



Richard Martin Groundwater LLC

Richard J. Martin, LHG

EDUCATION

Graduate Studies, Hydrogeology, Wright State University
BS, Geology, Wright State University, 1989

REGISTRATION

Licensed Hydrogeologist: WA, 337, 2002

PROFESSIONAL SUMMARY

With over 23 years of experience as a hydrogeologist, Richard has been involved with all aspects of hydrogeologic studies, including evaluation of groundwater resources, design and implementation of aquifer testing, delineation of wellhead protection zones, assessment of groundwater/surface water interactions, evaluation of soil and groundwater remedial systems, and determination of historical contaminant plume movement. He also provides hydrogeologic support for geotechnical projects including development of construction dewatering plans, evaluation of groundwater seepage for slope stability problems, evaluation of soil infiltration capacity for stormwater control design, and estimation of groundwater inflows to tunnels and excavations.

PROJECT EXPERIENCE

Seattle Public Utilities, Ballard and Delridge Green Stormwater Infrastructure Options Analysis, Seattle, WA – 2013 to ongoing. Richard is working with two engineering teams evaluating soil and groundwater conditions, and infiltration capacity for the Ballard and Delridge basins. The goal of the projects is to determine the potential for low impact drainage options to reduce CSO events for the Ballard basin and improve water quality of Longfellow Creek for the Delridge basin. Richard is working with the Delridge team to prepare a geotechnical exploration plan to evaluate infiltration potential and will be performing groundwater modeling analyses to evaluate potential risks to nearby slopes from increased infiltration.

Seattle Housing Authority and Seattle Public Utilities, High Point Redevelopment, Seattle, WA. Richard worked with the Seattle Housing Authority and Seattle Public Utilities on the High Point Redevelopment project in Seattle, Washington. The project involves evaluation of low impact drainage options to control stormwater for an urban housing development using a natural systems modeling approach. This project was completed in collaboration with Seattle Public Utilities through the Comprehensive Drainage Plan contract. Richard evaluated existing soil and groundwater conditions to assess the ability of the site to infiltrate stormwater. He designed and tested a soil mix for drainage swales to enhance infiltration and treatment of stormwater, and convey the treated stormwater from the site. Richard developed a numerical model to evaluate the movement of stormwater through the engineered soil and estimate the rate of inflow to the conveyance system as a function of the percent of vertical saturation of the soil. He also assisted in development of technical specifications for the engineered soil mix.

JWJ Group, Timbers Edge Development, Kitsap County, WA. Richard is providing hydrogeology and infiltration expertise to this proposed approximate 30-acre development in Kitsap County. The goal is to infiltrate 100 percent of stormwater runoff from new impervious surfaces using infiltration trenches, rain gardens, and other infiltration structures. The development is located adjacent to Illahee Creek, which

likely receives a significant portion of its baseflow from groundwater springs and seeps emanating from the sand aquifer below the site. Richard performed a hydrogeologic investigation and infiltration evaluation to identify areas of permeable soils, developing a groundwater flow model to evaluate potential mounding from infiltration, and evaluating potential changes in groundwater flow conditions that may affect slope stability. Final design is ongoing and construction is anticipated to start in 2013.

Tracyton Wetlands Preservation Society, Stormwater Infiltration Review, Tracyton, WA. Richard reviewed the stormwater infiltration plans for a proposed development in Tracyton, Washington. A small local community group was concerned about the development that is located upslope of their neighborhood, and already suffers from poor drainage and flooding during the wet season. The proposed stormwater management for the development consists of rain gardens and pervious pavement to infiltrate runoff. Kitsap County has already denied a permit but the developer has appealed. Richard reviewed existing documents related to the development including the drainage and soils report. Much of the site has been excavated and the peaty fine-grained native soil replaced with sand and gravel. Based on his review of the soil and groundwater conditions in the area, it was clear that the proposed development and infiltration of stormwater will exacerbate the drainage and flooding problems downgradient of the site and Richard recommended that infiltration not be used for stormwater management at the site.

Team4 Engineering, Rose and Sons Development, Kitsap County, WA. Richard performed a stormwater infiltration evaluation for a new housing development proposed in Kitsap County. As part of the pre-design stormwater management plan, a soil and groundwater evaluation was completed to evaluate the feasibility of infiltration at the site, and an infiltration mounding analysis was performed to evaluate the potential for buildup of water beneath pervious pavement areas that could reduce the infiltration capacity of the pavement. The modeling results indicated mounding beneath the pervious pavement would be less than 4 feet. Outside the area of the pervious pavement, mounding would decrease to near pre-infiltration conditions approximately 20 feet from the downslope edge of the pavement area. Additionally, the modeling indicated a minimum of 18 inches of treatment sand is required beneath the pavement.

Meridian Heights Stormwater Infiltration Design, Thurston County, WA. Richard is Project Hydrogeologist to evaluate soil and groundwater conditions and provide design recommendations for a subdivision in Thurston County, Washington. Historically, stormwater has been discharged through an outfall on a hillslope, which has resulted in erosion and deposition of sediment on downslope properties. Richard designed and implemented an exploration and testing program to evaluate infiltration feasibility at the site and potential impacts to slope stability. The testing program included construction and testing of a pilot-scale infiltration trench. The information was used to construct a three-dimensional groundwater mounding and seepage model, which indicated that impacts would be minimal.

Deering and Nelson, Nisqually Bend Subdivision, Lacey, WA. Richard was project hydrogeologist for the evaluation of the effects of the proposed development on nearby steep slopes. He performed geologic reconnaissance, reviewed existing subsurface information, coordinated hydrogeologic and geologic studies, performed seepage analyses, and provided recommendations regarding impacts of the proposed development on slope stability. The project proposed a zero stormwater runoff approach, in which all precipitation would be intercepted or used by vegetation, evaporated, or infiltrated. Richard developed time-variant, cross-sectional, seepage model using SEEP/W to assess the effects of concentrated and dispersed infiltration systems on groundwater elevations and slope stability. His analyses demonstrated that infiltration of stormwater would have a negligible impact on slope stability for deep-seated slides.

City of Issaquah, Issaquah Highlands Peer Review, Issaquah, WA. Richard was Project Hydrogeologist on the peer review team that is working with the City of Issaquah to review the operation of stormwater infiltration systems as part of the stormwater management program for the Issaquah Highlands

development. The City requested the review following the January 30, 2004, Camp Creek Landslide. Richard reviewed soil and groundwater conditions associated with infiltration structures at Issaquah Highlands, provided comments regarding the “White Paper” and other documents prepared by the City and their consultants, responded to public comments regarding the landslide and infiltration operations, and presented his review to City Council. He concluded the primary cause of the landslide was excessive infiltration above Camp Creek, and provided recommendations for future infiltration operations for the Issaquah Highlands development. Richard continues to work with the City of Issaquah reviewing and commenting on additional stormwater management issues associated with the development.

King County, Vashon Island Treatment Plant Upgrade, Vashon Island, WA. Richard was Project Hydrogeologist on this project to evaluate soil and groundwater conditions associated with a proposed stormwater detention or infiltration structure. He estimated soil infiltration rates based on the Washington State Department of Ecology Western Washington Stormwater Manual, and evaluated the infiltration suitability of the site including the volumetric storage capacity of the soil underlying the structure, the potential for groundwater mounding, and potential impacts to adjacent slopes and surface water features.

King County, East Lake Sammamish Trail Infiltration Testing, Sammamish, WA. Richard was Project Manager to evaluate the infiltration characteristics of existing soils along the alignment of the proposed East Lake Sammamish Trail. The proposed gravel trail is to be constructed along an approximate 7-mile stretch of abandoned railbed adjacent to Lake Sammamish. The testing was required as a result of a lawsuit brought about by opponents of the project. Infiltration testing was completed along the trail at approximately 500-foot intervals using a double-ring infiltrometer. Infiltration tests were also completed on previously constructed portions of the trail, at either end of the proposed alignment. Test locations were selected based on soil type, railbed geometry, and the presence of adjacent surface water or wetlands. The results of the testing demonstrated that the new gravel trail would not significantly impact existing hydrology or stormwater runoff characteristics.

King County, Regional Infiltration/Inflow (I/I) Control Program, King County, WA. Richard worked with the project team to evaluate groundwater conditions associated with I/I reduction pilot projects. The evaluation includes identifying groundwater in the vicinity of the pilot projects for both infiltration and construction dewatering purposes, evaluating whether reducing infiltration can increase slope instability, identifying aquifers that capable of safely accepting recharge when inflow is diverted, and identifying aquifers that provide baseflow to streams.

Snohomish County Public Works, OK Mill Road Project, Snohomish, WA. Richard was Project Hydrogeologist for a proposed roadway improvement project along OK Mill Road in Snohomish County, Washington. He evaluated subsurface conditions, performed hydrologic analyses, and provided recommendations for use in design and construction of proposed stormwater management facilities (infiltration ponds) for a portion of the proposed alignment. Richard worked closely with county personnel to develop geotechnical/hydrologic conclusions and recommendations in accordance with the Washington State Department of Ecology’s Stormwater Management Manual for Western Washington. (2003)