

Information and Reports Useful for Evaluating Risks to Drinking Water (Prelude to Group Exercise)



***Making Plans and Protecting Local Drinking Water Resources
in the Upper Valley Region***

Date: Tuesday, February 1, 2011

Place: Kilton Library, 80 Main St, West Lebanon, NH

Time: 9:00 am – 3:00 pm

Balance Threat (risk) vs. Protection



Questions to Consider



Potential impacts of contamination?

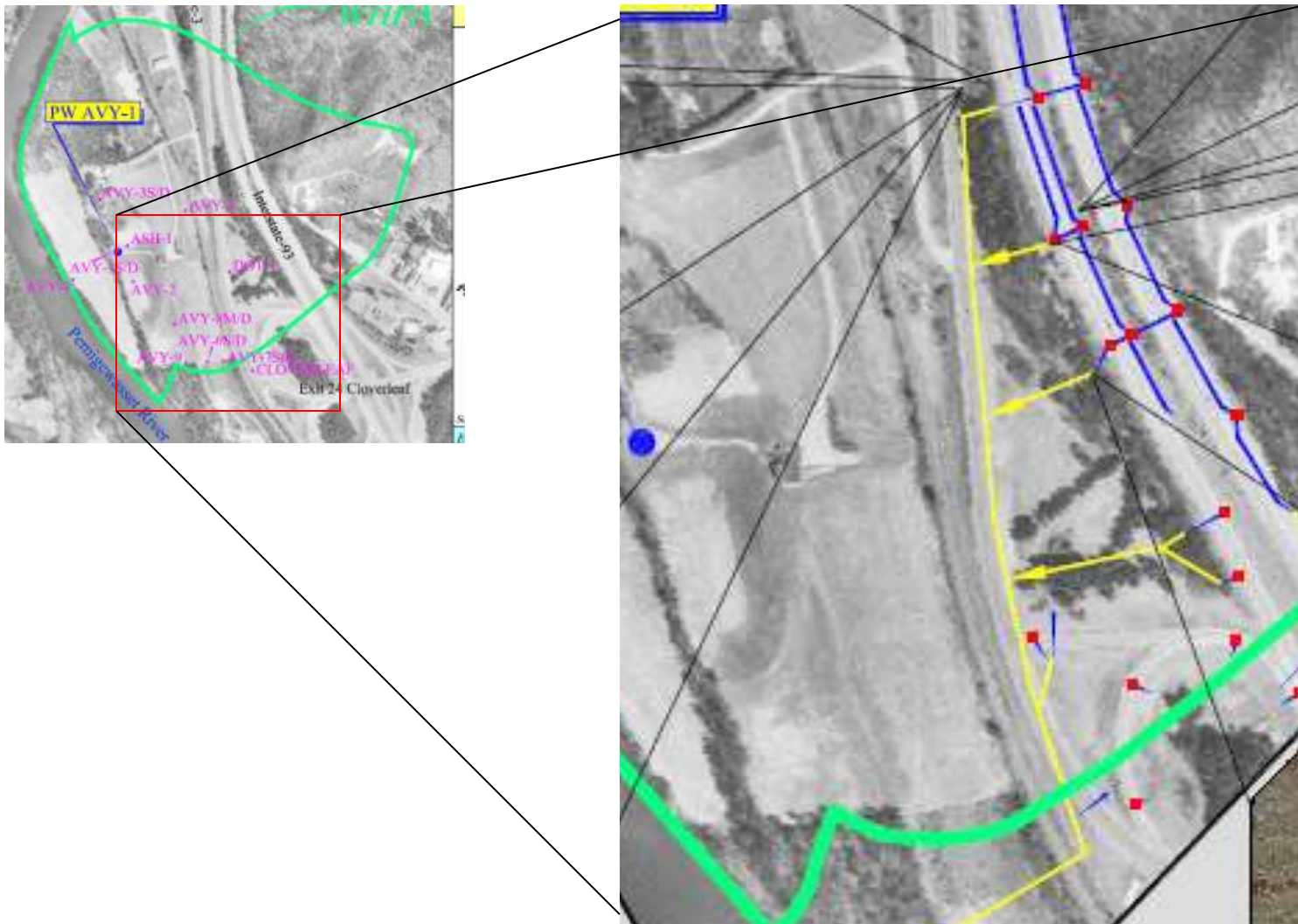
High / moderate / low impact?

Death

Taste



Do natural conditions make it relatively easy for contamination to reach the source?



What does the water quality data indicate?

(about potential contamination source(s) and trend(s))

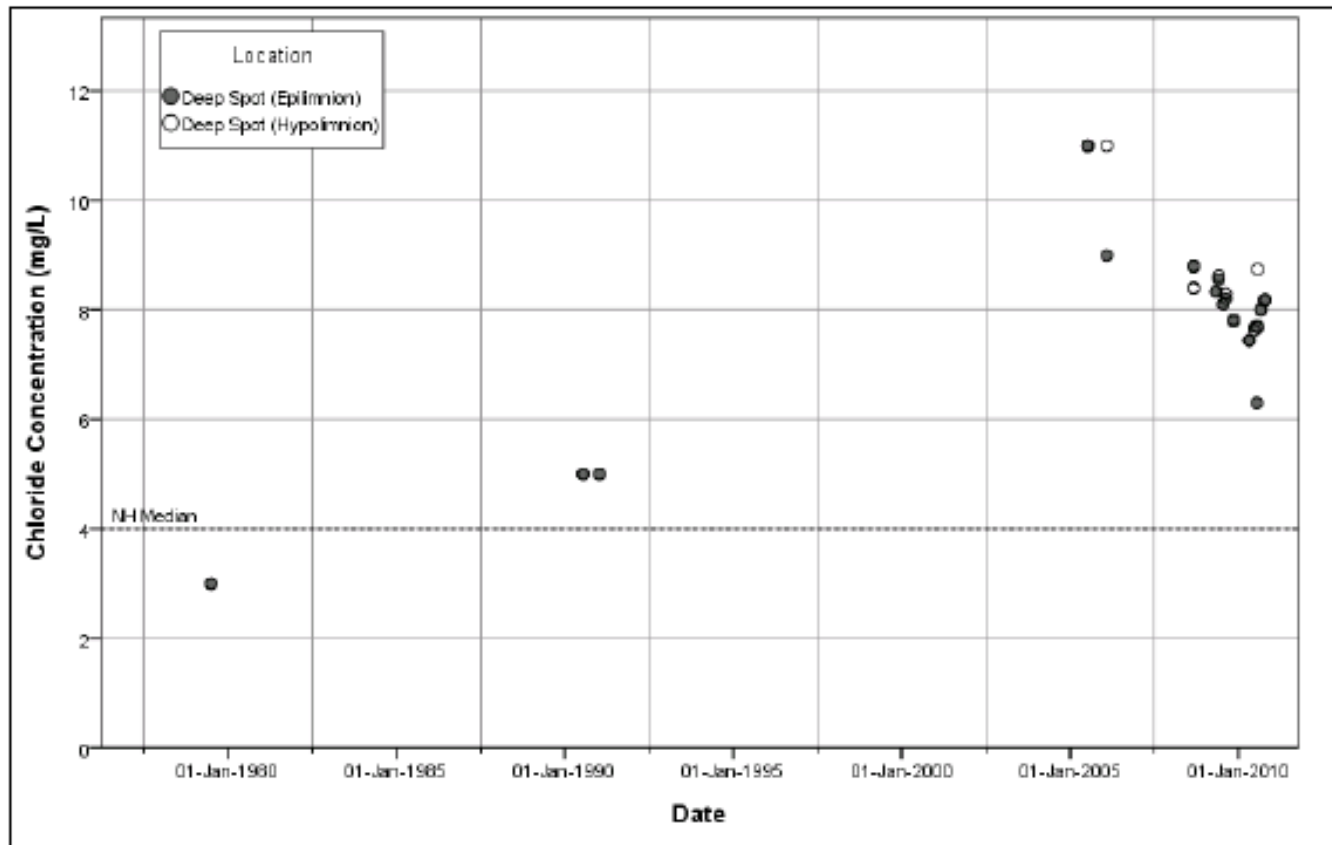


Figure C.5 – Scatterplot of chloride concentrations at the Deep Spot in Canaan Street Lake

Are certain PCS activities at high density or in close proximity to the source?



Are BMPs requirements enforced to limit release of contaminating substances?



Are there gaps in protections?



Do ordinances restrict high-risk uses?

Do performance standards ensure that users of harmful substances employ BMPs?

Do site plan regulations require structural or non-structural BMPs to interrupt pathways to releases of regulated substances?

Information Useful To Evaluate Risk of Contamination

- Hydrogeological or watershed studies
- DES source water assessment reports
- PCS inventory
- Land use / land cover data
- Water quality information
- Land use / management protections



Prioritize Management Actions



Rank actions using objective data

Rank “Hazardous Events” based on *likelihood or severity*

Table 16.3. Example of hazardous events identified and assessed for an alluvial aquifer

Process step	Hazardous event	Hazard type	Likelihood	Severity	Risk score
Alluvial aquifer	Water pumped during a storm event results in contaminated surface water from catchment run-off being drawn into aquifer	Microbes and chemicals (nutrients and potential pesticides from agricultural practices)	Unlikely (2)	Catastrophic (5)	10
	Cattle grazing near wellhead and rain events result in contaminated surface water entering the wellhead	Microbes and chemicals (mainly nutrients)	Moderate (3)	Catastrophic (5)	15
	Draw down of aquifer causing naturally occurring chemicals to enter water	Chemicals	Rare (1)	Major (4)	4

Risk Matrix (Frequency vs. Severity)

Table 16.2. Example of a simple risk ranking matrix (modified from Deere *et al.*, 2001 and WHO, 2004)

Likelihood or frequency of occurrence	Severity of consequence or impact				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	5	10	15	20	25
Likely	4	8	12	16	20
Moderate	3	6	9	12	15
Unlikely	2	4	6	8	10
Rare	1	2	3	4	5

Risk matrices allow ranking threats systematically using objective data (non-biased), adding credibility

Ranking Within DES Source Water Assessment Reports

- Reports use proximity, density, distance or presence of high-risk land uses as objective criteria to determine vulnerability to contamination
- Assigns vulnerability rankings of “high,” “medium,” or “low” based on susceptibility criteria
- Assessments are a good starting place for planning protection programs, but please contact DES to discuss limitations

Source Water Assessment Reports

High and medium level rankings should be evaluated for management actions

Source Number	Source Description	Source Type	Date Assessment Completed	Number of Vulnerability Rankings			Susceptibility Ranking Criteria														
				Highs	Mediums	Lows	Detects	Well/Intake	KCSs	PCSs	Highways/RRs	Septics	Pesticides	Urban Land Cover	Ag Land Cover	Animals	Lagoons	Dry discharges	Sanitary radius	Trophic status	
System Type <input type="text" value="C"/>		C=Community; P=Non-Transient, Non-Community; N=Transient																			
EPAID <input type="text" value="1561010"/>		System Name: <input type="text" value="MILFORD DEPT OF PUBLIC WORKS"/>																			
004	GPW	G	1/31/2001	4	3	5	L	L	M	M	M	L	H	H	H	L	H		L		
005	GPW	G	1/31/2001	4	3	5	L	L	M	M	M	L	H	H	H	L	H		L		
008	PENNICHUCK WATER WORKS	E	12/3/2001	0	0	0															

Assessments of each source based on the conditions found within the WHPA or SWIPA; available online at www.des.nh.gov 15

LUNCH



BREAK FOR 45 MINUTES THEN RETURN
FOR THE GROUP EXERCISE

GROUP EXERCISE

Break into 4 groups for 75 minutes

- 15 minutes to review Source Water Assessment and Part 2 Community Problem and Needs Assessment form
- 30 minutes to discuss in small groups identified threats and any known protections: Prioritize top threat and counterbalancing local protection.
- 30 minutes to discuss (entire group) possible local actions/strategies to improve source protection

Breakout Groups

Lebanon – Mascoma River

Hanover – Reservoirs

Sunapee – Lake Sunapee

Newport – Gilman Pond; Pollard Mill well

General Instructions:

A. Read the SWAR and note the “high” and “medium” susceptibility *ranking and factors* (i.e. threats) in Part 3

Review the SWAR map with hazards listed by project type. Note:
Attachment A: Key to Land Use Codes (i.e. “project types”) and Description of Risk for Source Water Hazard Inventory Sites

B. Discuss those threats with others in the group who may have some knowledge about either the threats and/or source water protections initiated by the water system or community.

C. Have a group member record consensus answers to questions in the handout, *Source Water Protection Community Needs Assessment Form*

Part 3

Watershed Area Characteristics

This part of the assessment describes the susceptibility of this source with respect to a number of factors evaluated by DES.

System Name: LEBANON WATER DEPT				Part 3 - Page 1
Source: MASCOMA RIVER SURF /RAW				Source ID#: 1321010 - 002
Susceptibility Factor	Susceptibility			Comments
	LOW	MEDIUM	HIGH	
1. Confirmed contaminant detects of concern in source water.	No current detects from anthropogenic sources (e.g. VOC, SOC, or metals) <input type="checkbox"/>	No medium criterion - source will rank either low or high for this concern.	Current detects from anthropogenic sources (e.g. VOC, SOC, or metals) <input checked="" type="checkbox"/>	Does not include naturally occurring substances.
2. Intake integrity.	No unresolved problems noted during sanitary survey. <input checked="" type="checkbox"/>	No medium criterion - source will rank either low or high for this concern.	Problems noted and remain since last sanitary survey. <input type="checkbox"/>	Problems with an intake, particularly the screen, can result in contaminants entering the distribution system.
3. Known sources of anthropogenic contamination (not covered below) within the hydrologic area of concern (HAC).	None present in the HAC. <input type="checkbox"/>	One or more within the HAC but not within 1000' of the intake. <input checked="" type="checkbox"/>	One or more within the HAC and within 1000' of the intake. <input type="checkbox"/>	Proximity of contamination to supply source and intakes is critical. Distance based on experience and consensus of advisory group.*
4. Potential sources of anthropogenic contamination (not covered below) within the hydrologic area of concern (HAC).	None present in the HAC. <input type="checkbox"/>	One or more within the HAC but not within 1,000 feet of the intake. <input type="checkbox"/>	One or more in the HAC within 1,000 feet of intake. <input checked="" type="checkbox"/>	Proximity of contamination to supply source and intake is critical. Distance based on experience and consensus of advisory group.*
5. Numbered state highways or active railroads in hydrologic area of concern (HAC).	None present in HAC. <input type="checkbox"/>	None present within 300 feet of the source in the HAC. <input type="checkbox"/>	Highways or active railroads within 300 feet of the source in the HAC. <input checked="" type="checkbox"/>	Roadways/railways increase the risk of accidental releases reaching the source. Roadways are also a significant non-point source of pollution. Distance based on experience and consensus of advisory group.*
6. Routine pesticide application in hydrologic area of concern (HAC).	No application sites in HAC. <input type="checkbox"/>	Application site(s) in HAC but not within 300	Application site(s) within 300 ft of intake. <input type="checkbox"/>	Distance based on experience and consensus of advisory group.* Impact of sites can be mitigated.

SWAR Attachment Inventory of Potential and Existing Sources of Groundwater Contamination within the Source Water Assessment Area for EPA-ID 1321010-002

EPA ID: 1321010-002
SYSTEM NAME: LEBANON WATER DEPT
TOWN: LEBANON

SRC.	MAP	FACILITY		
NUM.	SITE#	ID#	SITE NAME AND ADDRESS	PROJECT TYPE(S)

Source Water Hazard Inventory sites (March 2002) (* Inactive sites are marked with an asterisk)
This includes all sites that are regulated by NHDES to ensure water resource protection. See attached key for descriptions of particular project types.

s2

1	199012030	EXIT 17 MINI-STORAGE RIVERSIDE DRIVE LEBANON	LUST*, Risk: 8, Staff: CLOSED Tax map: 110/8, Lot: 5/70
2	199308016	NORTHERN STATE TIRE RTE 4 LEBANON	UIC*, Risk: 8, Staff: CLOSED Tax map: , Lot:
3	199611020	SUZETTE'S IMAGE CENTER 81 RIVERSIDE DRIVE LEBANON	UIC, Risk: 8, Staff: REGISTRATION Tax map: 110, Lot: 19

Underground Storage Tank sites (March 2002) (* Inactive sites are marked with an asterisk)
These are sites where there are, or were in the case of inactive sites, underground storage tanks. If there is a documented release from a tank, it becomes a LUST project type and is listed above in the Source Water Hazard Inventory.

s2

4	0112639	A&W ARTESIAN WELL CO OF VT INC RTE 4 LEBANON	UST* #Tanks: 0 Tax map: 111/11, Lot: 9/56
5	0112611	MASCOMA VILLAGE STORE RTE 4 LEBANON	UST #Tanks: 3 Tax map: 84/41, Lot: 29/6

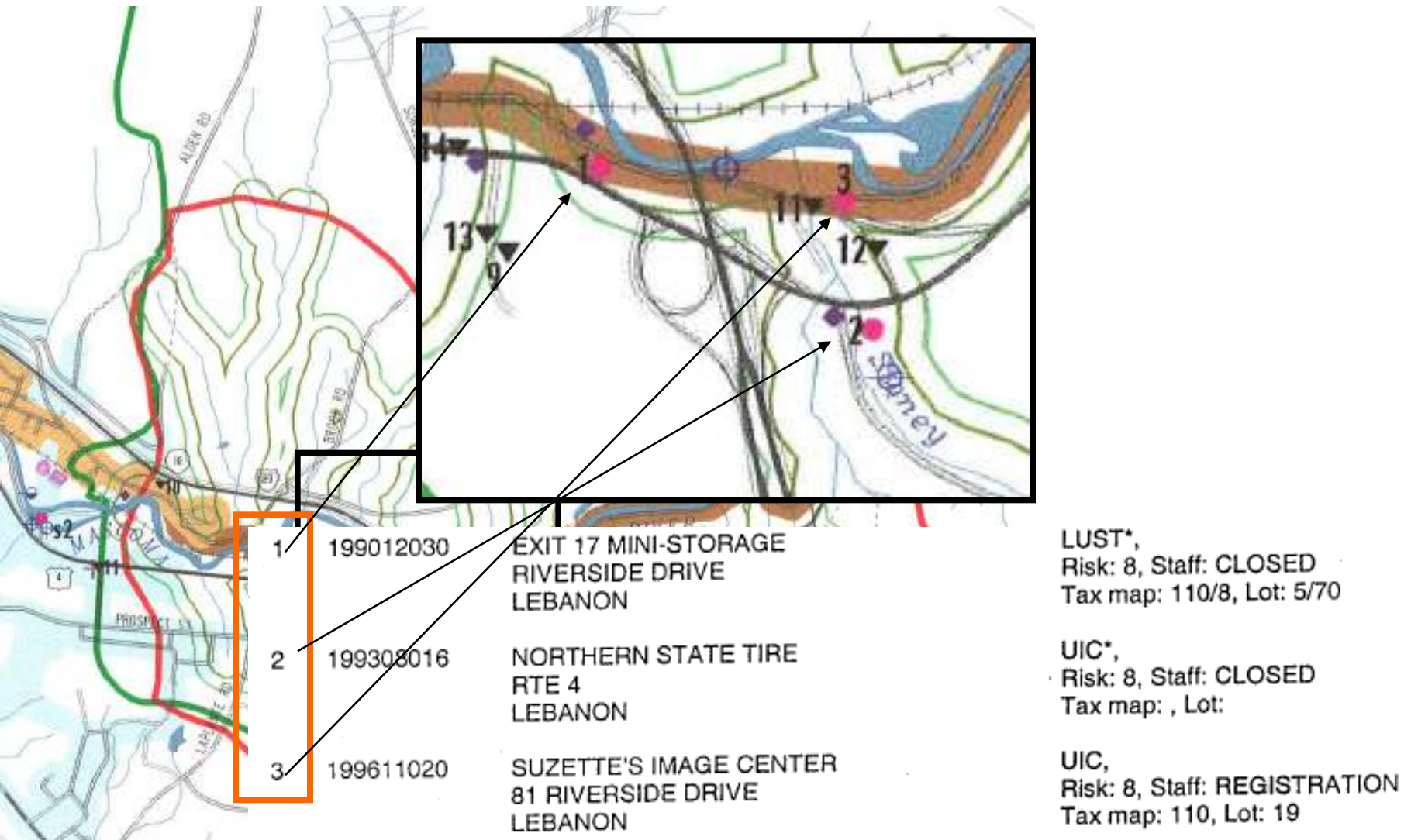
Resource Conservation & Recovery Act (RCRA) sites (January 2002)
These are facilities that generate hazardous waste. If a release is documented, it is listed above under the Source Water Hazard Inventory sites.

s2

6	NHD510119050	JACK'S SPEED SHOP INC RT 4 EAST LEBANON	RCRA Type: , Generator:
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PCSSs/KCSs are Each Numbered on Map and Coded by “Project Type”

For **Project Type** codes, see Attachment A: Key to Land Use Codes and Description of Risk for Source Water Hazard Inventory Sites



Project Code Attachment

Key To Local Potential Contamination Source Inventory

Land Use	Code	Description
Vehicle Service & Repair Shop	VSR	Auto, truck & equipment service or repair shops; autobody shops, including those associated with fleet maintenance; and mobile home dealers.
General Service & Repair Shop	GSR	Furniture stripping, painting, & refinishing; photographic processing; printing; appliance & small engine repair; boat repair; refrigeration, heating, ventilating & air conditioning shops; and electrical repair shops.
Metalworking Shop	MW	Machine shops; metal plating, heat treating, smelting & jewelry making shops.
Manufacturing Facility	MAN	Electronic & chemical manufacturing, processing & reclamation; paper, leather, plastic, fiberglass, rubber, silicon & glass making; pharmaceutical production; pesticide manufacturing; and chemical preservation of wood and wood products.
Waste & Scrap Processing & Storage	WSPS	Junkyards, scrap yards & auto salvage yards; wastewater (ww) treatment plants; dumps, landfills, transfer stations & other solid waste facilities; ww or septage lagoons.
Laboratories & Professional Services	LAB	Medical, dental, veterinary offices & pet grooming; research, development, testing & analytical labs; and funeral services.
Cleaning Services	CLN	Dry cleaners; laundromats; beauty salons; and car washes.
Food Processing Plants	FP	Meat packing & slaughterhouses; dairies; and processed food manufacture.
Fueling Maintenance of Excavation & Earthmoving Equipment	EEE	Active gravel pits; construction businesses with earthmoving or excavating equipment stored and maintained on site.
Concrete, Asphalt, & Tar Manufacture	CAT	Concrete and asphalt plants.
Car Dealerships	CARD	Car dealerships (with or without service departments).
Construction Sites	CONS	Construction sites (not including housing developments).
Aboveground and Underground Storage Tank facilities	AST/UST	Gas stations; petroleum bulk storage; chemical storage; and on-site heating fuel.
Salt storage & use	SALT	For winter road & parking lot use.