

Derry Source Water Protection Plan



**Prepared by the Southern New Hampshire Planning
Commission for the Town of Derry**

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Protection Program**

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Adopted by Planning Board:

Signature of Chair and Date

Record of Plan Updates:

**This Plan should be Reviewed Annually
and Updated Every Three Years**

Date Reviewed	Reviewer	Changes or Comments

“Water promises to be to the 21st century what oil was to the 20th Century: the precious commodity that determines the wealth of nations”

(From *Fortune Magazine*, Shawn Tully May 15, 2000)

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Cover Photo: Ballard Pond Island Pond Road

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I. INTRODUCTION

This plan has been developed utilizing grant funds made available through the New Hampshire Department of Environmental Services (NHDES) 2010 Local Source Water Protection Program. These grant funds were obtained by the Southern New Hampshire Planning Commission (SNHPC) on behalf of the Town of Derry as part of the Commission's regional source water protection initiative. This initiative has been developed to encourage all municipalities within the region to prepare source water protection plans and adopt and implement local ordinances, programs, and practices to protect their drinking water sources.

A. BACKGROUND

Source water protection involves preventing the pollution of the groundwater, lakes, rivers and streams that serve as sources of drinking water for local communities. Communities often take for granted that a plentiful supply of high quality sources of drinking water, whether from groundwater, surface water, or both, will always be available. However, these natural resources are vulnerable to depletion and contamination and need to be protected.

Recognizing the importance of protecting groundwater quality and that a wide variety of activities involving the use of materials that can, if not properly handled, contaminate groundwater, the legislature passed the Groundwater Protection Act (RSA 485-C) in 1991. There have been numerous instances of groundwater contamination in New Hampshire from leaking storage facilities, improper waste disposal, accidental spills, and even from normal use of these materials. Potentially contaminating substances can be more safely managed if certain basic guidelines are followed. The Groundwater Protection Act directed NHDES to adopt rules specifying best management practices (BMPs) for these Potential Contamination Sources (PCSs).

Groundwater is one of the most valuable natural resources within a community and contamination can limit its use and value as a source of drinking water and affect human health. Ensuring safe drinking water supplies and implementation of effective protection relies on the combined efforts of the state, water suppliers, municipalities, businesses, institutions, and individuals whose activities have the potential to affect source water quality. At the local level, municipalities and water suppliers have a key role in managing land uses that affect drinking water quality.

B. PURPOSE AND GOAL

The purpose behind a Source Water Protection Plan is to identify all public water systems, potential vulnerabilities to these systems, and offer guidelines and recommendations to manage potentially contaminating land uses. Both private (domestic) wells and public water systems located in Derry rely upon groundwater as the primary source of drinking water supply. A Public Drinking

Water System is defined as a “system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year” (Env-ws 300 NH Drinking Water Rules).

The goal of this Source Water Protection Plan is to protect the drinking water resources by protecting and preserving the environmental quality of the aquifer around the wells by providing the Town of Derry information (data and maps), guidance, priorities and actions to protect the Town’s groundwater (aquifers) and public drinking water supply sources from contamination.

Approximately half of the Town of Derry and its residents are dependent upon groundwater from community and private wells as the primary source of drinking water. This Source Water Protection Plan (SWPP or the “Plan”) inventories drinking water sources and assesses the threats to groundwater within designated wellhead protection areas, summarizes how the Town is currently working to protect drinking water, and recommends changes to improve upon the current protections in place.

The rest of the Town’s residents are supplied by Manchester Water Works (MWW) which gets its source from Lake Massabesic. The Lake Massabesic water supply is protected under a separate protection program and is not a subject of this Plan.

This Plan contains the following components:

- An overview and inventory of the active public water systems in Derry.
- A delineation of wellhead protection areas (WHPAs) in Derry.
- An inventory of potential contamination sources (PCSs).
- An assessment of risks posed by the PCSs.
- Management and protection recommendations that address identified threats.

C. PLAN APPROVAL, IMPLEMENTATION AND UPDATE

This plan is presented to the Derry Planning Board for its consideration and adoption as an element of the Town of Derry’s updated Master Plan.

The Derry Source Water Protection Advisory Committee has overseen the development of this plan. It is recommended that this committee review this plan annually and prepare a formal update every three years. To assist the town in updating the Plan, an annual review checklist is provided at the front of this document. The Southern New Hampshire Planning Commission (SNHPC) is also available to assist in the update process.

II. PLANNING APPROACH AND METHODOLOGY

Actions taken by water system owners, managers, surrounding landowners, and the municipality are all important in achieving source water protection within the community. A comprehensively developed and implemented Source Water Protection Plan (SWPP) is an important step in protecting groundwater resources from contamination and ensuring that these resources remain available as drinking water.

Elements of this plan are grouped and completed in the following sequence:

Section One: Source Inventory and Delineation

- **Water Supply System Summary Report.** The Water Supply System Inventory is an inventory of all the known existing public water systems actively operating within the community (see Appendix B). This inventory was compiled through a review of records and files, the Source Water Assessment Reports (see Appendix C) prepared by NHDES for each municipality within the state, and local knowledge.
- **Delineation of Wellhead Protection Areas (WHPA)** A **wellhead protection area (WHPA)** is the area surrounding a public water supply well from which water and contaminants are likely to reach the well. DES recognizes WHPAs for community water systems and for non-transient, non-community, water systems, but not for transient systems. WHPA delineation for bedrock wells is typically a fixed radius around the well which is based on the maximum daily volume of water expected to be pumped from the well for the population serviced. More complex hydrogeological studies may also be conducted to identify the surface area around the public water well system(s) that contribute groundwater to the well.¹ The purpose of wellhead protection is to prevent the contamination of groundwater used for drinking water.

In Derry, there are currently a total of **51** WHPAs recognized by NH DES among **36** active public water systems within the community. Some of the active public water systems have multiple wells (typically adjacent to one another) that share one WHPA (see Maps 3A - 3G). All 51 WHPAs have been delineated and mapped as concentric circles surrounding each well in accordance with DES rules. The circles vary from 1,000 to 4,000 feet in radius². The size of the WHPA circles is based upon the production (pumping) volume of the wells as approved or reported to NH DES. The Town of Derry's

¹ There are a number of methods for delineating WHPAs for public water supply wells. The methods range from simple and inexpensive to complex and costly. Grant funds through NH DES are available for refining delineations. Only the WHPAs mapped by NH DES are accounted for in this plan.

² Refer to NH DES Fact Sheet DWGB-12-2, Delineating Wellhead Protection Areas, <http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-12-2.pdf> for more details.

WHPAs are delineated based on hydrogeologic studies conducted in accordance with state rules.

Section Two: PCS and KCS Inventory and Threat/Vulnerability Analysis

- **Potential Contaminant Source (PCS) Inventory.** The Potential Contaminant Source (PCS) inventory identifies businesses, industry, and activities within and in the vicinity of wellhead protection areas that, due to the nature of activity or materials stored and/or used at the location, have the potential to negatively impact drinking water quality.³
- **Known Contaminant Source (KCS) Inventory.** The Known Contaminant Source (KCS) inventory identifies currently active hazardous waste sites where there are documented releases of contaminants or regulated substances to the environment that may have impacted groundwater quality and have not been officially closed (remediated) to NHDES standards. KCS are regulated and directly overseen by NHDES. A list of currently open or active KCSs in Derry is contained in Appendix D.⁴
- **Threat/Vulnerability Analysis.** The Threat/Vulnerability Analysis evaluates how susceptible the groundwater or aquifer within a WHPA is to contamination due to PCSs and KCSs. A vulnerability ranking of “low”, “moderate” or “high” has been assigned based on: 1) the hydrogeological setting; 2) the presence of PCSs and KCSs within the WHPA; and 3) the apparent visible physical risk of the PCS to impact groundwater quality. This Plan does not evaluate currently available groundwater quality data for each of the identified public water wells in Derry. The vulnerability analysis is based upon SNHPC’s field judgment with consideration given to the number of vulnerability rankings found within the NH DES Source Water Assessment prepared for Derry (see Appendix C).

Section Three: Management and Protection Program

- **Management Program.** A Management Program explains current and proposed methods and practices for protecting a community’s drinking water source(s) from the most significant existing or potential threats. It is developed by a local Source Water Protection Advisory Committee consisting of the regional planning commission, the municipality, and interested and knowledgeable parties and consultants. The program begins with a review and identification of current regulatory and management programs in place and evaluates opportunities to improve and expand on existing programs. It may include one or more of the following components:

³ See Section IV.A. for a more detailed discussion and definition of a PCS

⁴ See Section IV.A. for a more detailed discussion and definition of a KCS

- Land use controls (zoning ordinances, site plan regulations, etc.)
- Health ordinance and groundwater reclassification
- BMP management (public or private actions)
- Land conservation (public or private actions), and
- Public education and outreach

In Derry, the Source Water Advisory Committee consists of representatives from the Southern New Hampshire Planning Commission, Department of Public Works (Water and Environmental Divisions), Planning Department, and the Conservation Commission.

This Source Water Protection Plan does not address existing hazardous waste sites or brownfields sites. These sites are addressed through other federal and state programs. In addition, the Advisory Committee recommended that this plan not address groundwater reclassification as the Town's groundwater is currently not classified by the state.

III. PUBLIC WATER SYSTEMS

Town of Derry and its residents are dependent upon both groundwater and surface water as their primary source of drinking water. All groundwater is obtained within Town boundaries. Surface water is supplied by Manchester Water Works (MWW) which draws from Lake Massabesic, located in Auburn and Manchester. The Lake Massabesic Water supply and associated watershed is protected under a separate program. Although it is not a subject of this Plan, it is described in the following section for both supply planning and watershed protection purposes. It is also worth noting that the southeastern part of Derry is located within a watershed for one of the Town of Salem's water supplies.

A. SURFACE WATER – MANCHESTER WATER WORKS

The Town of Derry has a wholesale water supply purchase agreement with Manchester Water Works. MWW services approximately 159,000 people in Manchester and the towns of Auburn, Bedford, Goffstown, Hooksett, Londonderry and Derry. The water comes from Lake Massabesic, which is located in Manchester and Auburn. Derry services approximately 17,000 customers in Town, as well as parts of Londonderry and Windham. Water is stored in a 4 million gallon atmospheric storage tank. Most of Derry's water system is gravity fed; however there are 5 water booster stations which service areas of Derry at higher elevations. As of 2011, Derry had 75 miles of water mains, 4,005 service connections, and 614 fire hydrants (See Figure 1, Page 8 showing Derry's water service area).

B. GROUNDWATER - DERRY PUBLIC WATER SYSTEMS

There are **36** active public water systems located within the Town of Derry identified in this Plan (see *Appendix B: Water Supply System Inventory*). This inventory was compiled using information from the NHDES *Source Water Assessment Report* (Appendix C) and from members of the Derry Source Water Committee who provided updated information and recent changes that occurred since publication of the *Source Water Assessment Report* such as closed or inactive systems and new water lines. In addition, several of the systems identified in this plan utilize more than one well on site (i.e., multiple wells on the property that serve as drinking water sources). There may be other systems located within Derry which are not identified or included in this plan.

The locations of the **36** active public water supply systems within the Town of Derry are shown on Map 1 (Appendix A). Maps 3A-G provides more detail in each section of town. The names of all 36 systems are listed in the following Table 1.

Table 1
Active Public Water Supply Systems Located in the Town of Derry, NH

EPA ID	Name
0613010	Annie Oakley Mobile Park
0612220	Autumn Woods
0612040	Barkland Acres
0617040	Boys Club of Greater Derry*
0616040	Brookstone Park
0618140	Brookstone Park
0619030	Brookstone Park
0615020	Calvary Christian Church
0615040	Circle of Friends
0611010	Derry Water Depot
0612150	Drew Woods
0618120	Dunkin Donuts
0615060	E. Derry Memorial Elem. School
0613050	Frost Resident Co-Op
0612070	Glen Ridge
0612140	Hi & Lo Estates
0617030	Hidden Valley Campground
0616020	Hillside Plaza
0612090	Hubbard Hill*
0618110	Island Pond Convenience
0612170	Maple Haven
0612120	Meadowbrook*
0618100	Metro Market
0612050	Morningside Drive Water Assoc.
0618050	New Leis Garden
0612210	Old Coach Village
0615070	Over the Rainbow Preschool
0618130	Pete's Scoop
0612110	PEU/ Farmstead Acres
0612020	PEU/ Maple Hill Acres*
0612010	PEU/ Oakwood Terrace*
0618090	Promises to Keep
0612230	Rand Shepard Hill
0612080	Redfield Estates
0612130	Richardson Estates
0617060	Robert Frost Farm
0618060	Robert Frost Motor Inn
0613030	Running Brook Mobile Park
0618070	Steve N James Tavern
0613060	The Big W
0612240	Willow Bend
0612160	Woodland at Derry

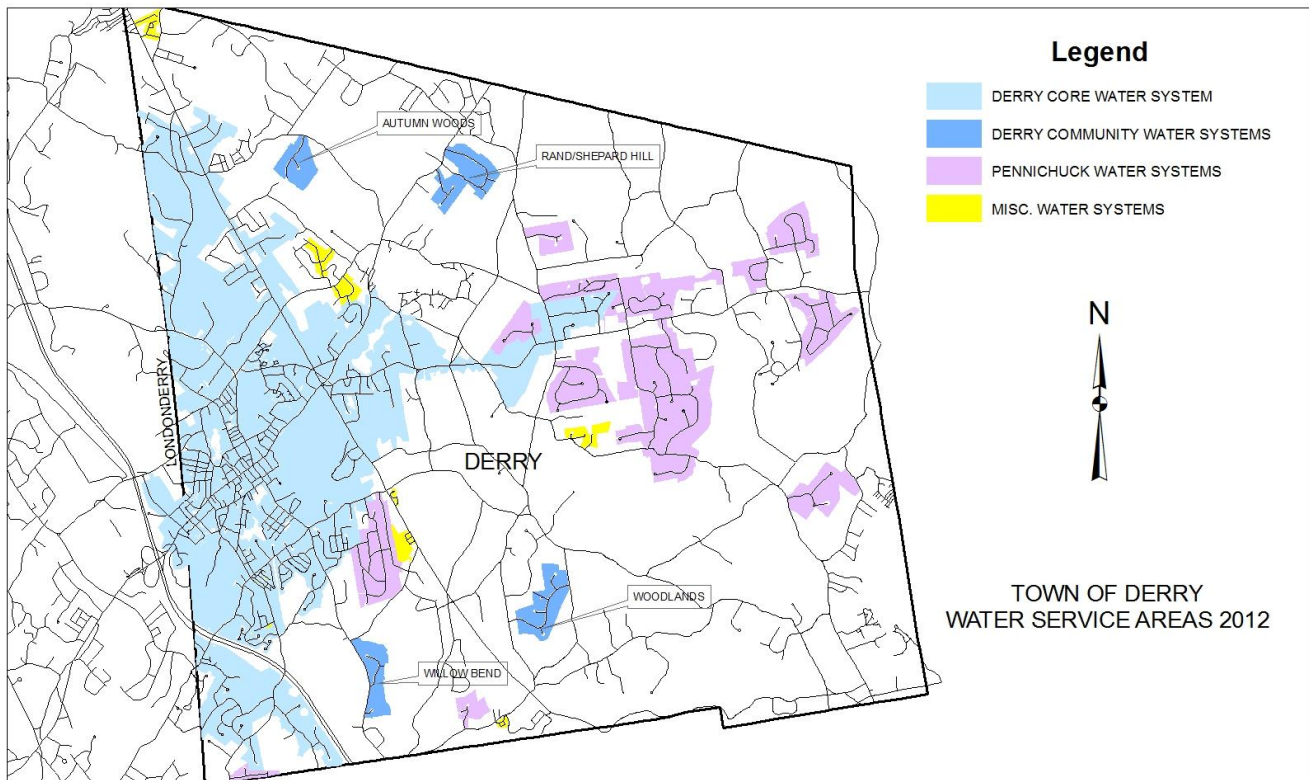
*Recently Inactive System

The NH DES's public water supply system inventory for the Town of Derry and each system classification is included as part of this plan in Appendix B.

C. GROUNDWATER – PENNICHUCK AND PRIVATE WATER SYSTEMS

Some satellite water systems are owned and operated by Pennichuck Water Works. There are also a few privately owned community wells. The following Figure 1 shows areas of Derry serviced by Pennichuck, or with private water systems.

**Figure 1:
Water Service Areas in Derry, NH**



The purple areas highlighted above are satellite water systems owned and operated by Pennichuck Water Works. Many of these systems were acquired from Consumers Water Inc., in 1997. The areas highlighted in yellow are other small private water systems or trailer parks that purchase water through the core system or from onsite community wells. All of Pennichuck's water systems supply water through community wells within these developments.

IV. POTENTIAL AND KNOWN CONTAMINATION SOURCES (PCS & KCS)

A. Potential Contamination Sources

There are many land use activities that pose threats to a community's groundwater. These sources can best be identified through a survey of potential and known contamination sources.

A potential contamination source (PCS), as defined by ENV-Wq 401, is:

Human activities or operations upon the land surface that pose a foreseeable risk of introducing regulated substances into the environment in such quantities as to degrade the natural groundwater quality.

PCSs must be inventoried within the WHPAs for small and large community wells permitted by DES through current state well siting regulations.

The following Table 2 provides a list of land uses identified by the NH DES which are defined as a PCS under the New Hampshire Groundwater Protection Act (RSA 485-C). Many of these PCSs may use regulated substances (such as chemicals, petroleum, lubricants, solvents, paint, and paint thinners. that if released to the ground (through improper storage, handling, spills or leaks), could potentially contaminate the groundwater and ultimately the water supply.

Many of the land uses identified in Table 2 represent various commercial entities and operators, such as manufacturing facilities that use gasoline, solvents, de-greasers or other types of regulated substances.

Auto body repair shops and gas stations are also a common PCS as well as septic systems, transportation corridors due to salt applications, livestock and the use of agricultural chemicals, and the fueling and maintenance of earth moving equipment.

**Table 2:
NH DES List of Potential Contamination Sources**

Potential Contamination Sources (PCS)		
Vehicle Service and Repair shops	General Service and Repair shops	Metal Working Shops
Salt Storage and Use	Snow Dumps	Storm Water infiltration ponds or leaching catch basins
Manufacturing Facilities	Underground or above ground Storage Tanks	Cleaning Services
Waste and Scrap Processing and storage	Food Processing Plants	Transportation Corridors

Septic Systems (at Commercial and Industrial Facilities)	Laboratories and certain professional offices (medical, dental, veterinary)	Use of Agricultural Chemicals
Fueling and Maintenance of Earth moving equipment	Concrete, asphalt, and tar manufacture	Cemeteries
Hazardous Waste Facilities	Livestock	Heavy salting of roadways

(Source: NH DES WD-WSEB-12-3 NH Drinking Water Source Assessment Program Plan,
May 1999, Appendix C)

In conducting the PCS inventory within the **51** wellhead protection areas recognized for the Town of Derry, the SNHPC obtained an existing GIS PCS data file from NH DES and then conducted a “windshield survey” (i.e., visiting each PCS). The windshield survey confirms whether existing PCS information is accurate and if new PCS information needs to be added to the list.

The windshield surveys conducted for this plan focused on **36** public water systems and the **51** identified WHPAs within Derry. All the PCSs identified in the windshield survey were assigned a threat level rating of low, medium, or high. This rating system provides a general indication of how vulnerable the public water supply wells are to contamination from the PCS and nearby land use activities.

Overall threat levels were determined primarily according to the proximity of the PCS to the well and general site conditions within the WHPA. The proximity of a PCS to a well provides a good indicator of the threat level because the closer to the well, the easier it is for a spill or contamination source to be drawn into the well. The general size and condition of a property also provides a good indicator for obvious reasons; the larger the quantity of regulated substances on a property, the higher the risk to the groundwater should a spill occur.

B. Known Contaminant Sources

A KCS is a site or activity that has resulted in a known release of a regulated substance to the environment and has the potential to, or has already caused, ground water contamination. A snapshot summary of NH DES’ list of all KCS located within the Town of Derry is provided in Appendix D. None of the KCS sites within Derry were included in this inventory and threat assessment. This would require detailed site investigations and possible groundwater monitoring. KCSs are regulated and directly overseen by NH DES.

NH DES’s Site Remediation Programs Databases One Stop Data Retrieval provides information on sites in New Hampshire with activities that either have resulted in groundwater contamination or pose a potential hazard to groundwater supplies. The regulated activities and groundwater hazards include:

- Confirmed releases of oil or hazardous materials to the soil and/or groundwater as a result of discharges, spill, and removal of underground storage tanks;
- Underground injection wells such as floor drains, leaching galleries, and septic systems anything other than domestic wastewater;
- Large discharges of wastewater such as domestic wastewater septic systems which are designed to discharge more than 20,000 gpd, land application of wastewater treatment facility effluent (spray irrigation, rapid infiltration basins, etc.) and unlined septage and wastewater lagoons;
- Unpermitted hazardous waste storage facilities;
- Landfills and other waste repositories in which groundwater quality is at risk.

V. VULNERABILITY ASSESSMENT RESULTS

1. SUMMARY

The results of the vulnerability assessment are summarized in this section and the following Table 3: Summary of Groundwater Best Management Needs Located Within or Near Wellhead Protection Areas, Town of Derry, NH. Table 3 provides a map number of the identified PCSs, the site identification number assigned by NH DES if applicable, and a physical address of the PCS included in the survey. The PCSs identified in Table 3 are also shown on Maps 3A through 3G in Appendix A.

In addition, Table 3 identifies whether the PCS is located within or near a designated wellhead protection area; the type of land use activity that is currently occurring on the site; and what the overall level of threat (low, medium or high) that activity might have to the public water supply system. The criteria for determining the level of threat (low, medium or high) is explained on page 4 of this Plan. A medium or high level of threat indicates that the use may have a greater Best Management Practices (BMP) need than a site with a low threat level.

Table 3
Summary of Groundwater BMP Management Needs
Located Within or Near Wellhead Protection Areas, Town of Derry, NH

Map #	Site ID	Potential Source	In a WHPA	Threat	Use
1	PCS01879	28 Tsienneto Rd	No	Low	Cleaning product disposal, animal disposal and pet waste
2	PCS00086	46 East Derry Rd	No	Low	Use and disposal of cleaning and cosmetic products
3	PCS00455	133 Hampstead Rd	Yes	Medium	Equipment and oil storage
4	PCS00084	1 West Running Brook Ln	Yes	Low	Potential use of fertilizers and an above ground storage tank
5	PCS00085	1 Forest Ridge Rd	Yes	Low	Storage containers and salt/sand equipment
6	PCS00083	131 Rockingham Rd	Yes	Low	Use and disposal of painting products and chemicals, garage
7	PCS01878	127 Rockingham Rd (Hillside Plaza)	Yes	Low	Use of chemicals, septic issues
8	PCS00531	161 Rockingham Rd	Yes	Low	Use of heavy equipment and fertilizers
9	PCS00952	8 Bowers Rd	Yes	Low	Use and disposal of chemicals
10	1	56-58 Windham Depot Rd	No	Low	Small Horse Farm
11	2	46 Windham Depot Rd	Yes	Low	Shop, Garage
12	3	4 Windham Depot Rd	No	Medium	Shop, Garage
13	4	227 Rockingham Rd	Yes	Low	Shop, Garage
14	5	19 - 22 Kilrea Rd/ Radford Farm	Yes	Low	Farm, Machinery
15	6	32 Warner Hill Rd	No	Low	Farm, Barn
16	7	146 Chester Rd	Yes	Low	Small Horse Farm
17	8	159 Hampstead Rd	Yes	Medium	Farm
18	9	116 English Range Rd	Yes	Low	Small Farm
19	10	70 Old Auburn Rd.	No	Low	Farm
20	11	112 English Range Rd	No	Low	Small Farm
21	13	124 Chester Rd	Yes	Low	Farm
22	14	121 Chester Rd	Yes	Low	Small Farm
23	15	53 English Range Rd	Yes	Low	Small Farm, Large Vehicles Stored
24	16	59 English Range Rd	No	Low	Small Farm
25	18	86 Tsienneto Rd	No	Low	Small Farm
26	19	19 North Main Street	No	Low	Ball Fields

27		Deleted from List			
28	21	2 Old Auburn Rd	Yes	Low	Small Farm
29	22	5 Warner Hill Rd	No	Low	Farm
30	23	12 Halls Village Rd	Yes	Low	Golf Course
31	24	17 Halls Village Rd	Yes	Low	Golf Course
32	26	1 Humphrey Rd	Yes	Low	Small Farm
33	27	14 Humphrey Rd	No	Low	Ball Fields
34	29	8 Stark Rd	No	Low	Small Farm
35	30	Goodhue Rd	No	Medium	Weber Landfill
36	32	175 Warner Hill Rd	Yes	Low	Farm
37	33	189 Island Pond Rd	No	Low	Small Farm
38	34	125 Island Pond Rd	No	Low	Small Farm
39	35	115 Island Pond Rd	No	Low	Small Farm
40	36	105 Island Pond Rd	No	Low	Small Farm
41	37	133 Island Pond Rd	No	Medium	Weber Junkyard

Source: DES, Southern New Hampshire Planning Commission

B. INVENTORY OF BMP MANAGEMENT NEEDS FOR WELLHEAD PROTECTION AREAS

The location and description of the identified PCS and the recommended BMP management of the site within or near designated WHPAs within the Town of Derry in Table 3 are described as follows (refer to Map 3):

PCS 1: 28 Tsienneto Road site contains cleaning product disposal, animal disposal and pet waste. The BMP Management Need level of this site is low.

PCS 2: 46 East Derry Road site allows for the use and disposal of cleaning and cosmetic products. The BMP Management Need level of this site is low.

PCS 3: 133 Hampstead Road site contains heavy equipment and oil storage. The BMP Management Need level of this site is medium.

PCS 4: 1 West Running Brook Lane contains an above ground storage tank and has the potential use of fertilizers. The BMP Management Need level of this site is low.

PCS 5: 1 Forest Ridge Road contains storage pool chemicals and winter deicing materials (salt and sand). The BMP Management Need level of this site is low.

PCS 6: 131 Rockingham Road allows for the use and disposal of painting products and chemicals. The BMP Management Need level of this site is low.

PCS 7: 127 Rockingham Road (Hillside Plaza) The BMP Management Need level of this site is low. This site is now used for retail purposes. Former uses of the site included vacuum sales and mixed use.

PCS 8: 161 Rockingham Road allows for the use of heavy equipment and fertilizer. The BMP Management Need level of this site is low.

PCS 9: 8 Bowers Road allows for the use and disposal of chemicals. The BMP Management Need level of this site is low.

PCS 10: 56-58 Windham Depot Road contains a small horse farm. The BMP Management Need level of this site is low.

PCS 11: 46 Windham Depot Road allows for light machinery and contains a small shop and garage. The BMP Management Need level of this site is low.

PCS 12: 4 Windham Depot Road allows for heavy equipment and contains a medium size shop and garage. The BMP Management Need level of this site is medium.

PCS 13: 227 Rockingham Road contains a small shop and garage with light equipment. The BMP Management Need level of this site is low.

PCS 14: 19 - 22 Kilrea Road/ Radford Farm contains light machinery and a small farm. The BMP Management Need level of this site is low.

PCS 15: 32 Warner Hill Road allows for the use of fertilizers and contains a small farm and barn. The BMP Management Need level of this site is low.

PCS 16: 146 Chester Road allows for the use of fertilizers and contains a small horse farm. The BMP Management Need level of this site is low.

PCS 17: 159 Hampstead Road allows for the use of heavy equipment and fertilizer. The BMP Management Need level of this site is Medium.

PCS 18: 116 English Range Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 19: 70 Old Auburn Road contains a large farm and allows for the use of fertilizers, pesticides, and light machinery. The BMP Management Need level of this site is low.

PCS 20: 112 English Range Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 21: 124 Chester Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 22: 121 Chester Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 23: 53 English Range Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 24: 59 English Range Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 25: 86 Tsienneto Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 26: 19 North Main Street allows for the use of pesticides and chemical applications for maintenance. The BMP Management Need level of this site is low.

PCS 27: Deleted from the list.

PCS 28: 2 Old Auburn Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 29: 5 Warner Hill Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 30: 12 Halls Village Road allows for the use of pesticides and chemical applications for maintenance. The BMP Management Need level of this site is low.

PCS 31: 17 Halls Village Road allows for the use of pesticides and chemical applications for maintenance. The BMP Management Need level of this site is low.

PCS 32: 1 Humphrey Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 33: 14 Humphrey Road allows for the use of pesticides and chemical applications for maintenance. The BMP Management Need level of this site is low.

PCS 34: 8 Stark Road allows for the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 35: Goodhue Road contains an inactive and unlined landfill the “Weber Landfill site” where potentially harmful products or chemicals may have been disposed. The BMP Management Need level of this site is medium.

PCS 36: 175 Warner Hill Road is a small farm and allows the use of fertilizers. The BMP Management Need level of this site is low.

PCS 37: 189 Island Pond Road allows the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 38: 125 Island Pond Road allows the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 39: 115 Island Pond Road allows the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 40: 105 Island Pond Road allows the use of fertilizers and contains a small farm. The BMP Management Need level of this site is low.

PCS 41: 135 Island Pond Road is an auto recycling facility which collects and stores potentially harmful products and chemicals. The BMP Management Need level of this site is medium.

In addition to this vulnerability inventory and PCS assessment, the Derry Source Water Protection Advisory Committee evaluated all **51** of the existing designated wellhead protection areas within the town and identified a total of seven WHPAs to be of special concern due to the large number of PCSs located within or near these areas.

VI. PROTECTION STRATEGIES

A. WATERSHED PROTECTION

Protection of the Town's overall groundwater supplies and aquifer are an important priority for the community because contamination from spills can migrate with groundwater flow within the aquifers depending upon the underlying geology, sloping terrain, ledges, and/or proximity to existing surface water bodies, streams and wetlands. Maintaining a full understanding of the interrelationship and connectivity between the Town's water resources is important.

This understanding can be best achieved through geohydrology studies and watershed management plans, such as the Beaver Lake Watershed Management Plan (see following Figure 2 showing the Beaver Brook watershed). These studies and plans provide a focus on appropriate land uses and best management practices, including such considerations as storm water management and maximum impervious surface coverage.

Beaver Lake Watershed Plan

The Beaver Lake Watershed Management Plan (BLWMP) was completed in August 2007. It was developed through the Beaver Lake Partnership which included:

- Town of Derry
- Town of Chester
- Town of Auburn
- Beaver Lake Improvement Association (Derry)
- Harantis Lake Homeowners Association (Chester)
- NH Department of Environmental Services
- Southern NH Planning Commission
- Pinkerton Academy (Derry)

The Beaver Lake watershed (the watershed) is located in the Towns of Auburn, Chester, and Derry. The watershed drains approximately 10.5 square miles (mi²), concluding at the outlet of Beaver Lake Dam in Derry, NH. The Beaver Lake watershed drainage area for Derry, Chester, and Auburn is 7.72, 2.78, and 0.044 square miles, respectively. Several of Derry's WHPA are wholly or partially within the watershed and as such would benefit both directly and indirectly from ongoing watershed protection practices and the implementation of recommended protection strategies identified in the BLWMP. Relevant goals include educational outreach campaigns, assess and improve land use regulations and ordinances, prioritize land acquisition and/or conservation easements of sensitive areas, evaluate current land use, zoning, growth management ordinances and open space plans, and develop recommendations for updates as needed.

Since implementation of the Plan, the Town has adopted a Stormwater Ordinance and Stormwater Regulations, prepared and implemented a Salt Reduction Plan, continued its assistance to the watershed stream teams consisting of Pinkerton Academy students, and given presentations to the Beaver Lake Improvement Association (BLIA) on shoreland water quality protection, and stormwater pollution prevention. In 2009, the Town adopted the Town of Derry Open Space Plan. Although it does not specifically address source water protection as a goal for open space preservation, it does give weight to various natural resources including water quality (aquifer transmissivity) and maintaining quality and quantity of ground and surface water.

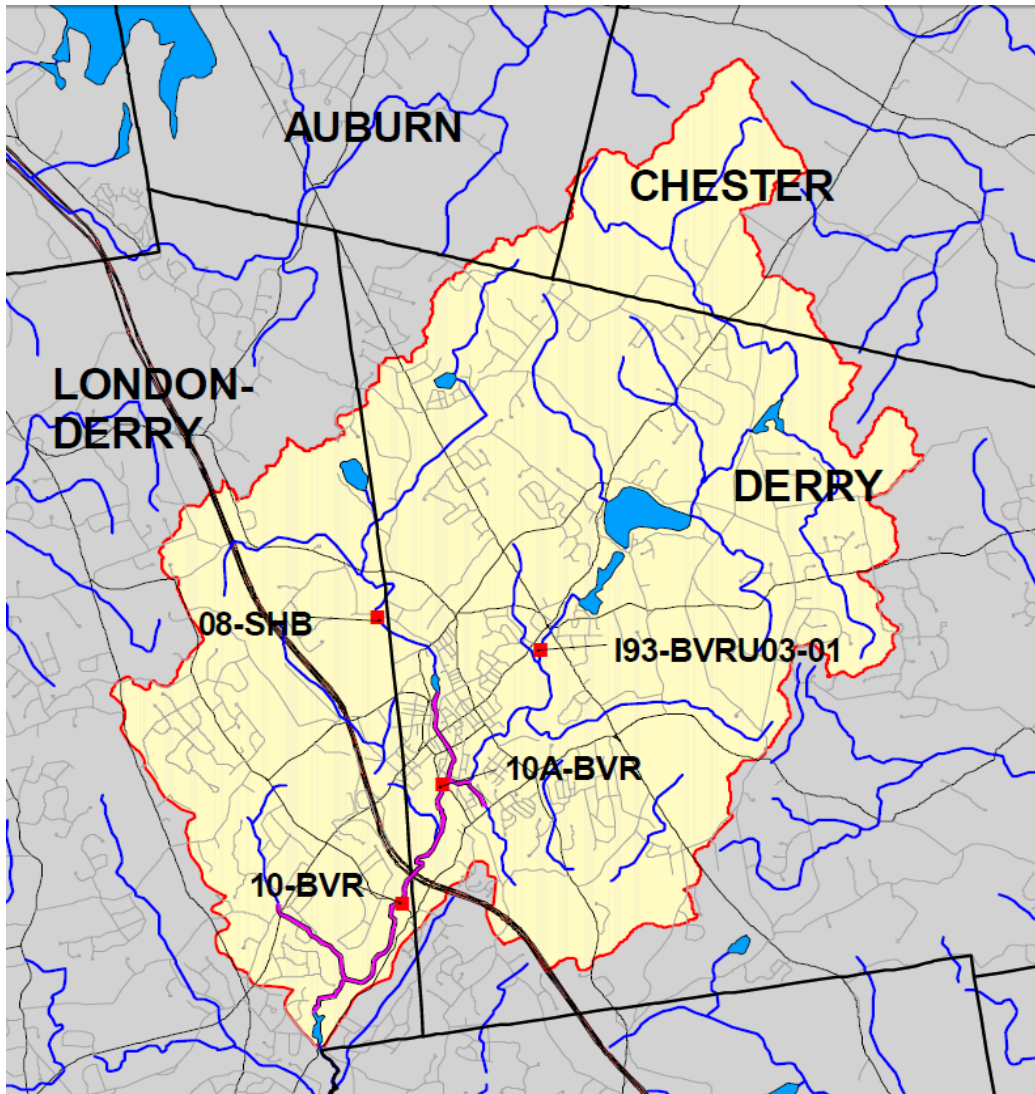
B. CHARACTER OF EXISTING WATER RESOURCES

The Town of Derry contains a total area of 36.7 square miles, of which 35.8 square miles is land and 0.9 square miles or 2.45% of the total area is water. Derry is mostly drained by Beaver Brook but lies almost fully within the Merrimack River Watershed, with a small section along the northern border of Town lying in the Piscataquog River Watershed.

The principal watercourses within the Town of Derry are Beaver Brook and Hornes Brook. Beaver Brook originates at the outlet of Beaver Lake and flows in a southwesterly direction for four miles before entering the Town of Londonderry. Hornes Brook originates at Hornes Pond in Derry and flows in a southerly direction before emptying into Beaver Brook.

The Beaver Brook floodplain ranges in width from 20 to 2,900 feet. This floodplain is primarily open or wooded, with some residential and commercial development. The Hornes Brook floodplain ranges in width from 20 to 350 feet, and consists of residential and commercial development. The floodplains of the remaining streams in Derry average 350 feet in width. They are wooded and contain sparse residential development.

Figure 2
Beaver Brook Watershed

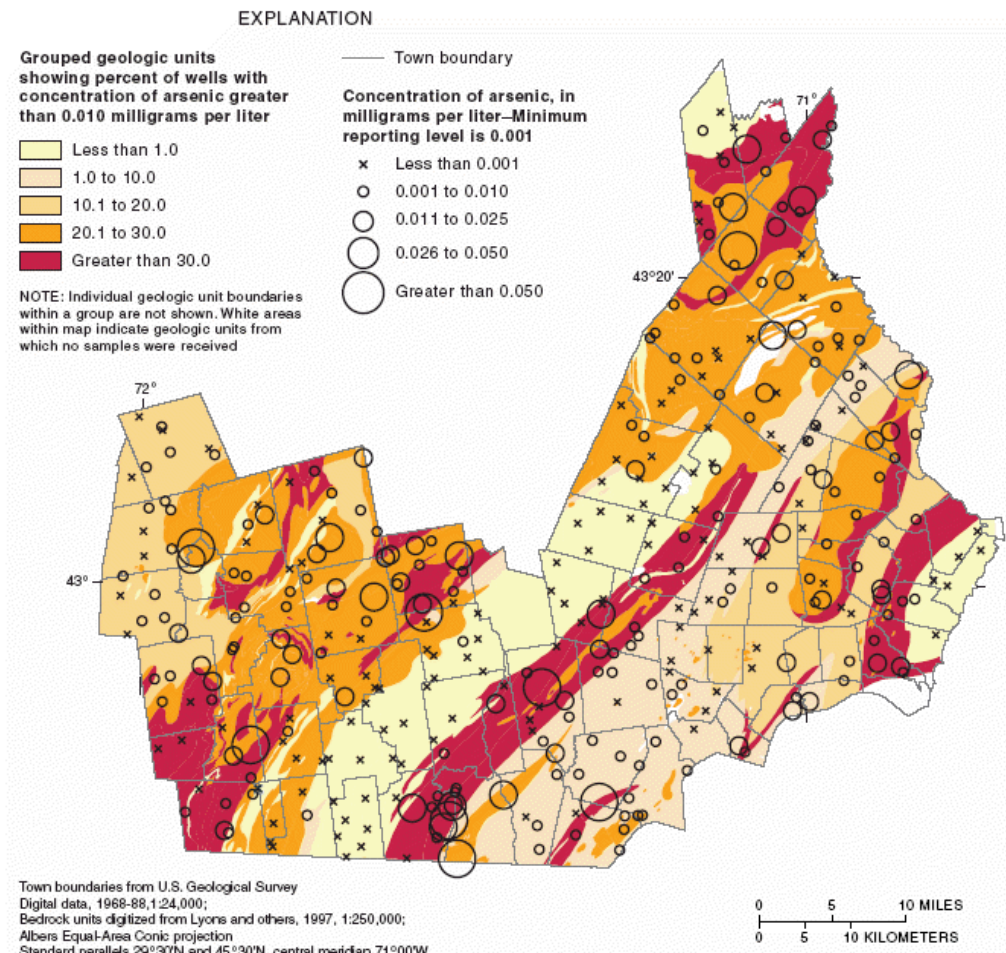


The Town of Derry is characterized by both stratified and unstratified material deposited by a receding glacial ice sheet. Irregular slopes, coarse soils, occasional outcrops of bedrock, and boulders are common.

Naturally occurring arsenic can be found in groundwater from bedrock wells in New Hampshire with elevated concentrations being dependent on the underlying bedrock geology. The drinking water standard for arsenic is 10 micrograms per liter ($\mu\text{g/l}$ or 10 parts per billion (ppb)). As shown in the following Figure 3, areas in the northwest corner of Derry have a greater likelihood of elevated arsenic being detected in groundwater. However, arsenic occurrence can be very random and must be confirmed through analytical testing on an individual well

basis in order to determine if concentrations exceed the MCL and are harmful to human health.

Figure 3: Concentrations of arsenic in private bedrock wells



Source: U.S. Geological Survey Fact Sheet 051-03, 2003

Note: The maximum contaminant level (MCL) for arsenic is 10 micrograms per liter (ug/l or parts per billion (ppb)) which is equivalent to 0.010 milligrams per liter (mg/l or parts per million (ppm)) as shown in the legend of the figure above.

C. LOCAL LAND MANAGEMENT AND DRINKING WATER SOURCE PROTECTION PROGRAMS

There are a number of mechanisms by which municipalities can protect drinking water sources. These mechanisms are divided into two primary categories: regulatory and non-regulatory. Regulatory mechanisms include ordinances, and regulations adopted by the Town that generally reflect or are more stringent than state regulations and statutes. They also include programs in place as required under Federal and State programs and permits and include the implementation of BMPs and related inspections through the application of Env-Wq 401. BMPs

for groundwater protection within this rule must be in place with respect to regulated substances in 5 or more gallon containers. Non-regulatory mechanisms are generally voluntary or include adoption of Town policies, practices, land acquisition, public education, state reclassification, Best Management Practices (BMP), and inspections.

Most of these strategies require that a source water protection or watershed management plan or program be established at the local level in order to determine what strategies and approaches would best fit for the Town of Derry. The Source Water Advisory Committee conducted the following review of the Town's existing programs, and applicable ordinances and regulations, Best Management Practices as required under other state and federal programs and permits (NPDES and TMDL compliance), as well as existing educational and outreach programs. This review helps identify and assess existing gaps in protection and includes, as necessary, recommendations for updates and revisions to improve the town's existing programs.

The following sections summarize a review of both the regulatory and non-regulatory mechanisms the Town currently has in place that contribute either directly or indirectly to source water protection. State and federal statutes and regulations are not discussed except to the extent that a Town's program is implemented to meet state or federal requirements (TMDLs or NPDES Compliance). The review helps identify and assess existing gaps in protection and includes, as necessary, recommendations on revisions to existing mechanisms to improve the Town's existing regulations.

1. LAND USE CONTROLS

There are three existing zoning districts in the Town of Derry's Zoning Ordinance which help to protect the town's water resources. They provide varying levels of protection to surface and ground waters within the Town.

Groundwater Resource Conservation District (eff 5/4/95)

A *Groundwater Resource Conservation District* (GRCD) was adopted by the Town of Derry in May, 1995 as part of the Town's Zoning Ordinance. It was established to protect, preserve, and maintain existing and potential groundwater resources and primary groundwater recharge areas within this district (aquifers) from adverse development, land use practices or depletion.

The GRCD is identified as those areas designated as stratified drift by blue shading which appears on maps prepared by the U.S. Geological Survey (USGS) in cooperation with NHDES Water Resources Division identified as USGS Water Resources Investigation Report 91-4025, 1992, or as amended. These areas as identified in the 1992 report are displayed as a layer on the

Town's Geographic Information System (GIS). Approximately 5.2 square miles, or 15% of the Town is underlain by stratified drift aquifer (Ground-Water Resources in NH: Stratified-Drift Aquifers, U.S. Geological Survey Water-Resources Investigations Report 95-4100).

Conservation Corridor Overlay District

The *Conservation Corridor Overlay District* (CCOD) regulates uses in important wetland and watershed areas. It was established to prevent the destruction of watershed areas and wetlands which provide flood protection, recharge of groundwater supply, and augmentation of stream flow, and for the protection of the community against the costs that may be incurred when unsuitable development occurs in swamps, marshes, along watercourses, or in areas subject to floods. The "Conservation Corridor" is designated to be all lands in the 100-year flood plain. The CCOD identifies specific permitted and prohibited uses.

Wetlands Conservation Overlay District

The *Wetlands Conservation Overlay District* (WCOD) was established to regulate the use of land areas subject to extended periods of high water table, flooding, or standing water. Some of the primary purposes of the WCOD are to prevent development of structures or other land uses on naturally occurring wetlands which would contribute to the pollution of surface and groundwater, prevent the alteration of natural wetlands which provide flood protection, recharge of groundwater supply, or augmentation of stream flow during dry periods, and to create undisturbed and natural buffers to the prime wetlands. The WCOD includes any area with very poorly drained soils, poorly drained soils 2,000 square feet greater in size, wetlands that are contiguous to surface waters and any areas designated as a bog.

2. ORDINANCES

Well Ordinance

The Town's *Water Supply Regulations–Well Ordinance* was adopted in September 1980 and amended October 1987. The Well Ordinance which applies to private individual wells for new construction specifies criteria for well siting, construction, and capacities. It also requires analytical testing for specific compounds prior to issuance of a Certificate of Occupancy. The testing is for information purposes only and references recommended maximum levels and secondary standards, some of which are out of date relative to current state and federal drinking water standards. The lead enforcement responsibility is also identified as the Health Officer. However, the roles and responsibilities of key

Town personnel including the health officer and code enforcement officer have changed since the 1980's. The current Well Ordinance should be revised to reflect changes in applicable state and federal requirements and water quality standards, as well as to reflect current responsible personnel.

Storm Water Ordinance (Eff 12/08)

The Town adopted a *Storm Water Ordinance* to comply with requirements of the Town's Municipal Separate Storm Sewer System (MS4) General Permit issued by USEPA under the NPDES program. The purpose of the ordinance is to protect, maintain, and enhance the environment and public health, safety and general welfare by controlling discharges of pollutants to the Town's storm water systems and maintaining and improving the quality of the receiving waters into which storm water outfalls flow, including, without limitation, lakes, streams, ponds, wetlands, and groundwater. The ordinance establishes minimum requirements and procedures to control adverse effects of increased post-development stormwater runoff, decreased groundwater recharge, and non-point source pollution associated with new development and redevelopment. Included in the ordinance is an extensive and detailed section of prohibited discharges designed to protect both groundwater and surface water quality and to minimize impacts from residential, commercial, industrial, and construction related activities. It also requires compliance with separate stormwater regulations and the use of state and federal recognized Best Management Practices identified in the regulations. The requirements in this ordinance provide substantial protection to both stormwater and groundwater resources town-wide.

3. REGULATIONS

Stormwater System Design Regulations

The Stormwater Regulations extend and support the Storm Water Ordinance. It requires that the implementation of stormwater management Best Management Practices (BMPs) be employed during construction (temporary) and in final site design (permanent). Additional protection is required in areas identified as higher potential pollutant loads, and restricts discharges to surface waters, ground surface, subsurface, or groundwater within 100 feet of a municipal, public, or community water supply well. The regulations also emphasize federal and state permitting requirements under the Multi-Sector General Permit (MSGP), Construction General Permit (CGP), and Alteration of Terrain (AoT) program.

Land Development Control Regulations

The Derry Planning Board has adopted Land Development Control Regulations (LDCR) (Revised December 14, 2011) which includes the Planning Board's

Subdivision and Site Plan Review Regulations. These regulations empower the Planning Board to review and approve or disapprove subdivision and site plan applications.

In reviewing the LDCRs, particularly the Design and Construction Standards, the Derry Source Water Advisory Committee has found that there are very few, if any provisions, in these regulations which specifically provide for groundwater, wellhead, and aquifer protection within the community. It is important to remember that while Derry receives a large percentage of its drinking water from Manchester Water Works, a significant portion of the Town of Derry and many residents and businesses (particularly outside existing water and sewer service areas) rely entirely upon both public and private wells for drinking water. Thus, the Town has an interest and duty to protect contributing groundwater to these water resources for the greater public good.

This can be addressed through recommended revisions to the LDCRs. Revisions could include requiring the applicant or developer to provide information regarding the environmental status of the property to the Technical Review Committee. The LDCRs should also be updated to specifically reference the Storm Water Ordinance and Stormwater Regulations. In addition, this Source Water Protection Plan can be used as a reference guide to help identify both known and potential contamination sources as well as the location of active community water systems and designated wellhead protection areas.

4. BEST MANAGEMENT PRACTICES (BMP) AND INSPECTIONS

To assure that WHPAs in Derry are protected and all the PCS sites identified by this plan maintain a high standard and quality of maintenance, a water supply operator or owner can volunteer to have a best management plan (BMP) compliance survey conducted.⁵ While water supply owners/operators identified in this plan are not required to have inspections, many do site inspections that help to prevent contamination and preserve the quality and availability of local drinking water resources.

If the PCS site owner(s) decide to have inspections conducted, the sites should be inspected on a routine basis to minimize and prevent additional or future groundwater contamination. The water supply owners/operators can retain qualified consultants to conduct these surveys or request assistance from NH DES.

The BMP Compliance Inspection reflects a set of standards describing how regulated substances, such as salt, fuel oil, fertilizers, etc., must be stored, transported, labeled, and protected in accordance with Env-Wq 401 (NH

⁵ NH DES Compliance Survey can found at:
http://des.nh.gov/organization/divisions/water/dwgb/dwspp/bmps/documents/survey_form.pdf

Administrative Rule). These standards help to minimize the release of regulated substances which can contaminate groundwater. If a site is not able to meet the standards within Env-Wq 401, the site owner or representative must correct the deficiency and make improvements. Examples of the NH DES BMP inspection form can be found online on the NH DES Best Management Practices to Prevent Groundwater Contamination page.⁶ Training and guidance is also available from NH DES by contacting the Source Water Protection Program.

The Town of Derry's Public Works Department currently undertakes BMP compliance inspections for town facilities and operations under the MSGP and the MS4GP permit requirements. Several of the town facilities are located within the GRCD.

5. PUBLIC WATER SERVICES/IMPROVEMENTS

Currently within the Town of Derry's 2009-2014 Capital Improvement Plan (CIP) there are plans to extend municipal water service south on Rockingham Road/Rt. 28 from the West Running Brook and Winter Hill Rd area to the vicinity of Berry Road (see Map 4 Water/Sewer Service). There are also plans for a new 3.25 MGD tank and water main expansion on Warner Hill Road which would service predominantly the East/Central Derry customers including an existing community water system.

Also included in the CIP are items such as the vehicle replacement program, water main upgrades and replacements program, and various other upgrades and repairs to booster stations. Funding for these projects may include water receipts, bonds and grants.

Specifically included in the CIP is the expansion of municipal water and sewer service to the commercially zoned areas along Route 28 as shown on Map 4. In time, the extension of municipal water and sewer service to this area will provide the adequate supply of quality drinking water to the residents and businesses located within a number of identified wellhead protection areas, particularly within the southern portions of the Town (see Map 4 Water/Sewer Service). This will also eliminate commercial septic systems as potential contaminant sources.

6. SALT MANAGEMENT

Beaver Brook is identified as impaired for chloride concentrations that exceed state and federal water quality standards. NHDES completed a Total Maximum Daily Load (TMDL) analysis (April 2008) to quantify chloride reductions needed to meet the applicable state water quality standards. The goal of the TMDL is to

⁶ NH DES BMP Inspection form:
<http://des.nh.gov/organization/divisions/water/dwgb/dwspp/bmps/index.htm>

reduce chloride loads from all sources (municipal, state and private/commercial sources) so that water quality standards for all the designated uses affected by chloride pollution are met in all areas of the Beaver Brook watershed. The Beaver Brook watershed includes both the Beaver Lake Watershed as well as the drainage area for Beaver Brook located downstream of Beaver Lake extending into Londonderry.

To meet TMDL requirements, the Town of Derry adopted a Municipal Resolution agreeing to implement measures to meet TMDL requirements through the development and implementation of a Salt Reduction Plan (SRP). The goal for the SRP is to set a policy and procedural framework to demonstrate how the Town will continuously work to improve winter maintenance operations while effectively and efficiently using road salt during snow and ice removal operations. New practices contained within the plan are intended to reduce the amount of road salt applied by the Town thus working towards meeting the Town's allocation of the required TMDL load reductions while continuing to meet town level of service (LOS). The SRP is meant to be dynamic to allow the Town to evaluate and phase-in any changes, new approaches and technologies in winter maintenance activities in a fiscally sound manner. For purposes of the plan, salt or chloride reduction efforts not only include simply applying less de-icing materials that contain chloride, but a series of actions and BMPs that include operational changes and improvements, mechanical upgrades, outreach and awareness activities, and monitoring, all of which are designed and implemented with the result being a net decrease in chloride loading to the watershed.

The Town currently maintains 160.81 miles of public roads town-wide, and 14.4 acres of parking lots. Town-maintained parking lots include: Town municipal offices, Derry Library, Derry Fire Dept., Derry Police Dept., Derry Transfer Station, Derry recreational parks, and a few public lots. All of the parking lots are located within the watershed, and approximately 66% of roads are within the watershed. While the Town is only obligated to meet TMDLs within the Beaver Brook Watershed, it has elected to implement its salt reduction program town-wide in order to protect all of its natural resources.

7. MASTER PLAN

The Town of Derry's 2010 Master Plan provides, within the Natural Resource Chapter, a description and assessment of the Town's aquifers as well as a section on existing protections, source water protection and watershed management. It is within this section of the master plan that we recommend to update, to reference, and to identify this Source Water Protection Plan.

The 2010 Master Plan also includes a number of applicable goals, objectives and implementation strategies which are consistent with this plan. These goals and actions are identified below:

- Continue long term protection efforts such as public education and outreach, IDDE and stormwater ordinance enforcement, and stormwater pollution prevention efforts.
- Protect the drinking water supply and aquifers, lakes and surface waters, wildlife habitats and corridors and forested areas.
- Establish a committee to introduce science programs around natural Resources and environmental conservation in the Derry schools

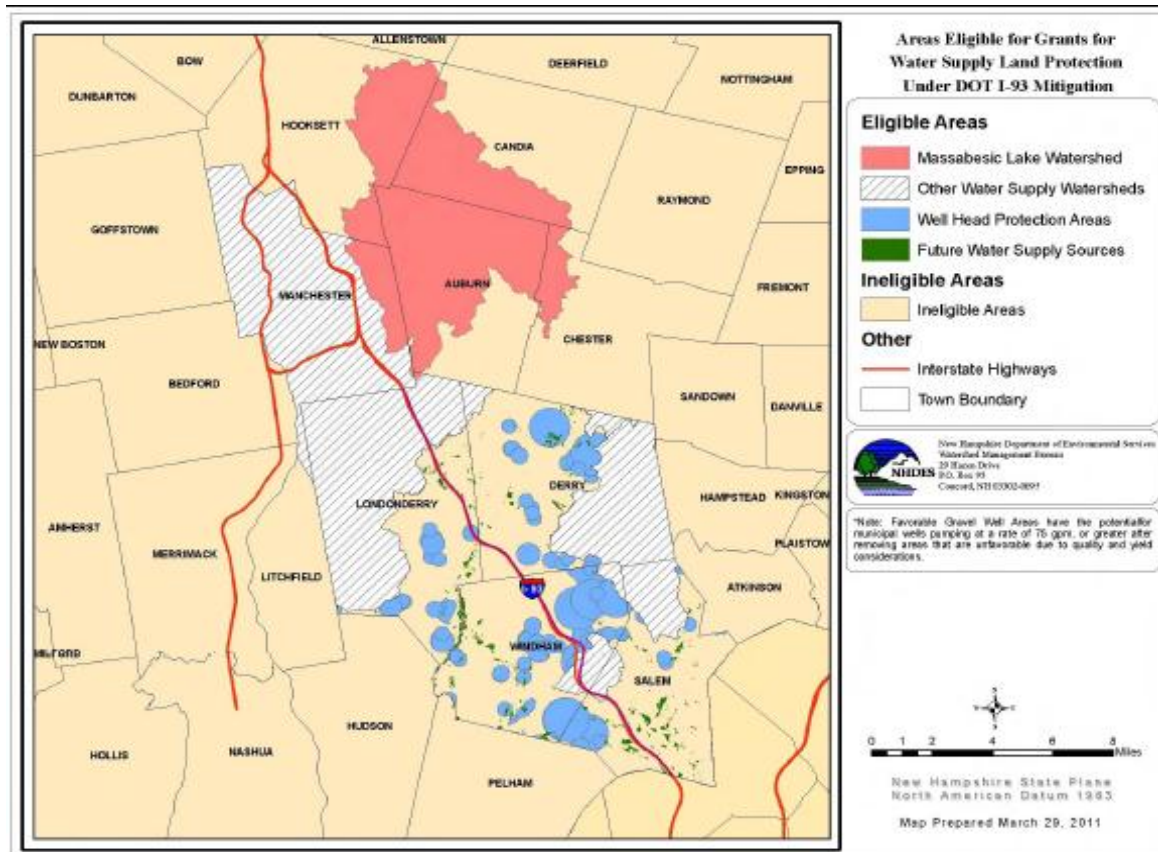
8. LAND ACQUISITION

Many of the WHPAs in Derry also have some protection afforded by existing conservation lands (see Map 1). Drinking water supplies, aquifers and WHPAs which are protected through conservation lands are less vulnerable to contamination. In recognition of this, the Conservation Commission of the Town of Derry is currently pursuing a number of open space and land conservation projects within the community. Some of these projects are located within the WHPAs identified in this plan.

Through an agreement with New Hampshire Department of Transportation, the New Hampshire Department of Environmental Services (DES) has \$3 million in federal funds for the protection of drinking water supply lands in the Lake Massabesic watershed and in the I-93 corridor communities of Salem, Windham, Derry, Londonderry and Manchester as part of a mitigation program for the I-93 widening project. The grant money is being administered by DES's Water Supply Land Protection Grant Program. In this program, municipalities and non-profit land trusts may apply for grants to cover up to 25 percent of the cost of purchasing land or conservation easements critical to the quality of their public drinking water supply. The money comes from a fund established to offset impacts to wetlands associated with the widening of Interstate 93 between the Massachusetts border in Salem and the I-93/I-293 interchange in Manchester. The Town submitted an application and was deemed eligible for a parcel of land located within the Willow Bend WHPA. A final application was submitted to NHDES and is awaiting NHDES Commissioner approval.

Areas applicable for grants for water supply land protection under the NH DOT 1-93 Mitigation are shown in the following Figure 4.

Figure 4: Areas Eligible for Grants for Water Supply Land Protection Under DOT I-93 Mitigation



Source: NH DES, Drinking Water Source Protection Program

9. HOUSEHOLD HAZARDOUS WASTE COLLECTION EVENTS

The Town organizes and sponsors an annual Household Hazardous Waste (HHW) collection event in May each year. The event is partially funded through a grant from NHDES HHW Program. The event is open for residents of Derry and Londonderry. In exchange, the Town of Londonderry sponsors an identical event in November each year for residents of both Towns. These events allow homeowners the opportunity to safely dispose of potentially hazardous materials from their homes and reduce the likelihood of improper disposal that could result in contamination of soil and groundwater resources.

In preparation for each event, the Town conducts a significant outreach program that includes advertisement in local papers, notices on the town website, signage and flyers at all Town facilities (Town Hall, Library, Recreation Department, Transfer Station), Cable TV Public Service Announcement slides, and mailings to the Town's water customers.

10. PHARMACEUTICALS AND PERSONAL CARE PRODUCTS

There has been an increasing concern regarding environmental impacts due to disposal of pharmaceuticals and personal care products (PPCPs). Investigations are finding low concentrations of chemicals in groundwater and surface waters that are commonly used in prescription and over-the-counter medications as well as some personal care products. Medicines may enter the environment after use and excretion by humans or animals; or through the disposal of unused medicines as solid waste or into a wastewater disposal system, including sewer or on-site septic systems. In order to raise awareness of this issue, the Town initiated an outreach program consisting of brochure distribution, joint talks and presentations, and advertising for Derry's first Pharmaceutical Take Back Day, held in 2010.

Working with the Derry Community Alliance for Teen Safety (CATS), Derry's Environmental Coordinator gave a presentation at a Town facility on the environmental impacts and proper disposal of pharmaceuticals. The presentation was given jointly with Derry's Police and Fire Departments.

11. PUBLIC OUTREACH AND COMMUNITY AWARENESS

The Town conducts outreach under many of its existing program including the Stormwater (MSGP and MS4GP), Household Hazardous Waste Collection Events, and Pharmaceutical Take Back Day. These include notices on the Town website, flyers and brochures handed out and located in kiosks and on bulletin boards at Town facilities (Town Hall, Transfer Station, Recreation Department/Senior Center, Police and Fire Departments), event specific signs and message boards (Town Hall, Transfer Station, and Central Fire Station), and notices included with water bills and Consumer Confidence Reports to Derry's water customers. These practices will continue.

Cable Television

As part of its outreach practices, the Town has taken advantage of the local cable access programming. This includes both public service announcement slides and special programming segments.

Examples of slides shown include:

- Stormwater Pollution Prevention
- Household Hazardous Waste disposal
- The ban on disposal of Mercury containing products
- Proper recycling of hazardous materials including motor oil, fluorescent bulbs, automotive and rechargeable batteries, and freon-containing appliances

- Green Painting tips, and
- Pet Waste Management

The Town has also prepared and aired 4 different cable talk shows including:

- A discussion on arsenic in groundwater (jointly with NHDES)
- Snow Removal 911: After a Big Storm (January 2011)
- Protecting our water with the Department of Public Works (August 2011)
- Reducing Road Salt Use: Protecting NH Waters (December 2011) (Jointly with NHDES)

The Town has plans for additional programming to focus on topics including drinking water, household hazardous materials, and lawn maintenance (fertilizer and pesticide use).

Classroom Outreach

The Town has given in-class presentations to elementary school children on recycling and drinking water. In addition, presentations were given at the Town Hall on stormwater pollution prevention to youth groups including cub scouts, Girl Scouts, and students in the Alternative Comprehensive Transition (ACT) Program Pinkerton Academy. These groups also participate in storm drain stenciling.

Other Advertising

The slogan, *"It's your home; it's your drinking water"*, is suggested for use in implementing strategies as part of town's education and marketing campaign. A draft brochure has been developed and included in this plan for the Town of Derry to use as part of this education/public outreach effort (see Appendix G).

VII. CONCLUSION/RECOMMENDATIONS

The Derry Source Water Advisory Committee has concluded that the Town of Derry has in place a variety of existing programs and regulations which help to protect the Town's drinking water sources and supplies. The key will be continuing these programs and regulations in the future, making revisions and amendments as necessary to keep them current with changing conditions and standards, as well as educating Town citizens of the importance of protecting the town's aquifers and groundwater supplies. These supplies are limited and require that both the Town of Derry and local residents work together to achieve long term protection.

It is a recommendation of this plan that the Town of Derry pursue an educational marketing campaign that would allow for citizens of the Town to easily access materials describing how they can help protect the aquifers and groundwater in Derry. It is recommended that this campaign consist of strategic outreach opportunities to both current residents and newcomers of all ages, as well as agricultural owners and operators

In short, the primary recommendations for enhancing and updating Derry's source water protection efforts are summarized below.

1. Adopt this Source Water Protection Plan as an element of the Town's Master Plan;
2. Incorporate the enhanced stratified drift aquifer map (Map 5) prepared for the Town of Derry as part of the Town's existing GRCD;
3. Review the Town's GRCD ordinance and compare it with the revised NH DES model groundwater protection ordinance to be released in 2012 to determine what revisions to the ordinance are needed;
4. Incorporate the Town's stormwater management regulations within the Planning Board's Land Development Control Regulations;
5. Revise the Land Development Control Regulations as necessary to incorporate the goals of this Plan and the draft revisions provided by SNHPC;
6. Support ongoing efforts to implement the Public Works Department's proposed expansion of water and sewer service and system improvements to ensure an adequate supply of quality drinking water to residents and businesses located within existing WHPAs;
7. Continue to update and implement the Public Works Department's Salt Management Plan;
8. Continue to support existing and future land conservation protection efforts proposed by the Town's Conservation Commission and the Town Council which will provide additional aquifer and groundwater protection;

9. Seek grants from NH DES through wetlands mitigation programs and water supply land protection program for aquifer and groundwater protection;
10. Pursue and implement as part of the town's environmental outreach and marketing program education of the public about the importance of aquifer and groundwater protection;
11. Encourage expansion of educational programs on groundwater protection in the schools (Pinkerton Academy Science Department and local elementary schools);
12. Development of a brochure "what you can do to protect drinking water" to be distributed as part of town's Household Hazardous Waste collection events;
13. Include a groundwater protection brochure in Welcome Wagon educational materials to all newcomers;
14. Advertise Drinking Water Week promotion on Town's website and bulletin boards;
15. Prepare a PowerPoint presentation to be shown on cable access; and
16. Add a groundwater protection link to the Town's website.