

**Lummi Nation Wellhead Protection Program  
Phase II**



May 1998

**LUMMI NATION WELLHEAD PROTECTION PROGRAM  
PHASE II**

**Prepared For:  
Lummi Indian Business Council**

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**Prepared By:  
Shandra Fitzpatrick, Water Resource Planner**

**Maps Provided By:  
Brenna Sterling, Lummi GIS Specialist**

**Reviewed By:**

**Leroy Deardorff  
Jeremy Freimund  
Andy Ross  
Gene Decoteau  
Victor Solomon  
Ralph Jefferson  
Joe Finkbonner  
Tam Dixon  
Judy Bush  
Mike MacKay**

**Lummi Environmental Director  
Lummi Water Resource Manager  
Lummi Water Resource Specialist  
Lummi Sewer District Manager  
Lummi Sewer District Field Superintendent  
Lummi Chief of Police  
Lummi LIFE Center Director  
Lummi Health Policy Analyst  
Lummi Lead Attorney  
Lummi Fish Biologist**

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## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	3
1. INTRODUCTION .....	4
2. COMMUNITY INVOLVEMENT .....	7
2.1 Community Education and Involvement .....	7
2.2 Off-Reservation Community Involvement.....	9
3. SPILL RESPONSE PLAN .....	10
3.1 Hazardous Material Emergencies .....	10
3.2 Vulnerability of Lummi Reservation .....	11
3.3 Emergency Resources Available .....	12
3.4 Chain of Command .....	13
3.5 Lummi Natural Resource Department Oversight .....	13
3.6 Relationship to Other Plans .....	14
4. IDENTIFYING WELLHEAD PROTECTIVE MEASURES .....	18
4.1 Definitions .....	18
4.2 Tribal and Non-Tribal Plans .....	20
4.3 Recommended Protective Measures .....	20
5. ACTION PLAN 1998-2000.....	21
5.1 Lummi Wellhead Protection Ordinance .....	21
5.2 Community Involvement .....	21
6. SUMMARY .....	23
7. REFERENCES .....	24
APPENDICES	
Appendix A: <i>Squol Quol</i> Article	

*LIST OF MAPS*

Map 1.1 Wellhead Protection Zones.....	6
Map 3.1 Public Roads.....	15

*LIST OF FIGURES*

Figure 3.1 Order of hazardous spill notification.....	13
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*LIST OF TABLES*

Table 3.1 Emergency Spill Notification List.....	16
Table 3.2 Natural Resource Call-down List .....	16
Table 3.3 Additional Emergency Numbers .....	17

## **EXECUTIVE SUMMARY**

The overall purpose of the Lummi Nation Wellhead Protection Program is to protect the ground water resources of the Lummi Reservation (Reservation) from contaminants which may have any adverse effect on the health of persons or the integrity of the ground water resources of the Lummi Nation. The wellhead protection program is a proactive approach by the Lummi Nation to prevent contamination of ground water resources by pollution and reduce risks that the Lummi Nation's ground water resources will become impaired or otherwise unusable as the primary water supply for the Lummi Nation and residents of the Reservation (LIBC 1997).

The purpose of this report is to document the status of Phase II of the Lummi Nation Wellhead Protection Program. Phase I, which is comprised of a susceptibility assessment and the development of contingency and public involvement plans, was completed in November 1997 and is documented in the Lummi Nation Wellhead Protection Program Phase I report (LIBC 1997). This Phase II report documents the implementation of the community involvement plan, the spill response planning effort, the development of protective measures, and an action plan through the year 2000. Phase III is the final phase of the Lummi Wellhead Protection Program. Phase III will include developing and implementing the protective measures and the public education measures identified in this phase of the program.

This Phase II report is organized into seven sections. The seven sections are:

- Section 1 is an introductory section.
- Section 2 describes community involvement.
- Section 3 reviews spill response planning.
- Section 4 presents identified protective measures.
- Section 5 discusses the 1998-2000 action plan.
- Section 6 summarizes the Phase II portion of the Lummi Wellhead Protection Program.
- Section 7 lists references cited in this report.

## 1. INTRODUCTION

The purpose of this Phase II report is to document the status of the Lummi Nation Wellhead Protection Program. This report will:

- summarize the status of the community involvement plan;
- document the spill response planning effort;
- report on the development of wellhead protective measures; and
- identify actions that will be taken during the 1998-2000 time period.

The Lummi Nation's Wellhead Protection Program is a project of the Lummi Natural Resources Department (LNR), a department of the Lummi Indian Business Council (LIBC), the governing body of the Lummi Nation, a federally recognized Indian Tribe. The Wellhead Protection Program is divided into three phases. Phase I is comprised of a susceptibility assessment and the development of contingency and public involvement plans. The first phase was completed in November 1997 and is documented in the Lummi Nation Wellhead Protection Program Phase I report (LIBC 1997). This Phase II report documents the implementation of the community involvement plan, the spill response planning effort, the development of wellhead protective measures, and an action plan through the year 2000. Phase III will include developing and implementing the protective measures and the public education measures identified during Phase II of the program.

The two wellhead protection areas identified during Phase I of the Lummi Wellhead Protection Program will be the geographic focus of planning efforts (Map 1.1). Area 1 is located on the Lummi Peninsula and includes most of the southern upland area. Area 2 is located at the northwestern part of the Reservation. This area encompasses the northern upland area of the Reservation and extends to about 3 miles north of the Reservation boundary (LIBC 1997). The flood plain of the Lummi and Nooksack rivers was not included as a critical aquifer area because the ground water is saline in these areas and is not suitable for ground water development (Cline 1974).

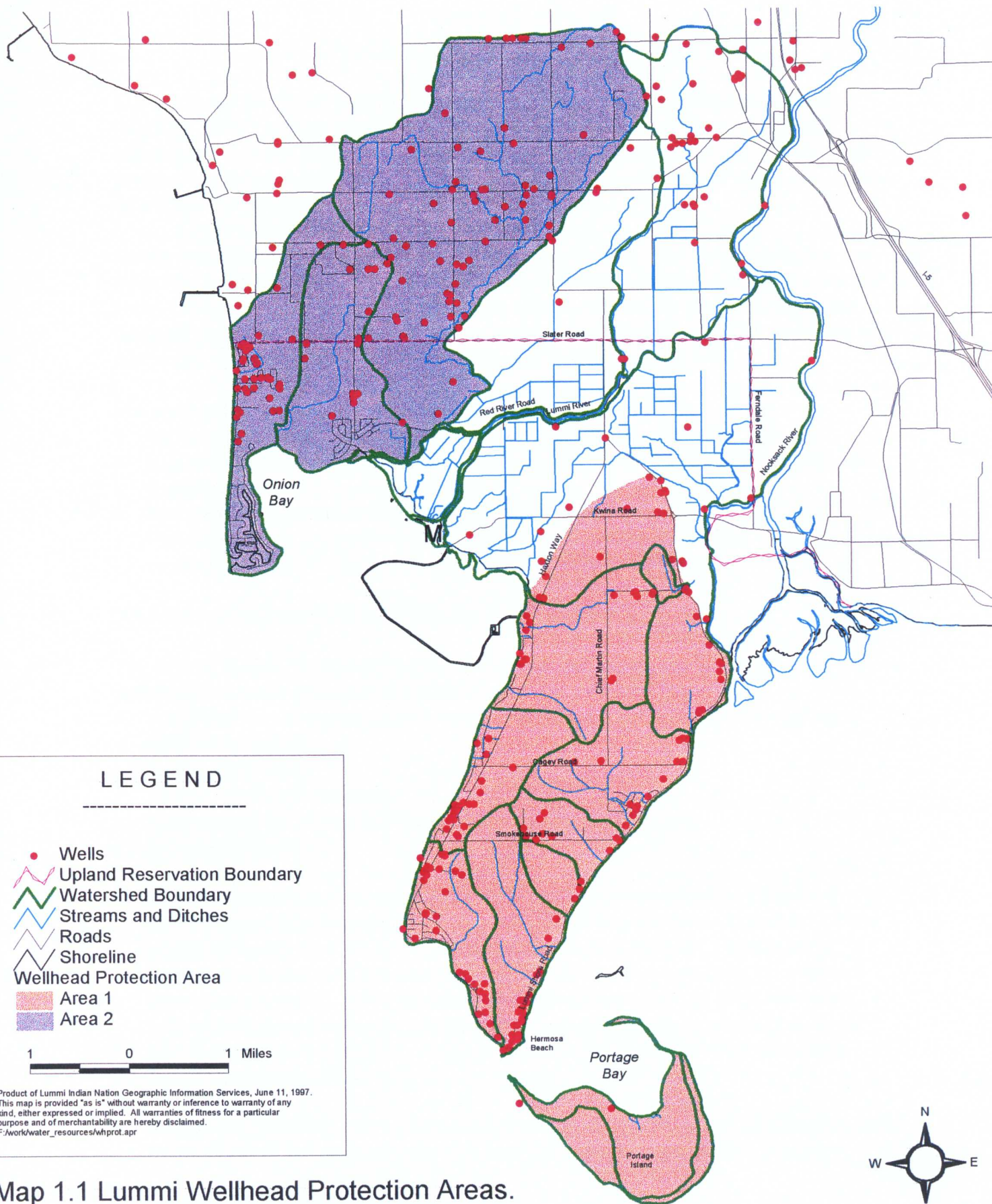
Community involvement, spill response planning, and the development and implementation of protective measures are key components of the wellhead protection program for a number of reasons including:

- Community education and outreach that is effective, targeted, and persuasive is vital to changing the behavior of many individuals who collectively contribute to pollution;
- Having a good spill response plan in place ultimately leads to proactive prevention due to a better understanding of the consequences of improperly stored or handled hazardous substances; and
- Defining and implementing effective wellhead protective measures is a key method to achieve the program goal of preventing ground water contamination through specific outlined procedures.

During Phase I, an inventory of potential contaminant sources was conducted. This inventory and other elements of the susceptibility assessment are the basis for spill response planning, community education, and the identification of wellhead protective measures during this second phase of the program (Phase II).

This Phase II report is organized into seven sections. The seven sections of this report are:

- Section 1 is an introductory section.
- Section 2 describes community involvement.
- Section 3 reviews spill response planning.
- Section 4 presents identified protective measures.
- Section 5 discusses the 1998-2000 action plan.
- Section 6 summarizes the Phase II portion of the Lummi Wellhead Protection Program.
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Map 1.1 Lummi Wellhead Protection Areas.

## 2. COMMUNITY INVOLVEMENT

Education and public involvement are essential elements of any wellhead protection program. While regulations and enforcement are important, implementing public education efforts is a proactive approach to protecting the ground water. Targeted and persuasive education and outreach is vital to changing the behavior of many individuals who collectively contribute to pollution (Ecology 1992).

Before community members can be motivated to participate in program activities, they must first be aware of potential sources of ground water contamination and be educated about what they can do to prevent it. Public education activities should therefore be designed to involve and encourage the community to become aware of the problems and take action when appropriate to solve specific problems (Ecology 1992).

For wellhead protection, it is important that people are aware of:

- the value of wellhead protection and how it benefits the community;
- how current or proposed wellhead regulations/ordinances affect their property and community;
- how they can ensure the safety of the ground water supply; and
- how they can get involved in wellhead protection in their community (i.e., opportunities for volunteer projects and/or community events).

### 2.1 COMMUNITY EDUCATION AND INVOLVEMENT

The Lummi Nation Wellhead Protection Program will inform and involve the community through a variety of methods including:

- a wellhead protection committee which will guide community education efforts;
  - slide presentations;
  - newspaper articles;
  - posters, flyers and brochures;
  - presentations at schools and the Northwest Indian College; and
  - community events.
- 
- **Slide Presentations:** An informative and technical slide presentation has been developed and was presented to the Lummi Wellhead Protection Committee. This presentation will be used in coming months to educate the LIBC commissions, industry personnel, and Whatcom County officials. On advice from the wellhead protection committee, a less technical slide presentation is being prepared which will educate school children, special interest groups, and the community at large (the General Council (eligible voting members of the Lummi Nation) and other Reservation residents).
  - **Newspaper Articles:** Newspaper articles will be an important part of educating and informing the Lummi community. A series of monthly news articles is being

prepared that will appear over the next year in the Lummi monthly newspaper, *Squol Quol*. The first article has been drafted as an introductory “question and answer” feature (Appendix A). News articles will follow regarding the effects of pollution and the progress of the Lummi Wellhead Protection Program development effort.

- **Posters, Flyers, and Brochures:** Posters, flyers, and brochures are a way that complex information can be made easier to understand. Posters and handouts can provide education opportunities at presentations, community events, in information packets, and/or by being placed at strategic locations. Posters, flyers, and brochures will be assembled as needed by the Lummi Wellhead Protection Committee.
- **Schools:** As children are very effective communicators of environmental protection messages, it is important to provide them with fun information and tools. The Lummi elementary school and the Northwest Indian College have expressed interest in working with the Lummi Natural Resources Department on water quality and similar projects and these projects will be designed as required. Projects that children can do at home, word games and interesting facts about water have already been provided to the “Kids Page” section of the *Squol Quol*.
- **Community Events:** Community events provide an opportunity to educate many people at one time. One event that can bring people together for a positive cause is to sponsor a “hazardous household waste collection day”. Whatcom County has stated their willingness to provide support for this event. Other events such as the Lummi Nation Stommish Days festival or environmental events can have volunteers on hand to answer questions in conjunction with posters, brochures, and hands-on displays.
- **Lummi Wellhead Protection Committee:** A wellhead protection committee comprised of LIBC personnel has been formed to help guide this process. The input from committee members is the source of a large percentage of the ideas presented in this report. The invited Wellhead Protection Committee members are listed below. Asterisks indicate people who have participated in one or more committee or subcommittee meetings.
  - \* Gene Decoteau, Manager - Lummi Water and Sewer District
  - \* Victor Solomon, Field Superintendent - Lummi Water and Sewer District
  - Al Scott Johnnie, Director - Lummi Cultural Department
  - \* Clayton Finkbonner, Director - Lummi Economic Development Department
  - Bob Brown, Lummi Superintendent of Education
  - \* Ralph Jefferson, Lummi Chief of Police
  - \* Gordon Scott, Manager Land Development - Lummi Planning Department
  - \* Joe Finkbonner, Lummi Indian Family Enrichment Center Director
  - \* Leroy Deardorff, Lummi Environmental Director, LNR
  - \* Jeremy Freimund, Lummi Water Resource Manager, LNR
  - \* Shandra Fitzpatrick, Lummi Water Resource Planner, LNR

Shandra Fitzpatrick is the lead technical staff person assigned to the program and Leroy Deardorff is the lead policy staff person. Ultimately, all of the committee members are responsible for the success or failure of the Lummi Wellhead Protection Program.

## **2.2 OFF-RESERVATION COMMUNITY INVOLVEMENT**

Since ground water does not follow private property or political boundaries, it is important that off-Reservation persons be educated about how their actions may also impact ground water resources on the Reservation. Similarly, non-tribal members who live within the exterior boundaries of the Reservation need to be educated on how individual and collective actions can impact ground water resources on the Reservation. The Lummi Natural Resources Department will meet with industries bordering the Reservation to exchange information and describe the Lummi Wellhead Protection Program. County officials may be part of the presentations because land under county jurisdiction is located within and adjacent to wellhead protection areas. Special interests may request presentations, and posters and brochures that are developed will be made available for off-Reservation events.

### 3. SPILL RESPONSE PLAN

The primary objective of a hazardous materials emergency response plan (spill response plan) is to minimize any adverse consequences of incidents involving hazardous materials. Minimizing adverse consequences of spills is accomplished by providing timely and competent response in a coordinated manner (Pipestem 1993). Having a plan in place and practicing appropriate responses to hazardous spills can prevent or minimize ground water contamination, ensures the highest quality water supply feasible, and protects from future costly clean-up or the need to find expensive alternate sources. Having a good spill response plan in place ultimately leads to proactive prevention due to better understanding of the consequences of improperly stored or handled hazardous substances.

#### 3.1 HAZARDOUS MATERIALS EMERGENCIES

Hazardous materials are substances which are toxic, corrosive, flammable, and/or explosive (EPA 1989). This is a general description of hazardous materials that encompasses the many interconnected federal regulatory definitions. In many instances, hazardous materials have the potential to cause injury to life and/or damage to ground water supplies. Hazardous materials may also be released as a secondary result of natural disasters such as earthquakes and floods.

Hazardous materials on or near the Reservation that have the potential to be involved in accidental releases include:

- household materials;
- sewage;
- agricultural livestock wastes and pesticides;
- petroleum products; and
- chemicals used for business, industries, and municipalities.

Emergencies are situations or occurrences of a serious nature, developing suddenly and unexpectedly, and demanding immediate action. Three interrelated steps of emergencies are preparation, response, and recovery.

- **Preparation:** Preparation is having plans and response materials in place before an emergency occurs. Preparedness can reduce the chances that an emergency will occur and can also reduce the extent of a hazardous spill.
- **Response:** Response is how quickly a community can react to an emergency and should improve with preparedness. Rapid response is very important for reducing the impacts of a hazardous materials emergency.
- **Recovery:** Recovery is how well events are handled to return the environment to a pre-accident condition. In general, recovery costs are minimized if the preparedness and response steps are well performed.

### **3.2 VULNERABILITY OF THE LUMMI RESERVATION**

Spills happen in the course of routine daily commerce anywhere hazardous materials are handled or transported (King County Local Emergency Planning Committee 1997). The largest operations using hazardous materials near the Reservation are two petroleum oil refineries and an aluminum smelter located just north of the Reservation. Excluding marine and rail transportation, the main transportation routes to and from these operations include Slater Road (which traverses the northern boundary of the Reservation - see Map 3.1). These and other nearby industries may also be the source of air emission releases which could impact Reservation water resources. So far, the ground water has not shown impairment from any accidental release of hazardous air emissions.

The Lummi Sewer District operates two sewage treatment plants on the Reservation. One of these treatment plants is located in the Northwest portion of the Reservation and the other is located on the Southwest tip of Lummi Peninsula, both within wellhead protection zones. The District personnel must be prepared to respond to possible sewer line breaks or a spill of chemicals or bio-solids on-site or during transport. Chemicals, household hazardous wastes, gasoline, and other automotive and general hazardous materials found on the Reservation can also be accidentally released from several small businesses, farms, municipalities and/or private homes during daily activities. To date, the Lummi Nation has not suffered any recorded hazardous materials accident on Reservation that would impact the ground water resources. Future residential and economic growth on the Reservation, in the Cherry Point Industrial zone, and in the area north of the Reservation will increase the risk of a hazardous material emergency on the Reservation.

Federal laws such as Title III of Superfund Amendments and Reauthorization Act of 1986 (SARA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Federal Emergency Management Act (FEMA), and Occupational Safety and Health Administration (OSHA) require handlers or transporters of hazardous materials to report dangerous materials and to have an active spill response plan prepared (National Response Team 1987). In the event of an accident, the cost of clean-up lies with the facility or transporter involved (National Response Team 1987). Having site specific plans in place aide in containment during the critical initial moments following an unplanned release.

Plans to address emergency situations have been written or are in the process of completion by Lummi government departments and Reservation facilities. These specific site plans will be included within a Lummi Reservation Comprehensive Emergency Management Plan being developed by the Lummi Indian Family Enrichment (LIFE) Center. It is the responsibility of the Lummi Planning Department to ensure that Reservation business comply with applicable hazardous waste and storage regulations.

### 3.3 EMERGENCY RESOURCES AVAILABLE

Lummi Law and Order personnel are trained as first responders. As first responders, they are trained to determine the magnitude of a hazardous substance incident and to initiate the contact with appropriate emergency personnel. This training, however, does not allow the Lummi Law and Order personnel to participate in hazardous material clean-up operations (OSHA 1926.65). Due to lack of money, equipment, and trained personnel, the Reservation depends on off-Reservation services to provide response to hazardous spill accidents. As funds become available, the Lummi Nation may secure resources and the trained personnel necessary to actively participate in the response and recovery steps of hazardous material emergencies.

Off-Reservation resources that respond to hazardous material emergencies include:

- **US Environmental Protection Agency (EPA):** The EPA is responsible for management of hazardous waste spills that occur on tribal lands. The magnitude of the spill will decide what type of response and resources would be needed.
- **Washington State Department of Ecology (Ecology):** The EPA and Ecology spill response teams work together on many hazardous waste accidents within Washington State.
- **Whatcom County Department of Emergency Management (DEM):** The DEM operates an emergency hazardous spill response vehicle which can aide in clean-up and transport of minor spills. The DEM also has the capabilities through their command center to quickly access information that will help mobilize appropriate equipment and personnel efficiently.
- **Washington State Patrol (WSP):** The WSP personnel are trained as incident commanders and in hazardous materials response.
- **Whatcom County Fire Department Specialized Emergency Response Program (SERP):** The SERP team is trained in hazardous material response especially as it pertains to situations threatened by fire and explosive conditions.
- **US Coast Guard:** The US Coast Guard deal with hazardous spills that occur in marine waters. While not directly related to possible spills affecting Reservation ground water resources, they may be called upon depending on the severity and location of a spill.
- **Industrial Facilities:** All facilities that handle or store hazardous materials in quantities over certain thresholds, as defined by law, are required to have an active spill response plan in place and the equipment to effectively contain a spill. Because chemical industry representatives can be especially knowledgeable during the planning process, and because many chemical plant officials are willing and able to share equipment and personnel during a response operation, they may be called upon for assistance.

### 3.4 CHAIN OF COMMAND

- **Lummi Law and Order:** Lummi Law and Order, due to geographical proximity and staffing levels, will be the first responder in many cases to a scene of an accident on-

Reservation. Their responsibility lies with securing the area, controlling traffic, and notifying appropriate response personnel (Table 3.1).

- **911:** 911 will be an initial contact by Lummi Law and Order to mobilize local response vehicles. Should 911 be contacted before Lummi Law and Order, 911 personnel will initialize phone contact with Lummi Law and Order.
- **EPA:** The Hazardous Spill office of the Seattle EPA will be notified after 911.
- **Ecology:** Many times the EPA and Ecology spill response sections work closely together on accidental releases in Washington State. The EPA hazardous waste section states that a call to Ecology after EPA is notified may speed response efforts.

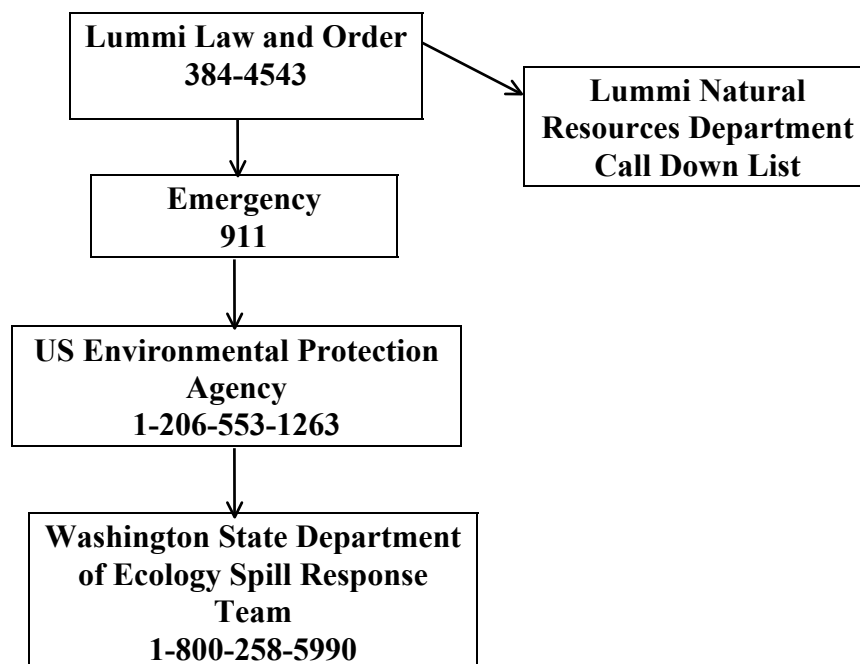


Figure 3.1 Order of hazardous spill notification

### 3.5 LUMMI NATURAL RESOURCE DEPARTMENT OVERSIGHT

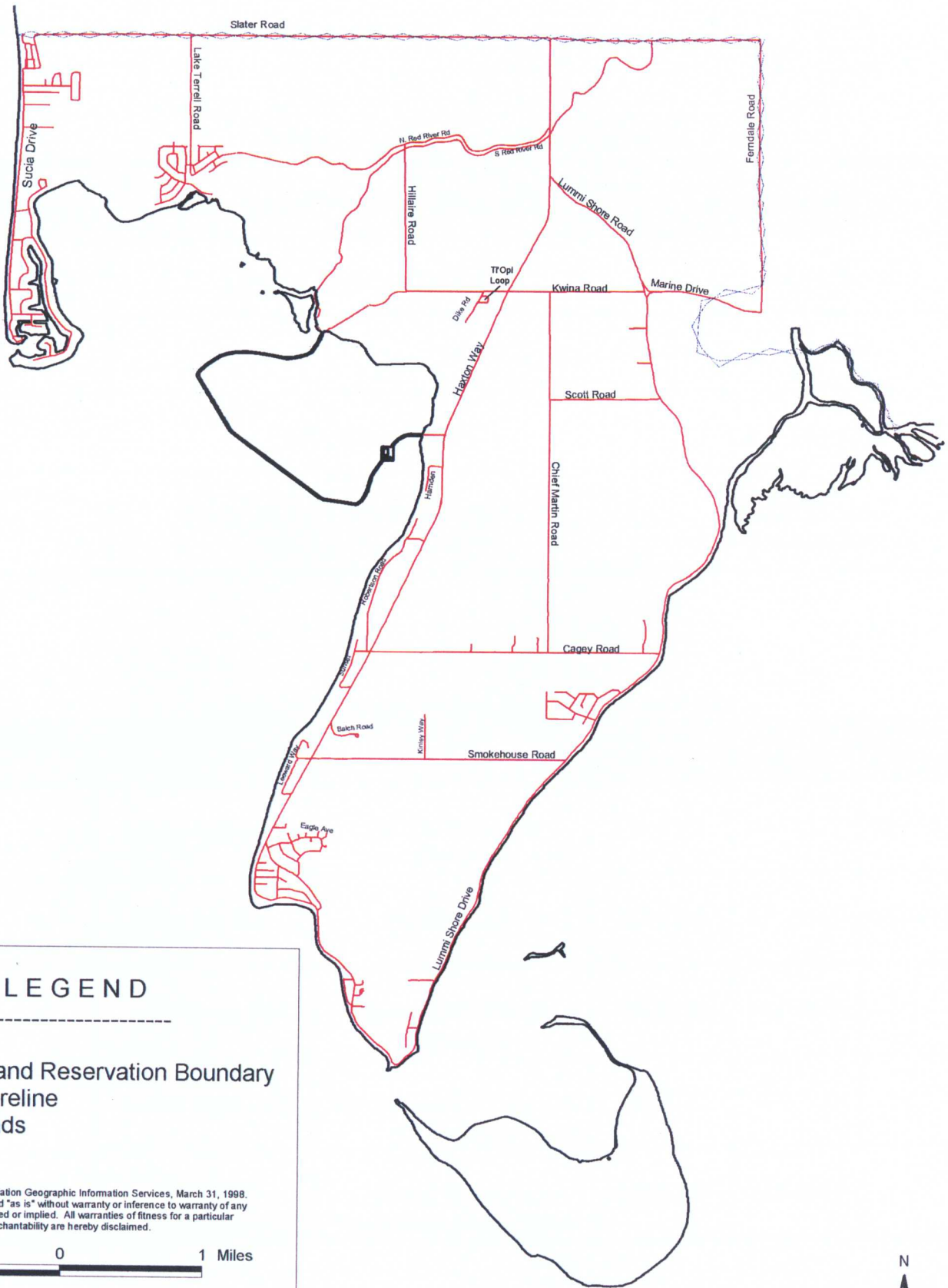
It is important that the expertise of the LNR be available to answer questions that emergency personnel may require. Although it would be optimal to have Lummi technical staff that know the physical characteristics of the Reservation on-site to control resource damage, the OSHA regulations (1926.65(e)7) forbid untrained personnel from physically participating in recovery operations. The OSHA regulations require that only personnel who have completed a 40-hour hazardous material safety course be allowed on-site of a hazardous material spill or other emergency. Once the 40-hour training course has been completed, an 8-hour refresher course must be successfully completed each subsequent year to retain certification.

Though LNR cannot be on-site during a hazardous material clean-up they should be informed by Lummi Law and Order as soon as possible if natural resources are

endangered. The list of contact telephone numbers from the LNR are presented in Table 3.2.

### **3.6 RELATIONSHIP TO OTHER PLANS**

The LIFE Center is currently taking the lead on preparing a comprehensive emergency management plan for the Reservation. The plan is designed to address any disaster or emergency situation that may occur on-Reservation. A series of meetings with a cross section of Lummi personnel have occurred to shape and guide the process. The comprehensive emergency management plan describes the mechanisms and structures by which the Lummi Nation will mobilize resources and coordinate response with local, state, and federal agencies. All facility, departmental, and program emergency response plans will be contained within the comprehensive plan. The emergency spill response plan procedures for the wellhead protection program will complement and be consistent with the comprehensive emergency plan for the Reservation.



Map 3.1 Public Roads

Table 3.1 Emergency spill notification list

<b>ORDER</b>	<b>EMERGENCY RESPONSE AGENCY</b>	<b>24-HOUR PHONE</b>
1	LUMMI LAW AND ORDER	384-4543
2	911	911
3	EPA REGION 10	1-206-553-1263
4	WASHINGTON DEPARTMENT OF ECOLOGY (Ecology)	1-800-258-5990 1-206-649-7000

Table 3.2 Lummi Natural Resource call down list

<b>ORDER</b>	<b>NAME</b>	<b>TITLE</b>	<b>WORK PHONE</b>	<b>HOME PHONE</b>	<b>CELL PHONE</b>
1	Merle Jefferson	Natural Resource Director	384-2225	647-1577	961-7684
2	Mike MacKay	Fish Biologist	384-2230	671-0357	961-4119
3	John Thompson	Resource Protection Manager	384-2207	647-9246	
4	Leroy Deardorff	Environmental Program Director	384-2272	758-7181	
5	Richard Vanderhorst	Natural Resources Program Administrator	384-2228	354-5367	

Table 3.3 Additional emergency numbers

AGENCY/FACILITY	BUSINESS PHONE	24-HOUR PHONE
Lummi Water and Sewer	758-7167 715-7526 (pager)	733-0945 (Lummi Law and Order)
Whatcom County Department of Emergency Management (DEM)	676-6681	676-6681 911
US Coast Guard National Spill Response Center	1-800-424-8802	1-800-424-8802
Northwest Air Pollution Authority	1-360-428-1617	
US Department of Transportation	1-202-366-4900	
Occupational Health and Safety Administration (OSHA)	1-206-553-5930	
Puget Sound Energy	1-888-225-5773	
ARCO Refinery	676-2637	1-800-710-1952 (pager)
TOSCO Refinery	384-1011	384-8351
INTALCO	384-7301	384-7314
US Fish and Wildlife	733-0963	
Washington State Department of Natural Resources	1-800-527-3305	1-800-527-3305
National Oceanic and Atmospheric Administration (NOAA)	734-2176	
Washington State Patrol	738-6215	384-1053
Whatcom County Fire Department-Specialized Emergency Response Team (SERP)	676-6819	911

#### 4. IDENTIFYING WELLHEAD PROTECTIVE MEASURES

Defining and implementing effective wellhead protective measures is the primary means to achieve the program goal of preventing ground water contamination. Wellhead protection measures will include land use ordinances, permit review requirements (e.g., requirements that consideration be given to all potential contaminant sources within the expected wellhead area of new water wells), standards for new industry and businesses, purchase of property, water conservation, household hazardous waste collection, public education initiatives, spill response planning, decommissioning abandoned wells or wells not intended for future use, and similar activities (LIBC 1997).

A Wellhead Protective Measures sub-committee held two meetings to establish what a cross section of LIBC personnel felt were important methods to protect the ground water resources on the Reservation. The committee members were provided with definitions of protective measures and with examples of ordinances and plans from other tribal and non-tribal governments. The final meeting provided direction toward establishing measures that could be written into an ordinance. The Wellhead Protective Measures sub-committee was comprised of:

Gene Decoteau, Lummi Water and Sewer  
Victor Solomon, Lummi Water and Sewer  
Ralph Jefferson, Lummi Law and Order - Chief of Police  
Evan Morse, Lummi Economic Development Department  
Todd Tucker, Lummi Land Development Specialist, Planning Department  
Joe Finkbonner, Lummi Indian Family Enrichment Center Director  
Leroy Deardorff, Lummi Environmental Program Director, LNR  
Jeremy Freimund, Lummi Water Resource Manager, LNR  
Shandra Fitzpatrick, Lummi Water Resource Planner, LNR

##### 4.1 DEFINITIONS

Definitions of protective measures that were provided to the Wellhead Protective Measures sub-committee members were the following

- **Land Use Ordinances:** Land use ordinances would establish rules and regulations related to the use of land located within the exterior boundaries of the Lummi Reservation. Regulations within wellhead protection zones may include prohibiting certain activities such as landfills, salvage yards, underground storage tanks, large impervious surfaces, high risk industry, and/or disposal of solid wastes. Ordinances may also allow certain activities provided that they meet quality standards. These activities could include timber harvest, biosolids application, herbicide/pesticide application, agriculture, and septic systems. Land use ordinances are amendments encompassed within the zoning ordinances.
- **Permit Review Requirements:** The Lummi Technical Review Committee (TRC) is responsible for ensuring that tribal and federal ordinances or laws are complied with in land use activities. The TRC provides input to the Lummi Planning Department which must issue a conditional use permit prior to land use activities on the

Reservation. The TRC can impose requirements on development or construction within wellhead protection areas. The permit review process can restrict uses that may cause ground water contamination and/or segregate land uses within critical aquifer areas. Examples of some permit conditions include requiring the use of certain types of drainage and infiltration processes, siting requirements for construction, and/or septic tank requirements.

- **Standards for New Industry and Business:** Standards can be imposed for new industry or business through ordinances or through the permitting processes. Industry or business can be held responsible for spill response measures, limiting on-site handling or storage of certain hazardous materials, and/or of storm water runoff collection and treatment.
- **Purchase of Property:** Property can be purchased in critical aquifer recharge areas to protect the aquifer from possible negative impacts. Some purchased areas may serve dual purposes such as protecting wetland areas, providing open space, and/or protecting wildlife habitat.
- **Water Conservation:** Water conservation can be accomplished using several methods including: establishing and enforcing water efficiency standards, pricing water so that substantial costs are incurred if more water than an established maximum is used, limiting pumping rates, water reclamation and reuse, and public education.
- **Household Hazardous Waste Collection:** Collection of hazardous waste is used to reduce the accumulation of hazardous materials within wellhead protection areas and also within the Reservation as a whole. Several times a year the Lummi Nation can sponsor a “hazardous waste collection day” which can be an enjoyable community event. Whatcom County has stated their willingness to work and provide support for a Lummi Household Hazardous Waste Collection program.
- **Public Education:** Public education can be one of the most useful tools of wellhead protection by informing residents of the connection between land use and water quality. Public education efforts require some degree of administrative support for activities such as flyer development, organizing and conducting public meetings, environmental festivals, working with school children, and hazardous waste collection days. Also, visual reminders such as signs designating wellhead protection areas can be effective tools for public awareness. Public education is an important tool regardless of which other protective methods are used.
- **Signs:** Signs posted at major roadways entering wellhead protection zones compliment and reinforce other on-going water quality education activities. Increased public awareness of important protection zones can lead to changes in behavior and a proactive participation by the community.
- **Spill Response:** Spill response plans provide knowledge on the proper handling and disposal of toxic and hazardous materials. These plans also ensure appropriate response in the event of contaminant releases or other emergencies within wellhead protection areas. Spill response can be given additional support by adopting health/zoning ordinances requiring registration and inspection of all businesses within the Reservation boundary that use toxic/hazardous materials above a certain threshold.

- **Decommissioning abandoned wells:** An abandoned well is any well that is no longer in use. Abandoned wells, besides being a physical danger to people and animals, can provide a direct pathway for contamination to quickly enter the ground water.

## **4.2 TRIBAL AND NON-TRIBAL PLANS**

The Wellhead Protective Measures sub-committee reviewed existing plans from several other jurisdictions. Plans provided to sub-committee members were:

- Swinomish Indian Tribal Community Draft Wellhead Protection Ordinance,
- Kitsap County Wellhead Protection Plan,
- Whatcom County Checklist for Water Availability,
- Town of Stratham Aquifer Protection District, and
- Massachusetts Department of Environmental Protection Draft Drinking Water Supply Protection Area Strategy.

## **4.3 RECOMMENDED PROTECTIVE MEASURES**

The Lummi Wellhead Protective Measures sub-committee determined that all defined measures contained ideals that should be included in a comprehensive wellhead protection program. While education and the use of Best Management Practices (BMPs) were considered strong methods to achieve long term goals, regulations and the development of an ordinance were also seen as necessary tools for an effective program.

Due to the incomplete knowledge that currently exists about Reservation hydrogeology, the presently identified wellhead protection areas will continue to be redefined as technical studies become available. The future wellhead protection areas will contain more localized critical protective areas within these larger zones. To implement protective measures that may require refinement over time, an administrative ordinance will be drafted that references a technical document. Ordinance development is a lengthy process, not subject to change easily or to adaptive management. By basing the ordinance on a technical document, the protective measures can be modified as more information becomes available. Within the administrative ordinance, civil penalties will be enacted with fines reverting to a fund that will finance ground water protection projects.

## **5. 1998-2000 ACTION PLAN**

The long term goal of wellhead protection cannot be achieved overnight. Therefore, determining short term objectives within the framework of a larger plan becomes critical to reaching the ultimate goal (EPA 1993). Setting achievable goals has allowed for the Lummi Wellhead Protection Program to successfully complete two of the three phases in the program. Phase III, the final phase, consists of the development and implementation of a wellhead protection ordinance and continuing community involvement efforts.

### **5.1 LUMMI WELLHEAD PROTECTION ORDINANCE**

The biggest task facing the Lummi Wellhead Protection Program in the near future will be to draft and implement a wellhead protection ordinance. The Wellhead Protection Ordinance will be fully incorporated into the Lummi Comprehensive Water Resources Management Plan, will be consistent with both the land use plan now under development and federal guidelines, and will comprise a new chapter in the Lummi Water Code. Measures that have already been completed toward this goal are the identification of wellhead protective measures and the review of ordinances and wellhead protection plans from other tribal and non-tribal governments.

The Environmental Protection Agency (EPA) has provided grant funds to support the development of a Lummi Wellhead Protection Ordinance. The first step of this effort will be to research and write an ordinance development plan. In addition to this ordinance development plan, the steps needed to achieve final approval and adoption of the Lummi Wellhead Protection Ordinance, which is anticipated to occur by February 2000, are:

1. Review existing ordinances and codes in the Lummi Tribal Code that may affect or be affected by a wellhead protection ordinance.
2. Review Wellhead Protection ordinances developed by other jurisdictions (tribal and non-tribal).
3. Develop a draft Lummi Wellhead Protection Ordinance.
4. Develop a regulations document that the ordinance will reference.
5. Begin the process of obtaining policy approval.
6. Hold public meetings.
7. Finalize and seek adoption by a vote of the Lummi General Council (all voting members of the Lummi Nation).

### **5.2 COMMUNITY INVOLVEMENT**

It is important to continue to inform the public of progress while establishing a wellhead protection program. This information campaign is important so that the community will not only be educated but also allowed the opportunity to voice concerns or suggestions (EPA 1993). Some of the public information and involvement process is intrinsic within the Lummi Water Resource Division procedures even now. Examples of this can be seen in the interactions with community members when field work is being performed, and

through the maintenance of an open door policy where concerned persons may drop-in to speak with technical personnel.

To reach a larger audience, the Lummi Wellhead Protection Program will provide ongoing information dissemination through:

- Articles in the Lummi Nation *Squol Quol* newspaper;
- Slide presentations to the LIBC, LIBC commissions, and to interested groups;
- Interaction with on-Reservation schools;
- Poster presentations at appropriate community events; and
- Contacting and informing off-Reservation sources of the effects their actions may cause to on-Reservation ground water resources.

## **6. SUMMARY**

Phase II components of the Lummi Wellhead Protection Program have been completed. The information from this program will serve as a basis for designing and implementing a wellhead protection ordinance and the associated public education campaign during the next two years (Phase III).

Two wellhead protection areas have been delineated based on the flow boundaries approach and available hydrogeologic mapping. These areas are expected to be better defined in the future as more technical information becomes available. Within these areas, potential sources of contamination have been identified. This inventory of potential contamination sources is a foundation for the development of protective measures.

To protect ground water resources from contamination, it is essential that the community is informed and is involved in processes which may affect them. In addition to news articles, presentations, and community events, public hearings will be held in accordance with LIBC policies and procedures related to ordinance development.

Spill response planning addresses some of the most serious concerns of how to access emergency personnel in the event of a hazardous materials accident. As the Lummi Nation does not have the resources at this time to deal with hazardous material clean-up, the LIBC must currently rely on off-Reservation agencies for protection. It is anticipated that the Lummi Nation will assume greater self sufficiency in hazardous materials emergency management as funds become available.

A wellhead protection ordinance was identified along with other measures as an important process to protect the ground water resources. Drafting of an ordinance will begin with an estimated completion and implementation in the year 2000. This ordinance will be part of a comprehensive Lummi Water Code that is also under development. The revised Lummi Water Code will also include chapters related to storm water management, water quality standards and wetland management.

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## Appendix A: *Squol Quol* Article

## **WELLHEAD PROTECTION**

*A change in the watershed affects our lives...a change that we make in the landscape affects the watershed. It's all connected.*

### **What is a Wellhead?**

A wellhead is the opening in the ground that allows access to underground water supplies.

### **What is Wellhead Protection?**

Wellhead protection are actions taken to prevent contamination of ground water resources. The Lummi Wellhead Protection Program relies on a proactive approach which includes the establishment of protection areas around wellheads and the development of measures to prevent ground water contamination.

### **Why Should the Lummi Nation be Concerned with Wellhead Protection?**

- Over 95% of the water for Lummi Reservation household use is pumped from local wells.
- Due to the location of the Reservation, ground water resources are particularly vulnerable to contamination from sea water intrusion.
- Alternative water sources are expensive.
- One of the salmon hatcheries is dependent on ground water and no suitable alternative source exists on or near the Reservation for salmon incubation and rearing.
- An ample supply of good quality ground water is essential to serve the purposes of the Reservation as the permanent homeland of its people.

### **What are Some of the Greatest Threats to Lummi Reservation Water Resources?**

Salt water intrusion, failing septic systems, private wells, livestock housed next to wells, roads, household hazardous wastes, manure lagoons, and off-Reservation industry.

### **What is Being Done to Protect Our Ground Water?**

The Water Resources Division of the Lummi Natural Resources Department is working with various concerned tribal interests, federal agencies, and private consultants to establish areas needing the greatest protection. A spill response plan to deal with major hazardous waste accidents is being developed, and committees are currently looking at measures that will fit the needs of the Reservation to protect the ground water.

### **Where Can I Find Out More Information?**

By calling the Lummi Water Resource Division during normal work hours (Leroy Deardorff 384-2272 or Jeremy Freimund 384-2212).