

SECTION 2: 2009 ENGINEER'S ANNUAL REPORT

Introduction and Summary

Engineering activities of the Board of Managers of the Valley Branch Watershed District (VBWD) during 2009 are summarized in different parts of this annual report. Part I of the Engineer's Annual Report and Part III of the Managers' Annual Report include investigations by the Managers. As engineering advisors for the Managers, we assisted the Managers with these studies or projects. Also during 2009, the Board of Managers responded to activities of others within the VBWD. As engineering advisors, we reviewed these actions and made recommendations to the Managers concerning conformance with the policies, objectives, rules, and regulations of the VBWD. Many of these activities are summarized in Part IV of the Managers' Annual Report. Part II of the Engineer's Annual Report summarizes the types of technical assistance we provided the Managers.

PART I

VBWD INVESTIGATIONS AND STUDIES

Basin Water Level Program

Managing the quantity of water and minimizing the negative impact from floods, high flows, and droughts is a mission of the VBWD Managers. Collecting water level data helps the Managers make decisions in managing the water levels and floodplains of the VBWD's water resources.

In 2009, the VBWD collected water level data from 34 basins. VBWD contracted with the Washington Conservation District to collect most of the water levels. Volunteers also collected water levels for the VBWD. Ramsey County Public Works read the water levels every two weeks during the ice-out months at Silver Lake. A volunteer for the Minnesota Department of Natural Resources (MDNR) reads and reports the water levels of Sunnybrook Lake. Some basins were unusually dry in 2009 and accurate readings could not be made.

The water level graphs presented in Appendix D were prepared by the VBWD using the volunteers' and contractor's data, and in some cases, additional data from the MDNR's database is included. The data for the water bodies monitored by Mr. Charles Taylor, a volunteer for the VBWD and member of the VBWD Citizens Advisory Committee, are also presented in tabular format in the appendix.

Water Quality Monitoring Program

The VBWD Managers routinely assess whether water bodies are meeting the VBWD's water quality goals. The type of monitoring conducted for a water body varies according to the classification the VBWD has assigned to it. The VBWD monitors the water quality and habitat of the major basins within the VBWD to detect changes in the water quality and habitat over time, thereby determining the effect of changing land use patterns in the watershed and the effectiveness of the VBWD's efforts to preserve/improve water quality. The water quality monitoring program and results are discussed in detail in Appendix E.

Basin Water Quality

In 2009, the VBWD monitored the water quality of 34 basins. Ramsey County Public Works monitored the water quality of Silver Lake and shared the data with the VBWD.

Stream Quality

In addition to the basin water quality monitoring, the VBWD collected data on its streams. Invertebrate samples were collected from Valley Creek in 2009. The VBWD continued to participate in the Metropolitan Council's Watershed Outlet Monitoring Program (WOMP) by collecting discrete and continuous water quality and quantity data from the creek in 2009. The VBWD also collected

discrete and continuous water quality and quantity data from stations on the South Fork and North Fork of Valley Creek. The VBWD continued to fund a program in 2009 in which students from the Stillwater Area High School collected stream macroinvertebrate and physical habitat data from Valley Branch Creek.

Habitat and Fish

In 2009, the VBWD monitored the habitat of all 31 of the major VBWD water bodies. Fish sampling was also conducted on Valley Creek in 2009.

Groundwater Level Observation Program

Understanding the effects of community growth and other activities on groundwater and the groundwater-surface water interface is a mission of the VBWD Managers. Groundwater level monitoring during 2009 was conducted for the VBWD's 15 operational observation piezometers. Groundwater level data are summarized in Appendix F. Locations of all observation piezometers and generalized groundwater contours based on groundwater and lake level data are shown on Figure F-1.

Precipitation Data

Collecting precipitation data helps the Managers make decisions in managing the water levels and floodplains of the VBWD's water resources. The VBWD recorded precipitation amounts in 2009 as in previous years. The precipitation gage is located at 4677 Birchbark Trail North, near Lake Jane. Mr. Charles Taylor of the Citizens Advisory Committee reads daily the precipitation amounts. Those amounts are summarized in graphs presented in Appendix G. Precipitation readings from the St. Paul airport and the Minneapolis-St. Paul International Airport are shown for comparison.

Project 1007, Olson Lake Estates Outlet, and Dam Inspections

The VBWD owns, operates, and maintains various stormwater management systems. Some general maintenance items were found during the fall of 2008 inspection and maintenance for these items began in 2009. In the fall of 2009, the VBWD completed its annual inspection of Project 1007 and the Olson Lake Estates Outlet Project. The investigation included dam inspections at Rest Area Pond and Eagle Point Lake.

PART II

REVIEW OF ACTIONS INITIATED BY OTHERS

During 2009, the Managers issued 27 permits. These permits are listed in Part III of the Managers Report. As engineering advisors, we provided technical assistance to the Managers in review of these projects.

Some of the types of assistance that we provided include the following:

Flood Levels

Technical activities grouped under this heading include computing flood levels and reviewing flood levels computed by others. In general, flood levels throughout the VBWD are computed assuming ultimate development of the tributary watershed and using the existing drainage system or drainage features proposed to be constructed in the near future. Computations included hydrologic analysis of the watershed and hydraulic analysis of storm drain systems. The information was used by the Managers to set minimum elevations and outline easements.

Wetland Impacts

Permit applications were reviewed to determine if the proposed work impacted wetlands. Wetland impacts were reviewed according for conformance with the VBWD's Rules and Regulations and the Wetland Conservation Act. Technical activities included review of the applicant's wetland delineation, and review of any necessary wetland mitigation. The purpose of the reviews was to determine if the proposed work complied with the VBWD's and the State's wetlands regulations.

Erosion and Sediment Control and Water Quality Effects

Permit applications were reviewed to ensure that the proposed activities would not result in erosion problems and to determine the effectiveness of proposed temporary and permanent erosion control measures. The effect of the development on the water quality leaving the site was analyzed and the suitability of ponds, infiltration facilities, and skimmers was assessed.

Effect of Development on Downstream Property

Technical activities in this category include quantifying flow rate changes and flood level changes and reviewing flow path alterations resulting for proposed development. This information was considered by the Managers before approving permit applications, particularly when the proposed activity could impact more than one community.

Development Compatibility with Water Management Plan and Rules & Regulations

At the direction of the Managers, we reviewed and informed the Managers of the compatibility of the proposed developments with the VBWD's Watershed Management Plan and the VBWD Rules and Regulations.

Inspections

Inspections of permitted activities in the VBWD were undertaken to ensure compliance with VBWD regulations and permit conditions. The VBWD's inspector, Mr. Ray Roemmich, handled the day-to-day inspections of permitted activities. At the direction of the Managers and/or inspector, we inspected projects which could impact wetlands and performed other inspections as needed.

Administrative Services

In addition to providing technical advice to the Managers, we continued to provide administrative services for the Managers in 2009. These activities included drafting correspondence, printing and publishing documents such as sections of the Annual Report, providing typing and word processing services, maintaining mailing lists, reviewing reports and planning documents, and representing the Managers by attending Washington County Water Consortium meetings, and other meetings regarding activities within the VBWD. For a portion of 2009, we also served as the recording secretary for the Managers.

Respectfully submitted,
BARR ENGINEERING COMPANY

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