T; Acide 2,4,5-trichloro phenoxyacetique; Acido (2,4,5-tricloro-fenossi)-acetico; BCF-Bushkiller; Brush Rhap; Brushtox; Dacamine; Debroussaillant concentre; Decamine 4T; Ded-Weed Brush Killer; Dinoxol; Envert-T; Esteron 245; Esteron 245 BE; Fence Rider; Forron; Forst U 46; Fortex; Fruitone A; Inverton 245; Line Rider; NA 2765; Phortox; RCRA; waste number u232; Reddon; Reddox; Spontox; Super D Weedone; Tippon; TormonaTransamine; Tributon; (2,4,5-trichloor-fenoxy)-azijnzuur; 2,4,5-; trichlorophenoxyacetic acid; Trichlorophenoxyacetic acid, 2,4,5-; (2,4,5-trichlor-phenoxy)-
Name	**Synonyms**
2,4,5-T ***CAS #93-76-5 cont.***	Essigsaeure; Trinoxol; Trioxon; Trioxone; U 46; Veon Veon 245; Verton 2T; Visko Rhap low volatile ester; Weedar; Weedone; Weedone 2,4,5-
Trichlopyr ***CAS #55335-06-3***	Crossbow; Turflon; Curtail; Dowco 233; Garlon; Garlon 3A; Remedy; Redeem

Section 2.11 Common open space areas

Experienced landscape maintenance personnel should monitor common areas with mature trees on a monthly basis. Any outbreaks of fungal disease or insect infestation should be recorded ands subsequently monitored to determine if the outbreak increases. When the outbreak reaches an undesirable level or threatens the health of the host, then measures should be taken to reduce the pest.

(a) Pesticides used should always be chosen with the EPA Leach List in mind, in order to minimize the duration and mobility of pesticide residues within the soil of these areas.

(b) Any pesticides used should be applied when there is little chance of rain or wind-drift.

(c) Treated areas should be posted to notify homeowners of pesticide application.

(d) A period of three weeks should be allowed after any pesticide application to monitor the effect of the application. No pesticide applications should be made at a higher frequency.

Section 2.12 Storage and handling of chemicals

Generally, all landscape maintenance products are toxic and should be handled with care. Follow all label requirements, and use only those chemicals recommended and approved for controlling the pest.

- Wear protective clothing when mixing and applying chemicals.
- Chemicals should always be stored in a dry place inaccessible to children, pets, or other desirable organisms.
- Containers should be well marked and kept tightly closed.
- Empty containers should not be disposed of in the trash, but rather saved for hazardous waste collection opportunities.
- Excess or unwanted chemicals should never be poured down any drain or into the yard or street. Excess or spent chemicals should be disposed of at an appropriate collection area in Grays Harbor County. If property owners discover they have outdated, banned or restricted landscape maintenance products, these compounds can be safely disposed of at the Grays Harbor County household hazardous waste collection facility located at 4201 Olympic Highway near the City of Aberdeen.

SECTION 3.0 HAZARDOUS MATERIALS BEST MANAGEMENT PRACTICES

We are surrounded by a variety of chemical products. While we may appreciate their benefits, we must also be aware of the hazards they pose.
Thoughtful selection, proper usage, safe storage, and correct disposal of household chemicals are crucial in safeguarding your health and the health of your family, as well as the environmental qualities we care about in Grays Harbor County.

Unfortunately, leftover chemical products are often flushed down the drain, tossed into the backyard, burned, buried, or poured down a storm drain. A little here and a little there may not seem like much. But when you multiply your seemingly minor amount by the number of homes in your community, the volume of chemical wastes we throw away mounts up to tons each year.

If we are to protect Grays Harbor County's environment from serious damage, we need to act responsibly with the hazardous substances we choose to use. And the most responsible choice would always be to find and use an effective but less hazardous substance.

What can you do?

You can take preventive measures to reduce the amount of household hazardous wastes you produce. The following guidelines will help:

- Consider using a non-toxic or less hazardous product for your job. When possible, use water-based, not solvent-based, products.

- Remember to buy only what you need, use it all, or give what is left to somebody who can. Only products in the original, non-leaking containers with readable labels should be given away. Do not share banned chemicals such as DDT or pentachlorophenol.

With those hazardous products you still have left over, try to follow these practices:

- Recycle everything you can. Bring in your waste oil to a recycling station. Be sure to bring in your old battery for exchange when buying a new one, or be prepared to pay an extra core charge.

- Filter used paint thinner by setting it aside in a closed jar until it settles. Strain off the clear liquid for reuse. When dry, dispose of the paint particles and dirt in the trash.

- To dispose of small amounts of latex paint, let liquid evaporate and discard the dried up paint in the trash. If you dried it in the paint can, leave the lid off the paint can when you throw it in the trash.

- Locate a household hazardous waste collection program where you can turn in any additional household hazardous material.

Hazardous materials in your home?

What might they be? Here are a few examples:

- Home repair chemical products, such as glues, sealants, thinners, solvents, and paints

- Cleaning agents, such as oven cleaners, spot removers, and other strong cleaning products

- Pesticides, herbicides, moss killers, and wood preservatives

- Auto and boat batteries, gasoline, oil, fluids, or antifreeze

- Hobby materials, such as photo and pool chemicals, charcoal lighter fluid, inks, and glazes

What's the problem?

Dumping used motor oil in the back yard, down storm drains, or in the garbage contaminates ground or surface water and soil. When used as a dust suppressant or for weed abatement on roads, oil will run off during rains, polluting water with heavy metals and other toxic contaminants. This is a health hazard to wildlife and humans. Used motor oil is the single largest source of oil pollution. One-pint of oil can produce a one-acre slick on su[r]face water.

Vehicle batteries contain corrosive materials and heavy metals that may contaminate soil and ground or surface water if disposed of improperly.

Dumping antifreeze on the ground may contaminate soil or surface water sources.

Nearly all of a car's wastes are toxic to varying degrees, and present environmental and human health hazards if disposed of improperly. Toxic materials cause injury or death if ingested, inhaled or absorbed through the skin. None of these materials should end up in a sewer, septic system, storm drain, back yard or empty lot.

It is illegal to discharge automotive waste directly to surface water, storm drains, or onto the ground, where rainfall can carry it into the ground water or nearby surface water. Civil penalties of up to $10,000 maybe imposed. In extreme cases, criminal penalties may also be imposed, pursuant to Revised Code of Washington 70.95.060. Property found to be contaminated is difficult to sell without doing expensive clean-up, and the owners of the property may find it difficult to obtain loans against their property once banks are aware of the problem.

General suggestions

- Buy only what you need, and substitute less or non-toxic materials when feasible.
- Follow safety precautions and other instructions on the product label.
- Keep all products out of the reach of children and pets.
- Never pour vehicle waste into storm drains, sewer, septic system, or onto the ground.
- Know where you will dispose of and store materials before doing-it-yourself. Call 1-800--RECYCLE if you are unsure where to take the waste.
- Keep all fluids separate and labeled to make proper recycling and disposal easier.
- All automotive wastes can be reduced by using alternate transportation such as walking, bicycling, carpooling, vanpooling and taking the bus.

Assessing the risk of groundwater contamination from home waste: Why should you be concerned?

Consider the variety of products commonly used around the homestead - paints, solvents, oils, cleaners, wood preservatives, batteries, adhesives, pesticides. Also consider the amount of these products which go unused or are thrown away. Some common disposal practices can create an unsafe environment around the home and may contaminate groundwater.

Small, unusable amounts are often spilled, buried, dumped, or flushed onto rural property. Minimize the amounts of these substances you use on your homestead and follow proper disposal practices to reduce both health risks and the potential for groundwater contamination. Most farmers are familiar with the hazards of pesticides they use in their farm operation, but they and other rural dwellers may be less aware of the hazards of other chemicals that make many tasks around the homestead easier or more efficient.

Improper use of some products may cause toxic health effects. Improper storage may allow chemicals to leak, causing potentially dangerous chemical reactions, toxic health effects, or groundwater contamination. Improper disposal can allow chemicals to enter directly into drinking water through surface water or groundwater.

Your drinking water is least likely to be contaminated by hazardous wastes if you buy only the products you need and use, store, and dispose of them properly. Use up, reuse, or recycle products whenever possible. Proper disposal practices are essential to avoid contamination that could affect the water supplies and health of your family and neighbors.

Home waste management worksheet

How will this worksheet help you to protect drinking water?

- It will take you step-by-step through your farm and home waste management practices.
- It will rank your activities according to how they might affect the groundwater that provides your drinking water supplies.
- It will provide you with easy-to-understand rankings that will help you analyze the risk level of your farm and home waste management practices.
- It will help you determine which of your practices are reasonably safe and effective, and which practices might require modification to better protect your drinking water.

How do you complete the worksheet?

Follow the directions at the top of the chart. It should take you about 15-minutes to 30-minutes to complete this worksheet and summarize your risk rankings.
The following terms may help you make more accurate assessments when completing the worksheet:

Conditionally exempt small quantity generator means a dangerous waste individual or business that generates less than 220-pounds of dangerous waste per month, or accumulates or stores less than 220-pounds of dangerous waste at their place of business.

Dangerous waste is a State term that includes all federally-regulated hazardous wastes, plus additional wastes that are regulated in Washington State due to toxicity, persistence, or carcinogenicity. Dangerous wastes fall into two categories, either "DW" or "EHW", and typically become regulated when more than 220-pounds are produced per month, or more than half of a 55-gallon drum.

Dump means a local or on-farm solid waste disposal area that does not meet regulations, is not covered, is not designed to prevent leaching, and offers little groundwater protection.

Dangerous waste means those wastes that are dangerous, but not extremely hazardous.

Extremely hazardous waste: means those dangerous wastes that are extremely hazardous because of their greater threat to human health and the environment.

Hazardous waste means any solid waste with certain properties that could pose dangers to human health or the environment, such as spent solvents, ink sludge, or cyanide wastes. This term is federal in origin, and covers all wastes the United States Environmental Protection Agency (EPA) considers hazardous.

Household hazardous waste collection program means a special program in which a community collects waste for reuse, recycling, or shipment to disposal in a specially constructed hazardous waste landfill or destruction in an approved incinerator.

Incinerator means a combustion device specifically engineered to burn solid waste. The unit should be approved by the appropriate responsible agency.

Licensed and approved landfill means a waste disposal site specifically designed to protect groundwater that meets current state standards.

Moderate risk waste means a dangerous waste that is exempt from most state and federal regulations because it is generated in households, or by businesses in quantities typically less than 220-pounds per month, or about half of a 55-gallon drum.

On-farm disposal means any method of burning, dumping, or land spreading of wastes on the farm. Also includes use of the septic system for disposal. These are not recommended practices for disposing of hazardous waste.

Recycling means reusing or reclaiming a waste material.

Solid waste means any discarded solid, liquid or gas material that has been abandoned, is naturally waste-like, is stockpiled before recycling, or is reused in a manner constituting disposal, such as through the application of oil for dust control.

Property Waste Management: Assessing Drinking Water Contamination Risk

For each category listed below that is appropriate to your property, read the activity description and check the statement that best describes the conditions on your property. Then complete the section entitled “What do I do with these rankings?”

Allow about 15-minutes to 30-minutes to complete the worksheet, and summarize your risk ranking for homestead waste disposal practices.

<u>Solid Waste</u>

(1) Property Trash Disposal

☐ Low Risk (Rank 4): The amount of waste is minimized through careful purchase, recycling or reusing, and sharing with others whenever possible. All hazardous products are separated out. The disposal of waste material is more than 400-feet downslope from well or off your property.

☐ Low Risk to Moderate Risk (Rank 3): Some products are recycled or reused, but little is done to reduce the amount of waste. Most hazardous products are separated out. Disposal of waste material is more than 400-feet downslope from the well or off your property.

☐ Moderate Risk to High Risk (Rank 2): Little or no recycling or reusing of products. Few hazardous products separated out. Disposal of waste material on your property is 100-feet to 400-feet downslope from well.

☐ High Risk (Rank 1): Little or no recycling or reusing of products. No hazardous products separated out. Disposal of waste material is upslope or within 100-feet from well. Disposal of waste material in abandoned well or similar hole.

Automotive and/or Equipment Maintenance Products

(1) Automotive and Equipment Area Drips and Spills

☐ Low Risk (Rank 4): Drips and spills are contained on paved area with sawdust or other absorbent material. The sawdust is disposed of at approved landfill.

☐ Low Risk to Moderate Risk (Rank 3): Drips and spills are contained on paved area with sawdust or other absorbent material. The sawdust is disposed of on your property away from the well.

☐ Moderate Risk to High Risk (Rank 2): Drips and spills are not contained. The maintenance area is at least 100-feet from well.

☐ High Risk (Rank 1): Drips and spills are not contained. The maintenance area is less than 100-feet from well.

(2) Batteries

☐ Low Risk (Rank 4): Use batteries are recycled or deposited at a hazardous waste collection event/facility or traded-in at a battery store.

☐ Moderate Risk to High Risk (Rank 2): Used batteries are stored on your property away from well.

☐ High Risk (Rank 1): Used batteries are disposed of on your property or the batteries are stored near well.

(3) Oil and Lubricants

☐ Low Risk (Rank 4): Used oil and lubricants are taken to used oil recycler or hazardous waste collection event or facility.

☐ Low Risk to Moderate Risk (Rank 3): Used oil and lubricants are reused for lubrication. Used oil and lubricants are burned for heat in an approved space heater. Used oil and lubricants are stored away from well.

☐ Moderate Risk to High Risk (Rank 2): Used oil and lubricants are disposed or stored on your property more than 100-feet from the well.

☐ High Risk (Rank 1): Use oil or lubricants are disposed of or stored on your property within 100-feet of the well.

(4) Disposal of Oil and Lubricant Containers

☐ Low Risk (Rank 4): Oil and lubricant product is used up and the container is recycled or reused. Empty containers are taken to an approved landfill if not recycled.

☐ Moderate Risk to High Risk (Rank 2): The disposal of empty oil and lubricant containers on your property at least 100-feet from the well.

☐ High Risk (Rank 1): The disposal of empty oil and lubricant containers within 100-feet of the well, or the disposal of partially filled oil and lubricant containers on your property.

(5) Antifreeze

☐ Low Risk (Rank 4): Antifreeze products are reused or disposed of at a hazardous waste collection event or facility.

☐ High Risk (Rank 1): Antifreeze products are dumped on your property, in an on-site sewage treatment system, or at a municipal sewage treatment facility.

(6) Gasoline and Other Fuel Disposal

☐ Low Risk (Rank 4): Leftover fuels are used up or taken to service station or hazardous waste collection site or event. No fuels are disposed of on your property.

☐ Moderate Risk to High Risk (Rank 2): Leftover fuels are stored on your property more than 100-feet from well.

☐ High Risk (Rank 1): Waste fuels are spilled, dumped, or poured on the ground around your property.

(7) Paints and Stains

☐ Low Risk (Rank 4): Used paints and stains are used up or shared with someone else. Used paints or stains are disposed of at an approved hazardous waste collection site or event.

☐ High Risk (Rank 1): Disposal of used paints or stains on your property. Used paints and stains are evaporated into the open air. Used paint or sludge is taken to licensed landfill.

(8) Solvents

☐ Low Risk (Rank 4): Solvents are cleaned and reused when possible. Solvent sludge is taken to a licensed landfill. A solvent recycler collection or hazardous waste collection is used for leftover solvents.

☐ High Risk (Rank 1): Solvents are evaporated in a ventilated area or in the open air. Solvent sludge is taken to licensed landfill.

(9) Household Cleaners

☐ Low Risk (Rank 4): Household cleaners are used up or shared with someone else. A hazardous waste collection service is used for leftover cleaners.

☐ Low Risk to Moderate Risk (Rank 2): Liquid cleaners are evaporated into the open air. Cleaners or sludge are taken to licensed landfill.

☐ Moderate Risk to High Risk (Rank 2): The disposal of household cleaning sludge or cleaners on your property at a distance of at least 100-feet from the well.

☐ High Risk (Rank 1): The disposal of household cleaning sludge or cleaners on your property at a distance of less than 100-feet form the well.

(10) Hazardous Household Product Containers

☐ Low Risk (Rank 4): Hazardous household product containers are taken to a recycling facility or reused for a similar product.

☐ Low Risk to Moderate Risk (Rank 3): Empty hazardous household product containers are taken to licensed landfill.

☐ Moderate Risk to High Risk (Rank 2): The disposal of empty hazardous household product containers on your property at a distance of more than 100-feet from the well.

☐ High Risk (Rank 1): The disposal of empty hazardous household product containers, or partially filed containers, at a distance of less than 100-feet from the well.

<u>Farm and Household Pesticides</u>

(1) Disposal of Unused Pesticides

☐ Low Risk (Rank 4): Unused pesticides are returned to the place of purchase or are taken to a hazardous waste collection site or event.

☐ High Risk (Rank 1): The disposal of unused pesticides on your property.

(2) Pesticide Container Disposal Location

☐ Low Risk (Rank 4): The pesticide container is disposed of through a recycling program or returned to the dealer.

☐ Low Risk to Moderate Risk (Rank 3): The pesticide container is disposed of at a municipal landfill.

☐ Moderate Risk to High Risk (Rank 2): The pesticide container is disposed of on your property.

☐ High Risk (Rank 1): The disposal of partially filled pesticide containers or empty bags on your property or at a municipal landfill.

What do you do with the worksheet rankings?

Identify the rank for each of the risks your have identified.

Look over your ranking for the individual activities you conduct on your property, keeping in mind the following relationship between the activity and the risk to groundwater:

- Low Risk: Rank 4. These practices are ideal, and should be your goal despite cost and effort.
- Low Risk to Moderate Risk: Rank 3. These practices provide reasonable groundwater protection.
- Moderate Risk to High Risk: Rank 2. Moderate risk to high risk practices provide inadequate groundwater protection in many circumstances.
- High Risk: Rank 1. High risk practices pose a high risk of polluting groundwater.

Read the following fact sheet as you work to modify the waste management practices on your property to better protect your drinking water and the water used by your neighbors.

Waste Type	Used Motor Oil	Lead-Acid Batteries	Antifreeze	Gasoline	Transmission & Brake Fluid	Degreasers and Solvents	Cleaners and Polishes	CFCs or Freon (Air Conditioner)	Tires
Hazard	Oil picks up heavy metals from engine. Petroleum products are toxic to people, wildlife and plants.	Lead is a toxic heavy metal. Battery acid is corrosive.	Contains ethylene glycol which is toxic. Animals are attracted to its sweet taste and it will kill them.	Flammable and toxic. Contains benzene, a cancer causing chemical that can be inhaled or absorbed through the skin.	Brake fluid is corrosive. Transmission fluid contains petroleum distillates and is ignitable.	Many degreasers contain chlorinated solvents and are very hazardous.	Most contain toxic ingredients. Some contain phosphates which promote the growth of algae in lakes and rivers.	These gases are harmful to the Earth's protective ozone layer.	Tire piles attract rodents, mosquitoes & other pests, & are a fire hazard. Toxics are released to air & water when tires burn.
Storage (Always clearly label the container)	Store in a sealed metal or plastic container. Do not mix with other substances.	Store upright in a sturdy acid-resistant, leak-proof container.	Store in the original plastic containers.	Store in approved containers, away from living area, ignition sources and direct sunlight.	Store separately in original containers.	Store in original containers in a cool, dry location.	Store in original containers.	N/A	Store outside in area protected from fire or rain. Local regulations may limit the number you can store.
How to Avoid Spills or Releases (Always keep securely covered)	Put large drip pan under crankcase before opening. Check for oil leaks regularly & repair them.	Store upright. Place leaking batteries in sturdy, acid-resistant, leak-proof container.	Use large enough pan when flushing radiator. Repair radiator leaks.	Don't overfill your tank.	Follow proper filling and draining techniques.	Follow instructions for proper use to avoid spills.	Use appropriate amounts according to instructions on the container.	Service your AC regularly. Repair leaks. Run your AC once a month to keep seals tight.	Avoid storing a quantity that could become a fire hazard. Tire fires generate toxic smoke & runoff.
How to Clean-up Spills	Clean up immediately with cat litter or absorbent pads.	Neutralize small acid spills (under 2 gallons) using cement, lime or baking soda.	Small spills may be wiped up and discarded in the garbage.	Clean up spills immediately with cat litter or absorbent pads.	Clean up immediately with cat litter or absorbent pads.	Absorb spills and take contaminated absorbent to a hazardous waste collection program.	Absorb spills and take contaminated absorbent to a hazardous waste collection program. See label instructions.	N/A	N/A
Recycling or Disposal Call 1-800-RECYCLE	Recyclable. Do not mix with other substances. Drain oil filter overnight (24 hrs) into drip pan to remove oil residue. Do not use oil as dust suppressant or weed killer or dispose of in a landfill.	Recyclable. Exchange your old battery when purchasing a replacement. Disposal of batteries in garbage is illegal.	Recyclable on limited basis. Use professional services that recycle antifreeze.	Use it up or save for hazardous waste collection program. Do not use as a solvent, paint thinner or weed killer.	Keep separate from used oil. Save for hazardous waste collection program.	Use up according to instructions or share with someone who will. Keep separate from used oil. Save for hazardous waste collection program.	Use up according to instructions or give to someone who will, or save for hazardous waste collection program.	Freon is recyclable. Service at a service station that collects and recycles freon.	Tires can be recycled. Some worn tires can be retreaded.
Safer Alternatives or Reduction Methods	None, however using re-refined oil saves energy and resources. Keeping your car tuned reduces oil use.	Purchasing longer life batteries will reduce the need for replacement and disposal.	N/A	Carpool, plan trips, walk and bicycle. Keep tires properly inflated.	Reduce use by repairing leaks.	Non-toxic and non-flammable alternatives are available. Use water based substitutes whenever possible.	A variety of non-toxic cleaners are available. Use the least toxic product that will accomplish the job.	Use newer, non-toxic refrigerants.	Keep properly inflated. Buy long-lasting and retread tires. Have your worn-out tires "custom" retreaded.
Toxic Trivia	Used motor oil is the single largest source of oil pollution. The 180 million gallons of used oil spilled by do-it yourselfers each year in the U.S. is 16 times that spilled by the Exxon Valdez in Alaska.	A car battery contains 20 pounds of toxic lead and one gallon of corrosive, lead-contaminated sulfuric acid.	Children and pets are attracted to antifreeze because it tastes sweet. They can be poisoned by drinking small amounts of improperly disposed antifreeze.	Washingtonians drove their vehicles more than 54 billion miles in 2000. That's over 51 billion pounds of air pollution released into our air.	These wastes are commonly mixed with used oil making them difficult or impossible to recycle.	Contaminating used oil with these substances could change it from a readily recyclable resource into a hazardous waste.	Commercial car washes pre-treat wash water. Washing your car & degreasing auto parts at home sends detergent and other contaminants directly into surface and groundwater.	The 1990 U.S. Clean Air Act Amendments require all auto air conditioner service stations to retrieve and recycle CFC's.	Tires take at least 800 years to decompose. 10 million burning tires would create an oil spill equivalent to 1/10 the Valdez spill plus large clouds of toxic smoke.

Any high risk practices require immediate attention. Some concerns you can address right away, while others could be major or costly projects that require planning and prioritizing your efforts before you take action. The long term goal of hazardous materials best management practices is to improve the way you use waste products on your property so that they can be classified as a low risk. Activities classed as low risk generally reflect best management practices.

Information derived from the worksheets is intended only to provide general information and recommendations to rural residents regarding their own homestead practices. It is not the intent of this educational program to keep records of individual results.

The Home Waste Management Worksheet system is a cooperative project of Washington State University Cooperative Extension, the Washington State Department of Ecology, the United States Environmental Protection Agency Region X, Washington State University Cooperative Extension Water Quality Coordinators Christopher Feise and Edward Adams, Homestead Assessment System Project Associate James D. LaSpina, Washington State University's Enid Cox, Washington On-Site Association's Jerry Stonebridge, the Yakima Health District's Karen Paugh, the Inland Empire Public Lands Council's Cheryl Freeman, the Washington Department of Ecology's Richard Greenberg, and the Yakima Public Works Department's Mark Nedrow and Suzanne Tarr.

Where can you go for help?

- *Personal Safety*

  Keep the following 24-hour, 7-day-a-week Poison Help Line number handy in case of actual or suspected poisonings:

  1-800-222-1222

  If you have small children, use Mr. Yuk stickers, available through the Poison Help Line or its website at:

  http://www.wapc.org/

- *Waste Reduction & Recycling*

  For times and locations of household hazardous waste collection programs, used oil recycling sites, and places that take old vehicle batteries, call the state's Recycling Information Line at:

  1-800-RECYCLE

  You can also find these times and locations via the Internet at:

  http://1800recycle.wa.gov

  http://www.co.grays-harbor.wa.us/info/pub_svcs/Recycle/index.htm

- *Hazardous Substance Information*

  For information on health and environmental effects of hazardous substances, and Community Right-to-Know information, phone the Washington State Department of Ecology Hazardous Substance Information Line at:

  1-800-633-1545

Other Information

For information on how to properly dispose of household hazardous waste, local waste reduction/recycling programs, and other recycling information call 1-800-RECYCLE.

The following materials are available from the Washington State Department of Ecology's website at:

- The used oil problem:

  http://wwv.ecy.wa.gov/ibiblio/90br10.html

- A guide to waste reduction and recycling around the house:

  http://www.ecy.wa.gov/biblio/95412.html

- It's your right to know about chemical hazards in your community:

  http://www.ecv.wa.gov/biblio/95412.html

- Hazardous waste: helping small business understand the law:

  http://www.ecy.wa.gov/biblio/0507017

- Automotive waste and the do-it-yourselfer:

  http://www.ecy.wa.gov/biblio/0507017

SECTION 4.0 INTEGRATED PEST MANAGEMENT PRACTICES

Integrated Pest Management (IPM) is a pest control strategy that uses an array of complimentary methods: mechanical devices, physical devices, genetic devices, biological devices, legal devices, cultural devices, and chemical management. These methods are done in three stages: prevention, observation, and intervention. It is an ecological approach with a main goal of significantly reducing or eliminating the use of pesticides.

Section 4.1 History of Integrated Pest Management

Shortly after World War II, when synthetic insecticides became widely available, entomologists in the State of California developed the concept of "supervised insect control." Around the same time, entomologists in cotton-belt states, such as the State of Arkansas, were advocating a similar approach. Under this scheme, insect control was "supervised" by qualified entomologists, and insecticide applications were based on conclusions reached from periodic monitoring of pest and natural-enemy populations. This was viewed as an alternative to calendar-based insecticide programs. Supervised control was based on a sound knowledge of the ecology and analysis of projected trends in pest and natural-enemy populations.

Supervised control formed much of the conceptual basis for the "integrated control" that California entomologists articulated in the 1950's. Integrated control sought to identify the best mix of chemical and biological controls for a given insect pest. Chemical insecticides were to be used in manner least disruptive to biological control. The term "integrated" was thus synonymous with "compatible." Chemical controls were to be applied only after regular monitoring indicated that a pest population had reached a level (the economic threshold) that required treatment to prevent the population from reaching a level, referred to as the economic injury level, at which economic losses would exceed the cost of the artificial control measures.

IPM extended the concept of integrated control to all classes of pests and was expanded to include tactics other than just chemical and biological controls. Artificial controls, such as pesticides, were to be applied as in integrated control, but these now had to be compatible with control tactics for all classes of pests. Other tactics, such as host-plant resistance and cultural manipulations, became part of the IPM arsenal. IPM added the multidisciplinary element, involving entomologists, plant pathologists, nematologists, and weed scientists.

In the United States, IPM was formulated into national policy in February 1972 when President Nixon directed federal agencies to take steps to advance the concept and application of IPM in all relevant sectors. In 1979, President Carter established an interagency IPM Coordinating Committee to ensure development and implementation of IPM practices.

Section 4.2 How IPM works

An IPM regime can be quite simple or sophisticated. Historically, the main focus of IPM programs was on agricultural insect pests. However, IPM programs encompass diseases, weeds, and any other pest that interferes with the management objectives of your site, such as agriculture, garden, structure, or open space.

An IPM system is designed around six basic components:

(1) Acceptable pest levels. The emphasis is on control, not eradication. IPM holds that wiping out an entire pest population is often impossible, and the attempt can be more costly, environmentally unsafe, and frequently unachievable. It is better to decide on what constitutes acceptable pest levels, and apply controls if those levels, referred to as 'action thresholds', are exceeded.

(2) Preventive cultural practices. Selecting varieties best for local growing conditions, and maintaining healthy crops, is the first line of defense, together with plant quarantine and 'cultural techniques' such as crop sanitation (e.g. removal of diseased plants to prevent spread of infection).

(3) Monitoring. Regular observation is the cornerstone of IPM. Visual inspection, insect and spore traps, and other measurement methods are used to monitor pest levels. Record keeping is essential, as is a thorough knowledge of the behavior and reproductive cycles of target pests. Since insects are cold-blooded, their physical development is dependent on the temperature of their environment. Many insects have had their development cycles modeled in terms of degree-days. Monitor the degree-days of an environment to determine when is the optimal time for a specific insect's outbreak.

(4) Mechanical controls. Should a pest reach an unacceptable level, mechanical methods are the first options to consider. They include simple hand picking, erecting insect barriers, the use of traps, vacuuming, and tillage to disrupt breeding.

(5) Biological controls. Natural biological processes and materials can provide control, with minimal environmental impact, and often at low cost. The main focus here is on promoting beneficial insects that eat target pests. Biological insecticides, derived from naturally occurring microorganisms, such as entomopathogenic fungi and entomopathogenic nematodes, also fit in this category.

(6) Chemical controls: Synthetic pesticides are generally only used as required and often only at specific times in a pest's life cycle. Many of the newer pesticide groups are derived from plants or naturally occurring substances, such as nicotine, pyrethrum and insect juvenile hormone analogues, and further 'biology-based' or 'ecological' techniques are under evaluation.

IPM is applicable to all types of agriculture. Reliance on knowledge, experience, observation, and integration of multiple techniques makes IPM a perfect fit for organic farming, as the synthetic chemical option is simply not considered. For large-scale, chemical-based farms, IPM can reduce human and environmental exposure to hazardous chemicals, and potentially lower overall costs.

- Proper identification of pest. What is it? Cases of mistaken identity may result in ineffective actions. If plant damage due to over-watering are mistaken for a fungal infection, a spray may be used needlessly and the plant still dies.

- Learn pest and host life cycle and biology. At the time you see a pest, it may be too late to do much about it except maybe spray with a pesticide. Often, there is another stage of the life cycle that is susceptible to preventative actions. For example, weeds reproducing from last year's seed can be prevented with mulches. Also, learning what a pest needs to survive allows you to remove these.

- Monitor or sample environment for pest population. How many are here? Preventative actions must be taken at the correct time if they are to be effective. For this reason, once you have correctly identified the pest, you begin monitoring *before* it becomes a problem. For example, in school cafeterias where roaches may be

expected to appear, sticky traps are set out before school starts. Traps are checked at regular intervals so you can see them right away and do something before they get out of hand. Some of the things you might want to monitor about pest populations would include: Pest present/absent? Distribution: all over or only in certain spots? Increasing or decreasing in numbers?

- Establish action threshold, such as economic, health or aesthetic. How many are too many? In some cases, a certain number of pests can be tolerated. Soybeans are quite tolerant of defoliation, so if you have only a few caterpillars in the field and their population is not increasing dramatically, there is no need to do anything. Conversely, there is a point at which you *must* do something. For the farmer, that point is the one at which the cost of damage by the pest is *more* than the cost of control. This is an economic threshold. Tolerance of pests varies also by whether or not they are a health hazard, referred to as low tolerance, or merely a cosmetic damage, referred to as high tolerance in a non-commercial situation. Personal tolerances also vary; many people dislike any insect, while some people cannot tolerate dandelions in their yards. Try to adopt a flexible attitude!

  Choose an appropriate combination of management tactics. For any pest situation, there will be several options to consider. Options include *mechanical or physical controls*, *cultural controls*, *biological controls*, and *chemical controls*.

  - ✓ *Mechanical or physical controls* include picking pest off plants, or using netting or other material to exclude pests, such as birds from grapes or rodents from structures.

  - ✓ *Cultural controls* include keeping an area free of conducive conditions by removing or storing waste properly or by removing diseased areas of plants properly.

  - ✓ *Biological controls* can be supported either through the conservation of natural predators or augmentation of natural predators. Augmentation includes the introduction of naturally occurring predators at either the indundative or inoculative level. An inundative release would be one that seeks to inundate a site with a pest's predator to impact the pest population. An inoculative release would be a smaller number of pest predators to supplement the natural population and provide on-going control.

  - ✓ *Chemical controls* would include horticultural oils or the application of pesticides, such as insecticides and herbicides. A more organic-based integrated pest management approach would include the use of pesticides derived from plants, such as botanicals, or other naturally occurring materials.

  Then, evaluate the results. How did it work? Did your actions have the desired effect? Was the pest prevented or managed to your satisfaction? Was the method itself satisfactory? Were there any unintended side effects? What will you do in the future for this pest situation?

SECTION 5.0 MONITORING

As mentioned in Section 2.6, detailed record keeping is valuable in assessing the success of a particular BMPP treatment. The landscape contractor is required by law to keep careful records of chemical use. Ideally, the property owner will also keep a record of all product applications. Cooperation between both the property owners and professional landscapers will ultimately aid in controlling more widespread pest and noxious weed problems in unincorporated Grays Harbor County.

SECTION 6.0 BMPP AMENDMENTS

Since a BMPP can only be as effective *as* its constituent elements, it may be necessary to modify those elements as environmental factors or site specific conditions dictate. Such changes may be necessary to better direct pest management efforts, as well as modify procedural directives identified in this BMPP. Any proposed changes to this BMPP shall be submitted to Grays Harbor County for review and approval prior to implementation.

SECTION 7.0 CONCLUSION

In addition to the elements of hazardous waste handling and integrated pest management plan (IPM) relating to landscape maintenance, general hazardous waste handling and IPM should be used to avoid potential impacts to groundwater. Numerous publications are available relating to both of these topics, including information that is beyond the scope of this document. Attached to this BMMP are a number of documents and information sources from the Washington State Department of Ecology and Washington State University relating to household hazardous waste, automotive waste, and IPM. If you have questions concerning proper hazardous waste handling, please contact the Grays Harbor County Environmental Health Division at (360) 249-4413 or www.co.grays-harbor.wa.us, or the Washington State Department of Ecology. For additional information concerning IPM, please contact the County's Environmental Health Division or the Washington State University Co-Operative Extension IPM Program at http://ipm.wsu.edu/index.html.

SECTION 8.0 ACKNOWLEDGEMENT

Grays Harbor County wishes to state our appreciation to Ken Brogan, Gary Anensen, Capitol Contracting, Insight Geologic LLC, and Thurston County in the preparation of this document.