

**STATUS REPORT
ORPHAN STORMWATER SYSTEM GRANT PROJECT
MAY 2006 – FEBRUARY, 2007**



VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATER QUALITY DIVISION, STORMWATER SECTION
MARCH 2007

EXECUTIVE SUMMARY

Since May 2006 the DEC Water Quality Division's Stormwater Section has been involved in the implementation of an "Orphan Stormwater System" pilot project. This project was created to facilitate cooperation between the State, property owners, and municipalities for the purpose of renewing expired stormwater permits and the repair of degraded stormwater systems. The project has dedicated approximately .75 FTE of permanent staff and has hired two full time temporary employees to research and inspect in the field about 100 permitted drainage systems meeting the "orphan" definition. "Orphan" stormwater systems are stormwater systems that meet the following criteria:

- a) the drainage system has an associated expired State discharge permit;
- b) the drainage system serves a residential subdivision, in whole or in part;
- c) the developer/original permittee or the successors in development no longer have any ownership in the subdivision; and
- d) the drainage system does not discharge to a Clean Water Act 303(d) listed stormwater impaired waterway.

Field inspections were conducted at all identified orphan systems during the summer of 2006. These inspections indicated that 20% of the systems were not built or were in substantial disrepair. However, the majority of systems, about 80%, had only minor maintenance or repairs needed. Typically the minor maintenance needed was in the category of standard roadway repairs. Catch basin cleaning, ditch cleaning, roadside swale mowing or grading, rock lining of ditches, rip rapping of outfalls and, roadside mulch and seeding are examples of maintenance activities considered minor. Examples of more serious maintenance needs include culvert replacement, catch basin riser repair/replacement or detention pond repair/replacement.

Stormwater staff also conducted an outreach effort to all municipalities with orphan stormwater systems. Staff developed an informational web site: (http://www.anr.state.vt.us/dec/waterq/stormwater/htm/sw_orphans.htm), prepared informational grant packages and inspection reports, and responded to numerous public inquiries. The outreach effort included at least 3 separate postal mailings to each municipality between June and December. The municipalities were notified of their respective orphan systems/permits and were sent field inspection summaries. Each municipality was contacted by phone and given a detailed explanation of the orphan project and the stormwater permits in their municipality. All of the information was also provided to the municipalities in digital CD format. In September and October, 2006 five regional informational meetings for municipalities were held at locations around the State.

A grant application period was established effective June 30, 2006 through January 31, 2007. As of February 6, 2007 the number of expired orphan system permits eligible for funding was 72. As of January 31, 2007 the Stormwater Section had received 26 grant applications requesting \$468,418 for 26 orphan systems.

Repair and maintenance of these stormwater drainage systems is estimated to significantly reduce sediment pollutant loading to Vermont's surface waters.

INTRODUCTION

The following report is submitted to the 2007 Vermont State Legislature and is required under Section 7 of Act 154 of the 2006 Vermont State Legislature. This report summarizes the implementation by the Agency of Natural Resources (ANR) of the orphan stormwater system, construction, renovation or repair pilot project (10 V.S.A. § 1264c.) This project was created to facilitate cooperation between the State, property owners, and municipalities for the purpose of renewing expired stormwater permits and the repair of degraded stormwater systems. This report follows an outline based on the elements prescribed in Section 7.

The orphan stormwater system pilot project became effective on May 23, 2006 with the signature by the Commissioner of the Department of Environmental Conservation of the “Procedure for Phase I of a Program for Funding Upgrades to Existing "Orphaned" Stormwater Management Systems in State Waters that are not Principally Impaired Due to Stormwater Runoff”. In this report the grant project will be referred to by the acronym OFA.

BACKGROUND

Since the late 1970’s the ANR has issued individual discharge permits to protect the water resources of the State from stormwater runoff. Since 1978 the creation of a threshold acreage of impervious surface has triggered a discharge permit requirement. Individual stormwater discharge permits typically have a life of 1-5 years. “Orphan” stormwater systems are stormwater systems that meet the following criteria:

- a) the drainage system has an associated expired State discharge permit;
- b) the drainage system serves a residential subdivision, in whole or in part;
- c) the developer/original permittee or the successors in development no longer have any ownership in the subdivision; and
- d) the drainage system does not discharge to a Clean Water Act 303(d) listed stormwater impaired waterway.

Since 2001 the ANR Water Quality Division Stormwater Section has managed the State stormwater discharge permit program. Since August 2002 the ANR has had a general permit in place that allows for the renewal of previously expired discharge permits in waterways not principally impaired by stormwater. This permit is General Permit 3-9010. Since August 2002 the Stormwater Section has reauthorized 613 expired discharge permits under General Permit 3-9010. To date a permit backlog of 1490 expired discharge permits has been reduced to 211. Of these remaining 211 permits about 100 are for commercial, industrial or transportation land uses and the remainder are for residential land uses. The orphan residential systems are a subset of the latter. This permit backlog was the result of long term under funding of the State stormwater discharge permit program when administered by the ANR Wastewater Management Division. Due to funding limitations,

issued discharge permits were not adequately tracked for permit renewal, current permittee, permit transfer to new owners, or annual permit maintenance requirements. As a result the current permittee, current maintenance condition and in many cases the location of a project were unknown at the time of the creation of the OFA project.

ACTIVITY UNDER ACT 154

Since May 2006 the Stormwater Section has hired two full time temporary employees to research and field inspect about 100 permitted drainage systems meeting the orphan definition (Appendix A, Table A and Map A). In addition, another .75 full time permanent employee has been utilized to contact municipalities, organize town and regional meetings and oversee the project staff.

The OFA project staff has developed an informational web site, prepared grant packages and inspection reports, and responded to numerous public inquiries. A grant period was established effective June 30, 2006 to January 31, 2007. Staff has developed a spread sheet that describes each permitted system, the 2006 condition of the system, the estimated impervious cover in the subdivision, the number of lots, and a list of the current landowners and mailing addresses. As required by law, staff has investigated any current relationship between the original developer or successor and the subdivision. Evidence of a relationship would disqualify the subdivision for financial assistance.

Beginning in June 2006 OFA project staff initiated outreach efforts to all of the municipalities with orphan stormwater systems (Appendix A, Table B). This outreach effort included at least 3 separate postal mailings to each municipality between June and December. The municipalities were notified of the orphan systems/permits in their towns and were sent detailed field inspection summaries. Each municipality was contacted by phone and given a detailed explanation of the orphan project and the permits in their respective jurisdiction. All of the information was also provided to the municipalities in digital CD format. In September and October five regional meetings were held around the State. (Appendix A, Map B). Eighteen municipalities attended these meetings. Nine towns requested additional individual meetings with their respective Select Boards.

Beginning also in June 2006 all homeowners of record were notified of field inspection site visits by a postcard mailing. In November 2006 two letters were sent to all orphan system homeowners of record. Municipalities also received copies of these letters. The first letter explained the expired status of the permit associated with their property and the need for the permit to be renewed under General Permit 3-9010. The second letter announced the availability of the OFA grant project and urged the homeowners to contact their municipalities for additional information. The second letter also noticed the grant deadline extension to January 31, 2007.

SUMMARY OF GRANTS AWARDED (154, Sec.7(1))

The period for receiving eligible grants was July 30, 2006 - January 31, 2007. As of February 6, 2007 no grant awards have been made.

A discussion of “mechanisms proposed by municipal applicants for assuming responsibility for the permitting, operation and repair of a relevant orphan stormwater system” as required under Sec.7(1) is located in the last section of this report, entitled “Recommendations for Effective Enforcement and Management of State Discharge Permits (154, Sec.7(8))”.

SUMMARY OF EXPIRED DISCHARGE PERMITS ELIMINATED AND EXPIRED PERMITS REMAINING (154, Sec.7(2))

In 2005 ANR Stormwater Section staff identified 48 potential orphan systems. In June 2006 OFA project staff identified additional systems potentially eligible for OFA and the total number of orphan systems increased to 111. Since June 2006 the overall number of eligible orphan systems has been reduced although some new orphans have been added. As of February 6, 2007 the number of expired orphan system permits eligible for funding was 72. These permits are shown as the unshaded records in Appendix A, Table A.

Since June 2006, forty orphan systems have been removed from the list of eligible permits. Of the forty: three permits were renewed, five permits are currently under technical or administrative review for renewal, seven were determined to be under the regulatory threshold, seven were determined to have never been built, four have notified the ANR they will submit renewal applications in lieu of the grant, twelve were found to still have developer ownership or an individual party ownership, and two were classified as discharging to stormwater impaired waters. These permits are shown as the shaded records in Appendix A, Table A.

SUMMARY OF MUNICIPAL ORPHAN APPLICATIONS (154, Sec.7(3))

At the close of the grant deadline on January 31, 2007 16 municipalities had applied for 26 orphan stormwater system grants. At the present time no grant awards have been authorized. Currently applications are under review and staff anticipate awarding all 26 requests in March 2007.

SUMMARY OF MUNICIPAL INCENTIVES (154, Sec.7 (4))

A discussion of incentives to encourage municipal participation in the construction, renovation, repair or maintenance of orphan stormwater systems as required under Sec. 7(4) is located in the last section of this report, entitled “Recommendations for Effective Enforcement and Management of State Discharge Permits (154, Sec.7(8))”.

ANALYSIS OF CURRENT COSTS AND FUTURE FUNDING NEEDS
ASSOCIATED WITH ORPHAN SYSTEMS (154, Sec.7(5))

As of January 31, 2007 the Stormwater Section had received 26 grant applications. The total funding request for the 26 orphan systems was \$468,418. Funding requests ranged from a low of \$800 to a high of \$158,000 with an average request of \$18,031 and a median request of \$3,637. A summary of the grant requests and the number of residential homeowners receiving financial assistance can be found in Appendix A, Table D.

While not all grant information has been reviewed and compiled a discussion on information collected to date is merited. Field inspections of 94 orphan systems in 2006 by project staff indicate there were 19 (20%) systems that were not built or were in substantial disrepair. The majority of systems, about 79 (80%), had minor maintenance or repairs needed. Typically minor maintenance needed was in the category of standard roadway repairs. Catch basin cleaning, ditch cleaning, roadside swale mowing or grading, rock lining of ditches, rip rapping of outfalls and, roadside mulch and seeding are examples of maintenance activities considered minor. Examples of more serious maintenance needs include culvert replacement, catch basin riser repair/replacement or detention pond repair/replacement. The 2006 findings echo similar findings found in a 1994 study by the ANR Wastewater Management Division. This report found that in a survey of 527 permitted drainage systems across the State that 19% of the systems inspected were in substantial disrepair. The majority (81%) of the systems were in good to excellent condition (VTDEC, 1995). Finally, based on cost information submitted with the 26 2006 orphan grants it appears that in general permits needing minor repairs have a cost range of \$1,800-\$6,000 and permits needing substantial repairs have a cost range of \$15,500-\$100,000.

As noted above 72 orphan systems have been identified as eligible for the OFA project. Approximately one-half of these systems are entirely on private property with no public right-of-way associated with them (Appendix A, Table C). To date, municipalities are reluctant to become affiliated with these privately owned systems. There were no municipalities that submitted orphan grant applications for private orphan systems.

As of February 6, 2007 the Stormwater Section has had further contact with owners or municipalities associated with twenty additional orphan permits and will likely resolve these without the need for financial assistance (Appendix A, Table D). This leaves twenty-seven orphan permits left unresolved. Nineteen of these orphans are entirely on private property and eight have public ownership. Based on both the inspection condition assessments conducted by the Stormwater Section and the range in repair costs submitted in the 26 grant applications, the estimated cost to reauthorize the remaining twenty-seven orphan permits in need of financial assistance is about \$275,000 (Appendix A, Table E). Residual funds remaining in the year one grant project are \$131,172. Therefore it is estimated that an additional \$144,000 is needed to meet the financial assistance need.

SUMMARY OF FAILED ORPHAN SYSTEMS & POLLUTION
ASSESSMENT (154 Sec. 7(6))

The 2006 field inspection of the 72 eligible orphan systems is summarized in Figure 1. Of this subset from the original 94 systems inspected, 80% were in minor disrepair and 20% were in substantial disrepair. Almost all systems were in need of basic maintenance. Without site specific monitoring of stormwater discharges, it is difficult to provide solid estimates on pollutant loads or stormwater volumes to waters of the State from these discharges. However, it is reasonable to assume that the pollutant loading from unmaintained or failed stormwater systems comes from two sources. Since sediment is the most common pollutant in Vermont waters and since most other pollutants are always attached to sediment, this report will only discuss this type of pollutant loading. First, stormwater treatment systems are designed to capture sediment mobilized in runoff. The sediment is detained in swales, catchbasins, ponds or sedimentation basins. If these systems are functioning correctly they will trap the mobilized sediment and the sumps will slowly fill.

**Overall Condition of the Orphan Stormwater Systems
Eligible for Grants**

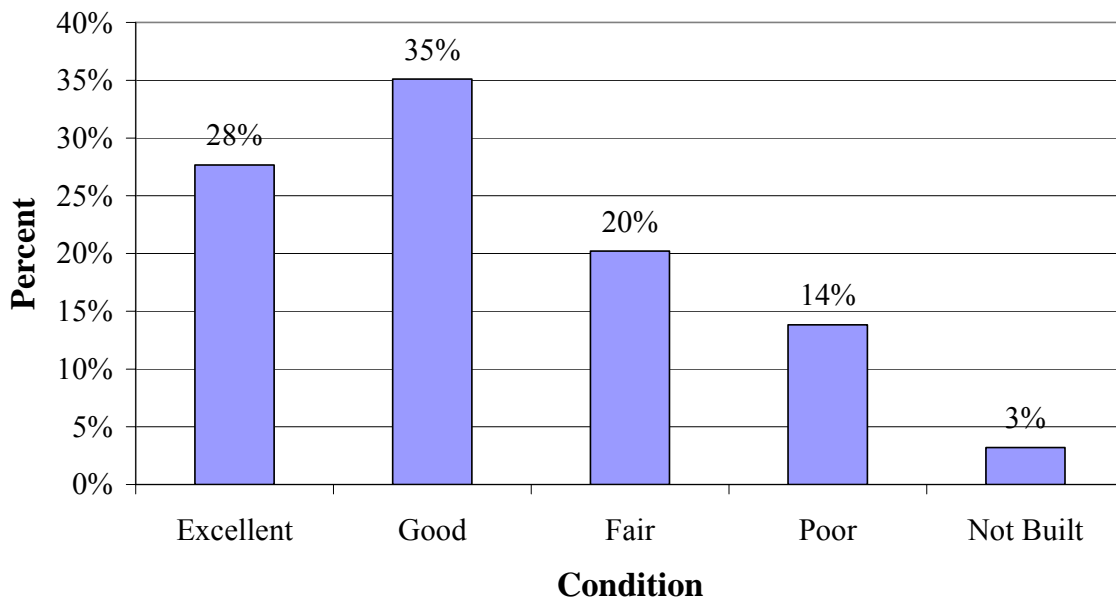


Figure 1.

Proper maintenance of all of these sumps entails removal of sediment before the system is filled or clogged. Sediment wash off during storm events can be modeled and a conservative estimate of the sediment pollutant load obtained by using the total impervious cover and the drainage area of the stormwater system. At this time the Stormwater Section

has very limited data on the as-built impervious cover of each orphan subdivision. However a gross calculation for the sum of 70% of the orphan drainages using the original permit data can be made with the Simple Method sediment wash-off equation. This calculation (Appendix B) estimates a total sediment wash off load of 509 tons/year from 49 of the 72 orphan systems for which data was available. This is equivalent to about 30 dump truck (14yd³) loads of sediment per year. This calculation assumes the direct wash off of sediment to streams with no entrapment or capture by the drainage system. It is reasonable to assume that the majority of this wash off sediment is reaching waters of the State since almost all of the systems inspected are in need of basic maintenance. If annual maintenance of these systems was being performed the annual load could be reduced by as much as 50%, or 255 tons/year; or an equivalent 15 dump truck loads of sediment per year.

The second and possibly more important source of sediment from these systems is from rill, swale or channel erosion. In order to create a reliable estimate of the amount of pollution caused by this type of erosion, measurements of the depth, length and width of the erosion rills are necessary. At the present time this data is not available for the orphan systems. However, some channel erosion was evident at almost all of the orphan sites. Channel erosion can export sediment loads several magnitudes greater than surface wash off loads. For example, a USDA Natural Resources Conservation Service equation estimates that a common residential drainage swale 200 feet long and 5 feet wide, eroding at 3 inches/year will result in an export of 90 lbs. of sediment per cubic foot of erosion for a total of 11.25 tons of sediment/year:

$$200 \times .25 \times 5 \times 90/2000 \text{ lbs./ton} = 11.25 \text{ tons (Mitchell, 2003)}$$

On the basis of the above two calculations it is logical to conclude that by implementing annual maintenance activities, and by repairing, regrading, rock lining and revegetating eroded swales associated with orphan permits an enormous volume of sediment will be prevented from polluting Vermont's surface waters.

SUMMARY OF ENFORCEMENT ACTIONS ON STORMWATER DISCHARGE PERMITS (154 Sec. 7(7))

As of February 6, 2007 the Stormwater Section has issued 74 Notices of Alleged Violation (NOAV) to permittees for failure to renew their expired discharge permit under General Permit 3-9010. As stated above, the permit backlog of about 1490 permits has been reduced to 211. As of February 6, 2007 thirteen cases have been referred to the ANR Enforcement Division for follow-up. For these 13 cases:

- a) nine cases were finalized by securing voluntary compliance by the property owner;
- b) two cases have been suspended pending additional investigation by the division; and
- c) two cases remain under review by the Enforcement Division

**RECOMMENDATIONS FOR EFFECTIVE ENFORCEMENT AND MANAGEMENT
OF STATE DISCHARGE PERMITS (154 Sec.7(8))**

The Stormwater Section has drafted a new policy for enforcement of all existing State and Federal stormwater permit requirements. The procedure is attached as Appendix C.

This section summarizes findings in relation to Act 154 Section 7 subsections (1),(4),(8). All of the information requested under these subsections is relative to the development of a better method, than currently exists, for managing homeowner, municipal and State responsibilities with stormwater discharge permits. While the above new policy and much of the below discussion is pertinent to all Federal and State stormwater permit programs, the focus of this analysis is on the issues relevant to the renewal of expired State discharge permits under General Permit 3-9010.

For all Vermonters, clearly, the following two scenarios currently associated with repermitting are unacceptable:

- a) landowners (including the municipality) receiving enforcement letters from the ANR for stormwater discharge permits of which they have no knowledge; or
- b) a landowner selling or refinancing his/her home is notified by his/her title attorney, at the time of the property sale, of a property title defect due to an expired stormwater discharge permit.

Since March 2006 Stormwater Section staff has held numerous discussions with all of the Vermont municipalities with orphan systems. The municipal response to the expired permit problem has varied considerably. This variation can be explained in part by the way a municipality understands the problem of stormwater runoff. For example, in Chittenden County stormwater runoff, stormwater permits and the liability associated with both have been topics before municipal staff and boards for well over 5 years. Many of these municipalities have developed policies or programs to facilitate the renewal of expired discharge permits. In most other regions of the State this is the first time (2006) the issue has been brought to the attention of the municipality¹. As a result there is a substantial learning curve in terms of understanding the existence and ramifications of expired permits. Consequently these municipalities have, in many cases, proceeded with caution in responding to the State and homeowner's concerns.

The following two pages summarize OFA Project staff observations and comments received from the public and the municipalities. A series of recommendations are provided in conclusion. The observations and recommendations are presented as two viewpoints, the ANR viewpoint and the municipal viewpoint.

¹ OFA project staff noted that there appears to be across the State a difference in the effort to locate expired stormwater discharge permits during deed research by Title Attorneys. Title Attorneys appear to be doing a much more thorough job in Chittenden County relative to other regions of the State.

*(I) Why a municipality is participating and applying for an orphan grant.
(Municipal viewpoint)*

- Stormwater management is a municipal concern/obligation; subsequently, the municipality does not view the permit as solely the homeowner's responsibility.
- The municipality is already maintaining the system as it is maintaining the road. The drainage system is in the public ROW and the municipality would need to be the co-permittee under General Permit 3-9010.
- Funding is available now and it may not be in the future.
- It is impossible or very difficult to mobilize homeowners without assistance.

(II) Why a municipality does not want to participate and apply for an orphan grant. (Municipal viewpoint)

- The system is on a private road. The municipality has never been involved with the road's maintenance and does not wish to be involved now.
- The \$55/impervious acre annual operating fee. This fee can be "absorbed" or distributed in several ways, but it's unappealing. Any potential costs associated with the stormwater system's maintenance/upkeep and re-compliance is also viewed as disincentives but the fee is particularly objectionable.
- The municipality, when accepting the grant, is obligated to remain a co-permittee for all future life cycles of the permit.
- The municipality is forced to "pick up" after the developer, although it was the responsibility of the developer to transfer the permit.
- The State stormwater management standards will change in the future resulting in additional upgrade costs for the system by the municipality.
- There are liability issues associated with working on private property.
- The municipality is being told to assume the responsibility of enforcing the State's permits.

***(III) Why a municipality should participate and apply for an orphan grant.
(Agency viewpoint)***

- When there is public right of way involved the municipality should be a co-permittee for General Permit 9010. This responsibility is easier to take on when it is funded.
- Municipalities are more likely to maintain and are more capable of maintaining the stormwater system (via the Public Works or Highway Department).
- When a system has failed or is in disrepair and the ANR Best Fit Treatment policy is required and therefore the costs to homeowners may be high.
- The municipality can redistribute costs associated with the system and permit renewal through an assessment district or stormwater utility.
- The municipality is the best responsible party. A municipality can make side agreements that have legal standing that can be enforced. A municipality may also have a commitment to water quality that does not resonate with individuals, although the converse is also possible.
- When there is no interest or motivation to form a homeowners association, the town is clearly the best and perhaps only permittee.

***(IV) Current Municipal Approaches to Stormwater Management.
(Municipal viewpoint)***

- Some municipalities have covered costs associated with stormwater permits and stormwater management in general by “adding a line” on the water and sewage bill for stormwater.
- Share the responsibility. Municipalities will perform maintenance and pay fees for what is public while the Homeowners Association will perform the maintenance and pay fees for structures on private property.
- Municipalities have encouraged homeowners in subdivisions with minimal maintenance needed to obtain a permit renewal independently of the OFA project.

- Some municipalities have covered the entire cost of permit renewal and future maintenance and consider it a municipal obligation to do so.

(V) Recommendations to Improve the Current Municipal Approach to Stormwater Management (Agency viewpoint)

- ▶ Municipalities may want to consider the planning, design, construction and ownership of public stormwater systems when returning Performance Bonds.
- ▶ Municipalities could do more to ensure that a developer follows through on his/her stormwater obligations when new development occurs and the municipality is likely to take over future ownership of the right of way.
- ▶ Proper management of stormwater often becomes a municipal issue. Problems are more likely when management is the responsibility of homeowners. The municipality should be prepared for and understand the responsibilities of good stormwater management.
- ▶ Stormwater management is important for a community's environmental quality.
- ▶ The municipality's involvement with the OFA Project, however minimal, is likely to increase the overall community awareness of nonpoint source pollution and the need for stormwater management to protect the State's waterways.

(VI) Recommendations to Improve the Current State Approach to General permit 3-9010 Administration (Municipal viewpoint)

- ▶ Eliminate the \$55/impervious acre annual operating fee for municipalities.
- ▶ Provide the municipalities with more time to understand and respond.
- ▶ Provide Year 2 (SFY08) funding, if necessary, in the event that Year 1 funding is inadequate to meet municipal demand. There is the potential for 10-15 more orphan systems that have currently active permits but will expire by 2008 and that are not covered under General Permit 3-9015².
- ▶ The OFA procedure should allow some latitude in the formation of "after the-fact" homeowner or condominium associations given the time and effort required to

establish such associations.

- ▶ Provide the municipalities with example easements and homeowner covenants that are acceptable for the permit renewal process.

² General Permit 3-9015 requires the filing of the permit in the local land records and transfer of the permit by the original permittee to the successor permittee(s). In addition the successor permittee(s) must show that it has read and is familiar with the terms of this general permit and agrees to comply with all the terms and conditions and it has adequate funding or other means to effect compliance with all the terms of permit coverage. These requirements should prevent the creation of any new “orphan” permits after 2008.

References

Mitchell, Charles, 2003. personal communication. USDA Natural Resources Conservation Service, Morristown, VT

Schueler, Thomas R. 1987. Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMP's. Metropolitan Washington Council of Governments, Metropolitan Information Center, Washington, D.C.

Vermont, State of. 1995. Vermont Stormwater Best Management Practices Assessment Study. VT Department of Environmental Conservation, Waterbury, VT.

Orphan Pilot Project Staff

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Orphan System Permit Information (2/6/2007)

Permit #	Project Name	Project Town	# of Lots	Date Permit Issued
Single Family				
1-0580	Ball Mountain Road Subdivision	Arlington	18	9/30/2002
3277-9010	Jasper Pines	Arlington	10	9/24/1990
3263-9010	Miller Woods	Barre	9	8/14/1989
2-0993	Subdivision at intersection of Berlin and Prospect Streets	Barre City	75	3/11/1982
2-1159	17 Lot Subdivision on Berlin and Prospect Streets	Barre City	17	10/30/1986
1-0605	The Sugar Woods	Barre Town	21	1/7/1988
2-0736	Holtsprings Development Stage 5	Bennington	79	9/19/1978
1-0668	Quail's Hill	Brattleboro	17	8/9/1988
1-0783	Wilson Woods	Brattleboro	23	1/20/1989
2-0815	Woodbine Estates	Brattleboro	2	2/29/1980
2-1089	Hillwinds North (formerly Black Mt. View Drive)	Brattleboro	14	4/22/1986
1-1088	Broadview Estates	Bristol	25	9/30/2002
2-0830	Patton Woods	Charlotte	8	3/28/1980
1-0972	Shady Grove	Chester	7	10/23/1990
3266-9010	Valleyfield	Colchester	1	7/1/1985
1-0588	Shulman Subdivision	Dorset	6	12/14/1987
2-1152	The Club at Overbrook	Dover	17	10/30/1986
1-1021	Elmore Mountain Road Subdivision	Elmore	1	5/16/1991
1-1125	Valentine Drive Subdivision	Enosburg	8	4/19/1993
1-0625	Buck Hollow Heights	Fairfax	15	3/3/1988
1-0626	Valley View Subdivision	Fairfax	10	3/3/1988
2-0801	Beliveau Subdivision	Fairfax	30 (9 built)	11/29/1979
4194-9010	Buck Hollow Heights on Rood Mill Road	Fairfax	10	1/25/1991
1-0738	Genge Subdivision	Fayston	4	10/16/1988
2-0750	Sherwood Forest Subdivision	Georgia	58	5/17/1982
1-0798	Sunnyside Subdivision	Hartford	18	2/3/1989
2-0764	Monument Road Subdivision	Highgate	18	6/3/1979
3719-9010	Hideaway Paradise Estates	Highgate	23	10/19/1984
1-0514	Hidden Pasture	Hinesburg	10	4/12/1988
2-0946	East Street Subdivision	Huntington	7	5/23/1981

Permit #	Project Name	Project Town	# of Lots	Date Permit Issued
Single Family (continued)				
1-0646	Patten Corp 20 lot subdivision	Jamaica	20	8/4/1988
1-0516	Snowflake Ridge	Jericho	9	11/3/1987
1-0642	Laisdell Pond	Jericho	10	3/24/1988
1-0510	9 lot single family subdivision	Londonderry	9	5/12/1987
1-1329	Highland Views	Ludlow	21	3/31/2003
2-1087	Millsite Homes	Ludlow	13	3/31/1986
2-1143	Egypt Subdivision	Lyndon	44	10/7/1986
1-0507	South Hill	Manchester	6	5/13/1987
1-0807	John Rusin Subdivision	Manchester	4	4/9/1989
1-0849	Meadow Ridge Development	Manchester	13	10/10/1989
2-1185	North Ridge Run	Manchester	13	1/21/1987
2-1127	Pendbridge Subdivision	Manchester Village	10	9/5/1986
1-0885	Goodwin Subdivision	Milton	11	11/28/1989
1-0947	Edgewater Terrace	Milton	8	1/6/1990
2-0810	Herrick Hill	Milton	13	1/28/1980
2-1192	Desranleau Subdivision	Milton	7	7/1/1988
2-0821	Adams Hill Development	Newfane	9	3/10/1980
1-0816	Waisel Subdivision	Pownal	16	7/8/1992
2-1074	Bare Hill	Putney	5	12/20/1985
1-0918	Peet Farm Property Development	Richmond	8	10/26/1990
2-0169	Southview Subdivision	Richmond	44	8/8/1983
2-0977	Murray Farm Subdivision	Richmond	9	12/18/1981
2-1134	Deer Creek	Richmond	9	7/30/1986
1-0495	Winch Hill	Roxbury	15	5/7/1987
1-0707	Laverne Drive Subdivision	Rutland	17	4/19/1989
1-0537	Double Four Orchard Subdivision	Springfield	7	11/3/1987
1-0691	Guyette Circle and Bowles Lane, a development off of Edward Street	St Albans	28	9/12/1988
1-0577	McCracken Homestead Estates	St Albans Town	35	12/4/1987
1-0952	Meadow Crossing Subdivision	St Albans Town	23	7/31/1990
1-0506 sn/1	Adams Street	St Albans Town/City	20	12/31/1991

Permit #	Project Name	Project Town	# of Lots	Date Permit Issued
Single Family (continued)				
2-0763	Mt. Prichard subdivision	St George	6	6/3/1979
1-0863	Arlington Development Tract II	St Johnsbury	9	4/23/1990
2-0965	Arlington Development	St Johnsbury	37	9/21/1981
1-0532	Sterling Falls Gorge Subdivision	Stowe	2	10/6/1987
1-0875	Worchester Forest Subdivision	Stowe	7	2/25/1992
5021-9010	Dishmill Farm Homesites	Stowe	6	10/21/1994
3685-9010	Jones Court	Swanton Village	37	1/26/1988
1-0594	Pratt & Mallow Development	Underhill	4	12/30/1987
2-0813	Mt. Vista Subdivision	Underhill	6	2/5/1980
2-0828	Pine Ridge Road Subdivision	Underhill	12	3/20/1980
1-0936	Otter Creek Subdivision	Vergennes	33	7/2/1990
2-0635	Ice House Court	Vergennes	8	5/23/1985
2-0755	Sunset Drive	Vergennes	20	4/18/1979
1-0663	Central Park Residential Subdivision	Vernon	19	8/11/1988
1-1126	Upland Mowing	Waterbury	9	4/30/1993
1-1132	ESM Equities Subdivision	Waterbury	18	5/16/1993
2-1118	Smith Subdivision	Weathersfield	17	8/8/1986
1-0968	Deerfield Meadows	West Dover	20	12/6/1990
1-0509	Yale Heights Residential Subdivision	West Windsor	22	1/10/1991
1-0954	Woodcock Farms East	Weston	12	9/4/1990
2-1010	The Orchard	Weybridge	7	7/25/1985
2-0641	Garden Lane	Williamstown	9	5/30/1985
1-0970	Blackberry Ridge Estates	Williston	6	10/19/1990
83			1322	
Multi-Family				
1-0316	Haviland's Privilege Townhouses	Bennington	1	7/9/1980
1-0602	South Street Condominiums	Bennington	40	8/8/1989
2-0903	Wintergreen Condos	Burke	12	11/13/1980
1-0676	Bay Ridge Estates	Colchester	20	8/18/1988
2-0975	Partridge Hill	Colchester	1	7/1/1985
3631-9010	Whispering Pines	Colchester	1	9/18/1978

Permit #	Project Name	Project Town	# of Lots	Date Permit Issued
Multi-Family (continued)				
1-0226	Fiddlehead Condominiums	Fayston	1	2/22/1997
2-1050	Colony Club Condos	Killington	1	7/1/1987
2-0987	Magic Mountain Condos	Londonderry	15	2/19/1982
2-1068	Riverview Farm Condos	Londonderry	17	12/20/1985
2-0235	Brookhaven	Ludlow	1	7/1/1985
2-0642	Bourne Brook Apts/Manchester East Condominiums	Manchester	32	5/20/1986
2-0913	Lane Shop Condominiums (River Condo.)	Montpelier	1	7/1/1985
2-1115	Lake Views Estates	Newport City	1	7/1/1987
2-0129	Creekside	Shelburne	1	8/4/1982
1-0671	Warner Drive	St Albans	7	8/9/1988
1-0116	Mountain View Estates	St Johnsbury	48	5/1/1980
2-0119	South Village	Warren	1	6/28/1982
4080-9010	Dover Watch	West Dover	1	7/21/1982
19			202	
Other				
1-0614	Partridge Run	Dover	21	1/21/1900
3256-9010	Sunrise Valley	Hartford	41	3/5/1987
2-1177	Milton Falls	Milton	49	1/21/1987
3708-9010	Lake Memphremagog Views	Newport City	59	3/30/1981
1-0572	Huntington Road Development	Richmond	18	12/14/1987
1-1065	Summit Place	St.Albans Town	12	9/21/1988
1-0484	Country Club Estates	Swanton	35	5/7/1987
3814-9010	Crosby Farms	Vergennes	49	6/30/1993
1-0898	Williamstown Business Center	Williamstown	13	1/15/1990
9			297	
Mobil Homes				
2-0632	Woodside Manor	Hartland	53	5/21/1985
1			53	
TOTAL				
112		59	1874	

= Former Orphans/Resolved Permits

Table B

Town Contact Summary (2/6/2007)				
Project Town	Contacts	Inspection Report Sent	Regional Meeting Attended	Town Meeting
Arlington	2	9/5/2006		
Barre Town	4	7/21/2006	9/28/2006	
Bennington	3	9/15/2006		
Brattleboro	3	9/13/2006	9/20/2006	
Bristol	2	9/6/2006		
Charlotte	2	9/7/2006		
Colchester	5	9/18/2006	9/21/2006	
Dover	2	9/11/2006		
Fairfax	4	9/19/2006	9/21/2006	
Fayston	2	9/11/2006		9/11/2006
Georgia	5	9/18/2006		1/22/2007
Hartford	3	8/21/2006	10/4/2006	
Highgate	3	9/25/2006	9/21/2006	
Hinesburg	2	9/6/2006	9/21/2006	
Huntington	2	9/6/2006		
Jamaica	2	9/12/2006		
Jericho	5	8/21/2006		10/5/2006
Londonderry	3	9/15/2006		
Ludlow	3	9/5/2006		
Manchester Town	5	7/21/2006		
Manchester Village	1	9/25/2006		
Milton	5	9/19/2006	9/21/2006	1/25/2007
Montpelier	3	9/22/2006		
Newfane	2	12/1/2006		
Newport City	4	9/18/2006		1/29/2007
Putney	2	9/11/2006	10/4/2006	
Richmond	4	8/23/2006		
Roxbury	1	9/25/2006		
Rutland City	4	9/19/2006	9/27/2006	
Springfield	2	9/26/2006	10/4/2006	
St Albans City	4	9/19/2006	9/21/2006	11/6/2006
St Albans Town	4	8/25/2006	9/21/2006	
St George	1	9/7/2006		
St Johnsbury	3	9/18/2006	9/28/2006	11/27/2006
Stowe	2	8/21/2006		
Swanton Town	2	9/13/2006	9/21/2006	
Swanton Village	3	9/18/2006	9/21/2006	
Underhill	3	8/21/2006		8/24/2006
Vergennes	3	9/18/2006	9/21/2006	
Vernon	3	9/11/2006	10/4/2006	
Waterbury	2	9/6/2006		
Weathersfield	2	9/12/2006		
West Windsor	2	9/25/2006	10/4/2006	11/3/2006
Weston	2	9/13/2006		
Weybridge	2	8/25/2006		
Williston	3	12/1/2006		

Orphan Systems with Private Right of Way			
Permit #	Project Name	Project Town	ROW
1-0602	South Street Condominiums	Bennington	Private
1-1088	Broadview Estates	Bristol	Private
2-0830	Patton Woods	Charlotte	Private
1-0676	Bay Ridge Estates	Colchester	Private
3266-9010	Valleyfield North	Colchester	Private
4080-9010	Dover Watch	Dover	Private
1-0626	Valley View Subdivision	Fairfax	Private
2-0801	Beliveau Subdivision	Fairfax	Private
4194-9010	Buck Hollow	Fairfax	Private
1-0226	Fiddlehead Condominiums	Fayston	Private
1-0514	Hidden Pasture	Hinesburg	Private
1-0646	Patten Corp 20 lot subdivision	Jamaica	Private
1-0510	9 lot single family subdivision	Londonderry	Private
2-1068	Riverview Farm Condos	Londonderry	Private
1-0849	Meadow Ridge Development	Manchester	Private
2-0642	Bourne Brook Apts/Manchester East Condominiums	Manchester	Private
2-1127	Pendbridge Subdivision	Manchester	Private
2-1185	North Ridge Run	Manchester	Private
2-0821	Adams Hill Development	Newfane	Private
1-0918	Peet Farm Property Development	Richmond	Private
2-1134	Deer Creek	Richmond	Private
1-0537	Double Four Orchard Subdivision	Springfield	Private
1-0671	Warner Drive	St Albans City	Private
2-0763	Mt. Prichard Subdivision	St George	Private
1-0875	Worcester Forest Subdivision	Stowe	Private
1-0594	Pratt & Mallow Development	Underhill	Private
2-0635	Ice House Court	Vergennes	Private
1-1132	ESM Equities Subdivision	Waterbury	Private
2-1152	The Club at Overbrook	West Dover	Private
1-0970	Blackberry Ridge Estates	Williston	Private

Orphans Systems Private Ownership	
Town	# of Private Systems
Bennington	1
Bristol	1
Charlotte	1
Colchester	2
Dover	1
Fairfax	3
Fayston	1
Hinesburg	1
Jamaica	1
Londonderry	2
Manchester	4
Newfane	1
Richmond	2
Springfield	1
St Albans City	1
St George	1
Stowe	1
Underhill	1
Vergennes	1
Waterbury	1
West Dover	1
Williston	1
22	30

Table C

Orphan Grants Status

Permit #	Subdivision Name	Municipality	Current Status (2/06/2007)	Grant Amount Requested	# of Property Owners Affected by Grants	# of Property Owners in Other Resolution
1-0580	Ball Mountain Road Subdivision	Arlington	Town involved, will resolve permit without grant application			18
3277-9010	Jasper Pines	Arlington	Town involved, will resolve permit without grant application			10
1-0605	Sugar Woods	Barre Town	Orphan grant application submitted	\$3,637	23	
3263-9010	Miller Woods	Barre Town	Orphan grant application submitted	\$3,295	9	
2-0736	Holtsprings Development Stage 5	Bennington	Town involved, will resolve permit without grant application			79
1-0602	432 South Street Condominiums	Bennington	No action private			
1-0668	Quail's Hill	Brattleboro	Orphan grant application submitted	\$158,000	17	
1-0783	Wilson Woods	Brattleboro	Orphan grant application submitted	\$12,300	35	
2-1089	Hillwinds North (fka Black Mt. View Drive)	Brattleboro	Orphan grant application submitted	\$800	15	
1-1088	Broadview Estates	Bristol	Homeowners working on permit renewal			25
2-0830	Patton Woods	Charlotte	No action private			
3266-9010	Valleyfield	Colchester	Orphan grant application submitted	\$36,831.36	50	
1-0676	Bay Ridge Estates	Colchester	Owner working on permit renewal			20
3631-9010	Whispering Pines	Colchester	Orphan grant application submitted	\$99,912	39	
2-1152	The Club at Overbrook	Dover	No action private			
4080-9010	Dover Watch	Dover	Town and landowner working on below threshold documentation			1
1-0626	Valley View Subdivision	Fairfax	No action private			
2-0801	Beliveau Subdivision	Fairfax	No action private			
4194-9010	Buck Hollow Heights on Rood Mill Road	Fairfax	No action private			
1-0738	Genge Subdivision	Fayston	Orphan grant application submitted	\$9,178	4	
1-0226	Fiddlehead Condominiums	Fayston	No action private			
2-0750	Sherwood Forest Subdivision	Georgia	No action has public right of way			
1-0798	Sunnyside Subdivision	Hartford	No action has public/private right of way			
1-0514	Hidden Pasture	Hinesburg	No action private			
1-0646	Patten Corp 20 lot subdivision	Jamaica	No action private			
1-0516	Snowflake Ridge	Jericho	Orphan grant application submitted	\$3,725	9	
1-0642	Laisdell Pond	Jericho	Orphan grant application submitted	\$1,020	10	
1-0510	9 lot single family subdivision	Londonderry	No action private			
2-1068	Riverside Farm Condos	Londonderry	Landowner working on below threshold documentation			17
1-0849	Meadow Ridge Development	Manchester	Ryan Downey - Speath Engineering is sending NOI			
2-1185	North Ridge Run	Manchester	No action private			
2-0642	Bourne Brook Apts/Manchester East Condos	Manchester	Owners working on permit renewal			32
2-1127	Pendbridge Subdivision	Manchester Village	No action private			
1-0885	Goodwin Subdivision	Milton	No action has public right of way			
1-0947	Edgewater Terrace	Milton	No action has public right of way			
2-0810	Herrick Hill	Milton	Town and landowner working on below threshold documentation			13
2-1177	Milton Falls	Milton	Homeowners working on permit renewal			49

Table D

Orphan Grants Status (continued)

Permit #	Subdivision Name	Municipality	Current Status (2/06/2007)	Grant Amount Requested	# of Property Owners Affected by Grants	# of Property Owners in Other Resolution
2-0821	Adams Hill Development	Newfane	No action private			
3708-9010	Lake Memphremagog Views	Newport City	Orphan grant application submitted	\$15,577	62	
2-1074	Bare Hill	Putney	Town involved, will resolve permit without grant application			5
1-0918	Peet Farm Property Development	Richmond	Orphan grant application submitted	\$2,471.70	8	
2-0169	Southview Subdivision	Richmond	Orphan grant application submitted	\$6,000	47	
2-1134	Deer Creek	Richmond	No action private			
1-0572	Huntington Road Development	Richmond	Orphan grant application submitted	\$2,688.71	19	
1-0495	Winch Hill	Roxbury	No action has public right of way			
1-0707	Laverne Drive Subdivision	Rutland City	Orphan grant application submitted	\$4,000	17	
1-0537	Double Four Orchard Subdivision	Springfield	No action private			
1-0671	Warner Drive	St Albans City	Orphan grant application submitted	\$11,468	7	
1-0952	Meadow Crossing Subdivision	St Albans Town	Orphan grant application submitted	\$1,800	21	
1-1065	Summit Place	St Albans Town	Orphan grant application submitted	\$800	13	
1-0506 sn/1	Adams Street	St Albans Town/City	Orphan grant application submitted	\$2,400	11	
2-0763	Mt. Prichard subdivision	St George	No action private			
2-0965	Arlington Development	St Johnsbury	Orphan grant application submitted	\$62,688.32	20	
1-0532	Sterling Falls Gorge Subdivision	Stowe	No action private			
5021-9010	Dishmill Farm Homesites	Stowe	Orphan grant application submitted	\$3,290	7	
1-0875	Worcester Forest Subdivision	Stowe	No action private			
1-0484	Country Club Estates	Swanton	Orphan grant application submitted	\$2,950	35	
3685-9010	Jones Court	Swanton Village	No action has public right of way			
1-0594	Pratt & Mallow Development	Underhill	Town involved, will resolve permit without grant application			4
2-0813	Mt. Vista Subdivision	Underhill	Town involved, will resolve permit without grant application			6
2-0828	Pine Ridge Road Subdivision	Underhill	Town involved, will resolve permit without grant application			12
2-0635	Ice House Court	Vergennes	Town and landowner working on below threshold documentation			8
2-0755	Sunset Drive	Vergennes	Orphan grant application submitted	\$5,700	20	
4912-9010	Otter Creek Village	Vergennes	Orphan grant application submitted	\$2,026	29	
1-0663	Central Park Residential Subdivision	Vernon	Original permittee still has interest, will resolve with Town			19
1-1126	Upland Mowing	Waterbury	No action has public right of way			
1-1132	ESM Equities Subdivision	Waterbury	Homeowners working on permit renewal			18
2-1118	Smith Subdivision	Weathersfield	Town involved, will resolve permit without grant application			17
1-0509	Yale Heights Residential Subdivision	West Windsor	Orphan grant application submitted	\$12,779	14	
2-1010	The Orchard	Weybridge	Town involved, will resolve permit without grant application			7
1-0970	Blackberry Ridge Estates	Williston	No action private			
4342-9010	Heins Estates	Williston	Orphan grant application submitted	\$3,081	25	
TOTAL						
72		41 Towns	26 applications, 19 in other resolution, 27 remaining	\$468,418	566	360

Table E

Cost Estimate for Remaining Orphan Systems (No Action) – 2/6/2007

Single Family	Subdivision Name	Municipality	ROW	# of Lots	Cost Estimate
2-0830	Patton Woods	Charlotte	Private	8	\$1,800
2-1152	The Club at Overbrook	Dover	Private	17	\$1,800
1-0626	Valley View Subdivision	Fairfax	Private	10	\$100,000
2-0801	Beliveau Subdivision	Fairfax	Private	30 (9 built)	\$15,500
4194-9010	Buck Hollow Heights on Rood Mill Road	Fairfax	Private	10	\$6,000
2-0750	Sherwood Forest Subdivision	Georgia	Public	58	\$1,800
1-0798	Sunnyside Subdivision	Hartford	Public/Private	18	\$15,500
1-0514	Hidden Pasture	Hinesburg	Private	10	\$1,800
1-0646	Patten Corp 20 lot Subdivision	Jamaica	Private	20	\$1,800
1-0510	Beaver Hollow - 9 Lot Single Family Subdivision	Londonderry	Private	9	\$15,500
1-0849	Meadow Ridge Development	Manchester	Private	13	\$15,500
2-1185	North Ridge Run	Manchester	Private	13	\$15,500
2-1127	Pendbridge Subdivision	Manchester Village	Private	10	\$1,800
1-0885	Goodwin Subdivision	Milton	Public	11	\$1,800
1-0947	Edgewater Terrace	Milton	Public	8	\$1,800
2-0821	Adams Hill Development	Newfane	Private	9	\$6,000
2-1134	Deer Creek Subdivision	Richmond	Private	9	\$6,000
1-0495	Winch Hill	Roxbury	Public	15	\$15,500
1-0537	Double Four Orchard Subdivision	Springfield	Private	7	\$1,800
2-0763	Mt. Prichard Subdivision	St George	Private	6	\$6,000
1-0532	Sterling Falls Gorge Subdivision	Stowe	Private	4	\$6,000
1-0875	Worcester Forest Subdivision	Stowe	Private	7	\$1,800
3685-9010	Jones Court	Swanton Village	Public	37	\$1,800
1-1126	Upland Mowing	Waterbury	Public	9	\$6,000
1-0970	Blackberry Ridge Estates	Williston	Private	6	\$6,000
25		20		333	\$254,800

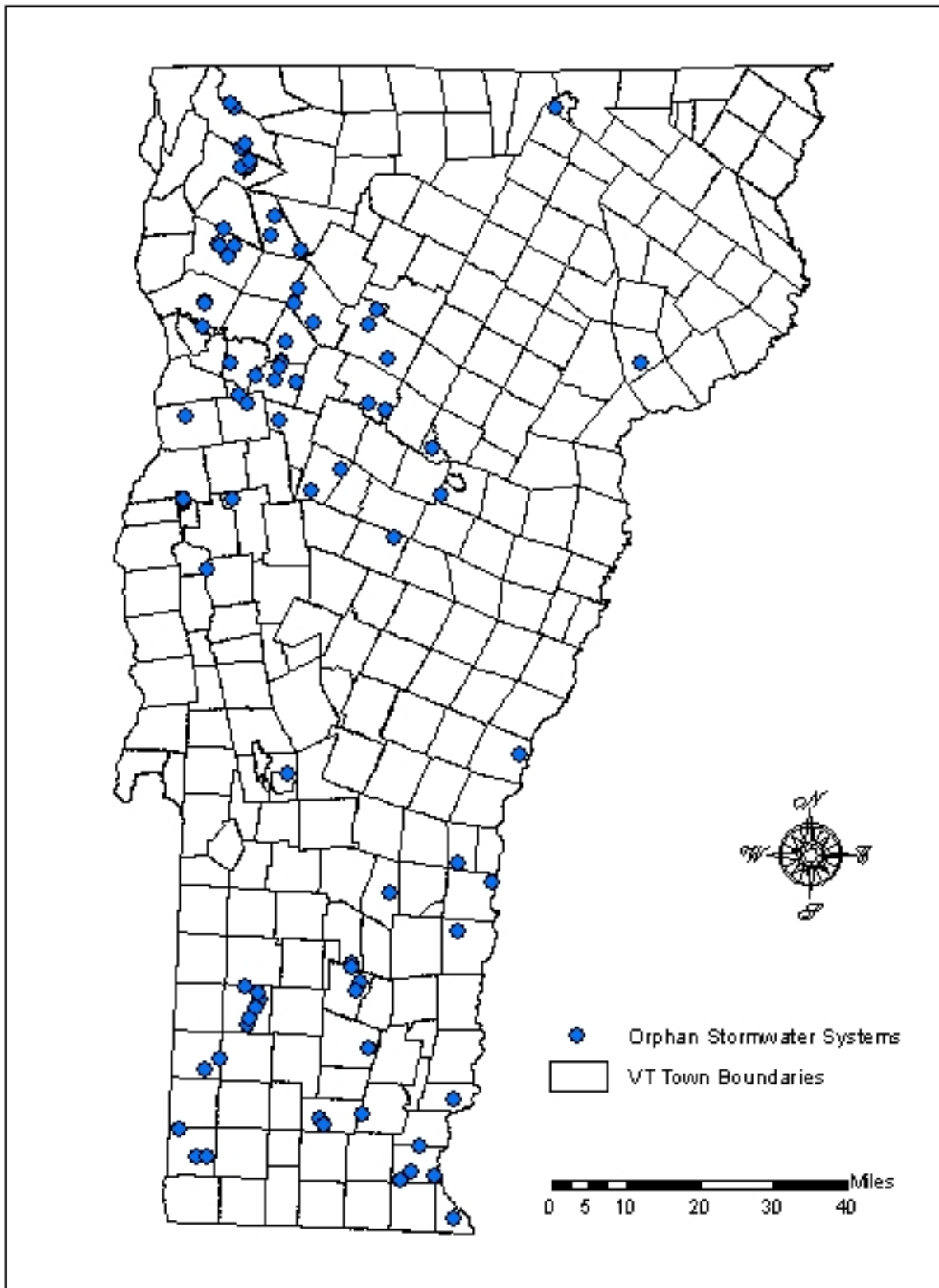
Multi-Family	Subdivision Name	Municipality	ROW	# of Lots	Cost Estimate
1-0602	432 South Street Condominiums	Bennington	Private	40	\$1,800
1-0226	Fiddlehead Condominiums	Fayston	Private	1	\$15,500
2		2		41	\$17,300

TOTAL	Municipality	# of Lots	Cost Estimate
27	22	374	\$272,100

Cost Estimates for Maintenance Level Categories			
<u>Minor</u>	<u>Moderate</u>	<u>High</u>	<u>Severe</u>
\$1,800	\$6,000	\$15,500	\$100,000

Map A

Orphan Stormwater Systems in Vermont



Map B



Orphan Stormwater Systems: Informational Meetings for Town Managers, Administrators, and Selectboard Members

Regional Meetings Dates and Locations

September 20, 2006 in Brattleboro

Location: Brattleboro Municipal Center at 230 Main St in the Hanna Cosman Room

Time: 4:30 pm

September 21, 2006 in Milton

Location: Municipal Office Building at 43 Bombardier Road in the Community Room

Time: 3 pm

September 27, 2006 in Manchester

Location: Town Hall at 6039 Main Street in Manchester Center

Time: 2 pm

September 28, 2006 in Barre City

Location: The Vermont History Center at 60 Washington Street (route 302)
For directions go to:

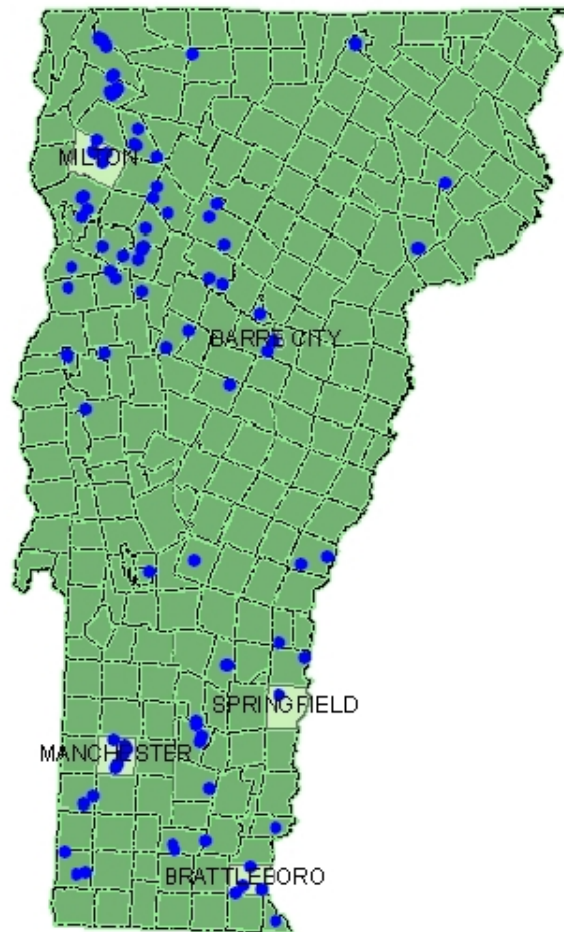
<http://www.vermonthistory.org/barremap.htm>.

Time: 6:15 pm

October 4, 2006 in Springfield

Location: ANR Regional Offices at 100 Mineral Street in the first floor conference room

Time: 2pm



Distribution of Orphan stormwater systems (blue dots) through out the state.

Please RSVP as soon as possible via email or telephone to Sarah at Sarah.Sanders@state.vt.us or 802.241.4584.

APPENDIX B

Simple Method Pollutant Loading Model (from Schueler, 1987): Data for 49 Permits								
Impervious Cover	Site Area	% Impervious	Rv	Rv/12	(E)*Pj*P	(F)*180 mg/l	(G)*Site Area	H*2.72
0.15	18.15	0.826446281	0.057438017	0.004786501	0.155082645	75.92846281	1378.1016	3748.436352
1.5	40.11	3.739715782	0.083657442	0.006971454	0.225875093	110.5884458	4435.70256	12065.11096
4.43	146.21	3.029888517	0.077268997	0.006439083	0.208626291	102.143432	14934.3912	40621.54406
0.54	12	4.5	0.0905	0.007541667	0.24435	119.63376	1435.60512	3904.845926
0.523	8.161	6.408528367	0.107676755	0.008973063	0.290727239	142.3400564	1161.6372	3159.653184
1.5	1281	0.117096019	0.051053864	0.004254489	0.137845433	67.48912412	86453.568	235153.705
1.36	13.1	10.38167939	0.143435115	0.011952926	0.387274809	189.6097466	2483.88768	6756.17449
1.77	21.4	8.271028037	0.124439252	0.010369938	0.335985981	164.4987364	3520.27296	9575.142451
4.29	242.2	1.771263419	0.065941371	0.005495114	0.178041701	87.16921685	21112.38432	57425.68535
2.12	23.72	8.937605396	0.130438449	0.010869871	0.352183811	172.4291939	4090.02048	11124.85571
0.85	3.9	21.79487179	0.246153846	0.020512821	0.664615385	325.3956923	1269.0432	3451.797504
3.64	196.25	1.85477707	0.066692994	0.005557749	0.180071083	88.16280214	17301.94992	47061.30378
2.2	63.93	3.441263882	0.080971375	0.006747615	0.218622712	107.03768	6842.91888	18612.73935
3.65	147.14	2.480630692	0.072325676	0.00602714	0.195279326	95.60875792	14067.87264	38264.61358
1.55	91	1.703296703	0.06532967	0.005444139	0.17639011	86.3605978	7858.8144	21375.97517
2.6	19.7	13.19796954	0.168781726	0.014065144	0.45571066	223.1159391	4395.384	11955.44448
1.69	73.5	2.299319728	0.070693878	0.005891156	0.190873469	93.45165061	6868.69632	18682.85399
1.04	23.75	4.378947368	0.089410526	0.007450877	0.241408421	118.1935629	2807.09712	7635.304166
1.81	22.2	8.153153153	0.123378378	0.010281532	0.333121622	163.0963459	3620.73888	9848.409754
0.7	182.4	0.38377193	0.053453947	0.004454496	0.144325658	70.66184211	12888.72	35057.3184
11.3	105	10.76190476	0.146857143	0.012238095	0.396514286	194.1333943	20384.0064	55444.49741
1.01	11.26	8.969804618	0.130728242	0.01089402	0.352966252	172.8122771	1945.86624	5292.756173
2.5	17.9	13.96648045	0.175698324	0.014641527	0.474385475	232.2591285	4157.4384	11308.23245
4.41	17.46	25.25773196	0.277319588	0.023109966	0.748762887	366.5943093	6400.73664	17410.00366
2.07	43.7	4.736842105	0.092631579	0.007719298	0.250105263	122.4515368	5351.13216	14555.07948
1.73	40	4.325	0.088925	0.007410417	0.2400975	117.551736	4702.06944	12789.62888
3.5	109.3	3.202195791	0.078819762	0.006568314	0.212813358	104.1934199	11388.3408	30976.28698
3.41	40	8.525	0.126725	0.010560417	0.3421575	167.520312	6700.81248	18226.20995
0.4	45.4	0.881057269	0.057929515	0.00482746	0.156409692	76.57818502	3476.6496	9456.486912
1.57	31.1	5.048231511	0.095434084	0.00795284	0.257672026	126.1562238	3923.45856	10671.80728
2.4	10.7	22.42990654	0.251869159	0.020989097	0.680046729	332.9508785	3562.5744	9690.202368
2.94	32.61	9.015639374	0.131140754	0.010928396	0.354080037	173.357586	5653.19088	15376.67919
1.56	3.6	43.33333333	0.44	0.036666667	1.188	581.6448	2093.92128	5695.465882
1.1	7.6	14.47368421	0.180263158	0.01502193	0.486710526	238.2934737	1811.0304	4926.002688
3.2	35.2	9.090909091	0.131818182	0.010984848	0.355909091	174.2530909	6133.7088	16683.68794
0.35	4.3	8.139534884	0.123255814	0.010271318	0.332790698	162.9343256	700.6176	1905.679872
1	5	20	0.23	0.019166667	0.621	304.0416	1520.208	4134.96576
0.23	0.45	51.11111111	0.51	0.0425	1.377	674.1792	303.38064	825.1953408
2	28	7.142857143	0.114285714	0.00952381	0.308571429	151.0765714	4230.144	11505.99168
0.5	45	1.111111111	0.06	0.005	0.162	79.3152	3569.184	9708.18048
1.85	117.55	1.573798384	0.064164185	0.005347015	0.173243301	84.81992003	9970.5816	27119.98195
1.5	13.85	10.83032491	0.147472924	0.01228941	0.398176895	194.9474079	2700.0216	7344.058752
1.8	42.6	4.225352113	0.088028169	0.007335681	0.237676056	116.3661972	4957.2	13483.584
1.4	4.4	31.81818182	0.336363636	0.028030303	0.908181818	444.6458182	1956.4416	5321.521152
2.28	44	5.181818182	0.096636364	0.00805303	0.260918182	127.7455418	5620.80384	15288.58644
1.8	11	16.36363636	0.197272727	0.016439394	0.532636364	260.7787636	2868.5664	7802.500608
3.15	256	1.23046875	0.061074219	0.005089518	0.164900391	80.73523125	20668.2192	56217.55622
1.35	6.5	20.76923077	0.236923077	0.01974359	0.639692308	313.1933538	2035.7568	5537.258496
4.65	21	22.14285714	0.249285714	0.02077381	0.673071429	329.5357714	6920.2512	18823.08326

Total Pounds: 1019002.08
Total Tons: 509.50

APPENDIX C

Outline of Proposed Changes to Existing Stormwater Program Compliance Policy (December, 2006)

The following is an outline of proposed improvements to the existing Stormwater Compliance Policy, below. The existing policy was developed for the Stormwater Discharge Permit (i.e. post-construction) program. A separate policy is in place for the Construction Stormwater Permit program.

The Stormwater Program has recently moved to assigning technical staff on a regional basis. These regional Stormwater Analysts are responsible for all technical review of both Construction and Operational Stormwater permitting. Among several benefits, assigning staff to specific regions will allow for improved communication between Stormwater, Enforcement Division and Regional Office staff, and increased familiarity with the compliance issues of various development activities in the districts. Additional specific changes to the compliance program are suggested below.

- Develop Multi-Sector General Permit and integrate State Stormwater Permit Program Policy
- Cross-training with Enforcement Division to maximize inter-program understanding
- Increased emphasis on preventative compliance actions, i.e., pursuing penalties for failure to obtain required permits, or implement stormwater treatment systems, before illegal discharges occur
- Contemplation of dedicated Stormwater Program staff for compliance
- Expand field presence through streamlining of application process (free-up staff)

STORMWATER PROGRAM COMPLIANCE POLICY

(Existing, Adopted August, 2005)

Part I. Stormwater Discharge Permit Program Compliance Policy

1. Introduction

This policy applies to the State Stormwater Permit Program (i.e. operational permits). A separate policy is in place for the Construction Stormwater Permit Program. The State Stormwater Permit program is responsible for implementing the requirements of 10 V.S.A §1264, and the Vermont Stormwater Rules.

2. Description of Compliance Efforts

- a. The Stormwater Program tracks compliance with permit conditions, including reporting, through a Microsoft Access database.
- b. Non-compliance discovered during file or site reviews is followed-up on immediately, in no case longer than 1 month.
- c. All records tracking compliance shall be kept in the project file, and project database where appropriate.

3. Inspection Scheduling, Priority for

Inspections shall take in response to complaints, and systematically to ensure compliance. The priority system for site visits shall be based on the following:

- a. Probability of having violations that may cause an adverse impact to public health or the environment;
- b. Probability of having unreported violations;
- c. Site is part of an inspection initiative;
- d. Site has a history of repeat or chronic noncompliance;
- e. Site must be inspected to meet statutory commitments.

4. Inspection Scheduling, Announced versus Unannounced

In general, all site visits shall be announced prior to the site visit, unless part of an enforcement or multi-program site inspection, or unless part of Construction Stormwater Permit joint site visit. The rationale for this is that more can be accomplished with the assistance of the owner's representative, and because there is little that can be done in the short term to bring a site into compliance with a State Stormwater Permit.

5. Criminal Investigations

Criminal investigations will take place only under direction from the Environmental Enforcement Division. The priority for participation in investigations is as follows:

- a. Request from Enforcement Division to participate;
- b. Action resulted in substantial harm to public health or environment;
- c. Evidence the person engaged in willful violation

6. Significant Non-Compliance versus Minor Non-Compliance

Significant non-compliance includes the following situations:

- a. Failure to construct the required stormwater system;
- b. Failure to correct system deficiencies after notice to do so;
- c. Failure to renew an expired permit after notice;
- d. Failure to submit maintenance reports after notice.

Minor non-compliance includes the following situations:

- a. Submitting required reports or renewal applications promptly following reminder from Program;
- b. Failure to construct system properly, and voluntarily notify Program and correct promptly (may be significant non-compliance if result in adverse impact to public health or environment).

7. Assuring Compliance

Assistance

In general compliance is promoted by having timely follow-up to all instances of non-compliance, including missed reporting and renewal deadlines, and through an effective program of site inspections. Additionally, the program shall make efforts to acknowledge compliance.

Technical support is provided to all permittees upon request. However, it is the opinion of the program that lack of technical information is not a substantial contributor to non-compliance (may be the converse in the Construction Stormwater permitting).

NOAVs

Notices of alleged violation (NOAVs), 1272 Discharge Orders, or registered letters shall be used in cases of significant non-compliance at the discretion of the Section Chief.

In cases of non-compliance, staff shall use their judgment to request a referral to the Enforcement Division at any time.

