



Engineering Our Environment

Environmental engineers play an important role in helping to protect Minnesota's land, water and air.

With our impact on the environment growing yearly, the need for improved regulations and remediation is rising. Across the state, engineers are busy planning, developing and implementing new ways to combat a host of environmental complications. Whether mitigating an existing problem or preventing a future one, these men and women play a crucial role in protecting Minnesota's land, water and air.

One occupation that deals directly with identifying and

remediating environmental issues is environmental engineering. The scope of this job can be relatively broad. Environmental engineers might design systems, processes or equipment for controlling, managing or improving water, air or soil quality, or they might advise government agencies and corporations on how best to follow the procedures and regulations pertaining to environmental law. No matter the task at hand, the environmental engineer's primary concern is to protect people and

the environment from hazardous conditions.

The statewide median wage for this profession is \$36.80 per hour, with the highest median wage being earned in southwestern Minnesota at \$46.19 per hour. The rural northwestern part of the state earns the lowest median wage at \$33.45 per hour.

Table 1 provides a breakdown of the typical wage by industry for the seven-county Twin Cities area, where the vast majority

of Minnesota’s environmental engineers are employed. The typical education necessary for entry into this occupation is a bachelor’s degree from an Accreditation Board for Engineering and Technology-accredited program.

Aspiring engineers, however, need to get as much working experience as they can in order to land a job in the field, according to Donovan Hannu, an environmental services group manager at Bay West LLC in St. Paul.

Hannu said the company looks for people with previous internships in semi-related fields. “If we can’t find people with prior internships, we hire people who have been employed somewhere else,” he said. “For example, a job as a server in a busy restaurant is more relevant than one might initially think. You know how to work with others, be flexible and meet customer expectations, often while still being a full-time student. Put all of that work experience on your resume.”

It is this type of flexibility and adaptability that proves to be invaluable for success in this occupation.

Bay West has been providing environmental consultation services to the western Great Lakes region for more than 40

TABLE 1

Typical Wage by Industry in the Twin Cities — Environmental Engineers

Industry	Employment	Median Wage
Professional and Business Services	490	\$36.35/hr
Public Administration	90	\$35.90/hr
Manufacturing	30	\$40.39/hr

Source: Occupational Employment Statistics (OES)

years. The firm attracts fresh graduates as well as seasoned industry veterans looking to grow professionally and make a positive impact on the environment. Bay West’s size and management made it the perfect fit for Hannu.

“Many environmental consulting firms are large national companies with small regional offices, limiting an individual’s ability to make important decisions or have a significant impact on the company,” he said. “Bay West was completely the opposite. I loved the fact that Bay West was owned by three local people working in the same building as me, yet was also big enough to provide many different avenues for exposure to different services, clients and learning opportunities.”

Companies such as these provide both private and public sector clients with a wide range of services to maintain a safe,



Donovan Hannu

PHOTO: COURTESY BAY WEST

TABLE 2

Typical Wage by Industry in Minnesota — Civil Engineers		
Industry	Employment	Median Wage
Professional and Business Services	2,160	\$38.80/hr
Public Administration	1,060	\$40.34/hr
Construction	470	\$37.72/hr
Manufacturing	20	\$38.44/hr

Source: DEED, Occupational Employment Statistics, 2014 employment, 2015 wages

healthy environment. These include assistance and oversight with remediation efforts for commercial or industrial businesses and responses to emergencies requiring immediate cleanup.

Their government contracts will often have them cleaning up military sites to remove munitions and any other contaminants that are present. Currently, Bay West is helping to clean up the former Twin Cities Army Ammunition Plant in Arden Hills, with the hope of future development. Wastes at the plant included volatile organic compounds (VOCs), metals, polychlorinated biphenyls (PCBs), pesticides, cyanide and explosives. It is up to people like Hannu to ensure that future residents of this site and others like it can be confident that their homes are safe from pollutants.

“Cleaning up and developing contaminated properties is very rewarding,” Hannu said. “It is rewarding to see a new business located on a formerly vacant property that once contained nothing more than a few dilapidated buildings and unsafe soil and groundwater.”

A typical workday for entry-level employees in this occupation might involve visiting a project site, collecting samples, inspecting facilities, documenting the results and conducting other activities in the field. After a few years of experience, an employee might engage in these same sorts of activities in addition to writing technical reports, preparing various proposals, coordinating contractors and field staff, and interacting with clients.

As environmental regulations are undoubtedly going to increase in the coming years, the need for more environmental engineers (25 percent in the state currently are women) will become greater as well. Over the next decade, the employment level for environmental engineers is expected to increase at a rate of 11.5 percent statewide.

A Broad Umbrella

While the number of jobs officially classified as environmental engineers is small, the occupation falls under the umbrella of another profession that handles many of the same duties and shares common goals—civil engineering. In fact, many environmental engineers earned their degrees in civil engineering, which is a much more widely offered program at postsecondary institutions.

It is the responsibility of a civil engineer to perform engineering duties related to planning, designing and overseeing construction and maintenance of structures and facilities, including highways, bridges, dams and buildings. Basically, any form of major construction requires a civil engineer to assess the impact of the project on the world around it and to guide it to a safe and suitable completion.

While the environmental engineer is concerned more with the remediation of environmental afflictions, the civil engineer must employ practices to ensure a project stays within environmental guidelines from its inception. Civil engineers must find a way to amicably blend the built environment with the natural environment.

Civil engineering occupations have significantly higher employment numbers, projected growth rates and wages than their environmental counterparts, but there is a smaller proportion of women in this field, at only 14 percent.

Currently, 3,820 civil engineers are employed in the state, with jobs in this occupation expected to grow at a rate of 15.4 percent over the decade. Again, the majority of these engineers (79 percent) are concentrated around the Twin Cities metro, where the median earned wage is the highest statewide, at \$39.95 per hour. The median wage for the state overall isn't much lower, at \$39.47 per hour. As is the case with environmental engineers, the majority of people in this occupation find themselves employed in the professional and business services industry, as Table 2 shows.

Minimizing our footprint and improving the quality of air, water and land ought to be one of our top priorities in Minnesota, and these engineers are working toward that goal. With their ingenuity, innovation and passion for the safety and protection of the environment, they are leaving behind a legacy of stewardship and responsibility for future generations. The environmental regulations that drive this industry have increased as our understanding of the impact we have on the planet grows. They will almost

certainly become even more stringent in the coming years.

With regulatory changes and increased environmental awareness, the need for both environmental and civil engineers will certainly escalate. After all, a state that takes pride in its 10,000 lakes has an obligation to preserve each and every one for ourselves and for future generations. ■

