

Environmental Consultants—Who Needs Them?

- You notice a problem with your well water. It tastes different, and you have noticed some discoloration. Do you need a consultant? Your first step should be to contact the local health department and have your water tested. The health department will recommend action, if necessary, based on the test results. An environmental consultant is probably not needed.
- You decide to build a cabin on a vacation property you own. You need a well and a septic system for it. Should you hire a consultant? Probably not, unless siting of wells or drainfields presents special problems in your area. The local health department can provide guidance and the names of licensed well drillers and septic contractors who are familiar with your area. These professionals may provide all the expert help you require. However, if you are responsible for developing water or wastewater systems for a community, a licensed professional engineer must prepare plans and specifications.

The following situations may also benefit from the expertise of an environmental consultant:

- You own a service station with an underground fuel storage tank that is suspected of leaking.
- You are thinking of constructing waterfowl ponds on your property. To be constructed properly, this type of project requires permits and engineering design.

- You have a problem with soil erosion and runoff on your property.
- You are a city manager or local planning official considering solid-waste management options for your community or upgrading your community's wastewater treatment plant.
- Your company is about to buy a property previously occupied by another business. You may need a site assessment for the property to obtain financing.
- Your community wants to protect its new well field by developing a wellhead protection plan.
- Your company is in compliance with regulatory standards but is interested in lowering emission rates further.

These are only a few of the situations in which individuals, businesses, industries, or municipalities might consider hiring an environmental consultant. Before deciding if the services of a consultant are needed, one must clearly define the problem to be solved.

This directory

1. defines what to look for in an environmental consultant,
2. describes how to hire a consultant, and
3. lists environmental consulting firms that serve the Upper Peninsula, briefly describing their typical services.

Use and Organization of This Directory

Consulting engineering is an important and learned profession. The members of the profession recognize that their work has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by consulting engineers require honesty, impartiality, fairness and equity and must be dedicated to the protection of the public health, safety and welfare. In the practice of their profession, consulting engineers must perform under a standard of professional behavior, which requires adherence to the highest principles of ethical conduct on behalf of the public, clients, employees, and the profession.

—Consulting Engineers Council of Minnesota
Membership Directory, 1992-1993.

The consultants included in this directory provide environmental services to Michigan's Upper Peninsula. The GEM Center for Science and Environmental

Outreach at Michigan Technological University sent a two-page survey to consulting firms in February 1999.

Consultants listed in the 1994 directory—and those who asked to be included in a revised edition—received surveys. Firms listed in the Yellow Pages of Upper Peninsula telephone directories under "Environmental and Ecological Services," "Engineers-Professional," "Surveyors-Land," or "Surveyors-Professional" also received surveys. The forms allowed the firms to provide information about their environmental consultant capabilities, clientele, staffing levels, branch office locations, and areas of specialty.

The GEM Center compiled information from the surveys to create the alphabetical listing of firms. The Center did not review the qualifications of firms that requested a listing. The burden is on the client to ensure that the firm can provide the services required.

Some firms listed in the 1994 directory no longer exist or have moved, others have merged, and new firms or branch offices have opened. A consultant that

is not listed may have failed to return or never received a survey; chosen not to be listed, often because of specialization in other areas of engineering; become established after the survey was sent; or appeared in none of our references. Listing of a firm does not imply endorsement by the GEM Center or Michigan Technological University.

The next two sections of this directory give a brief overview suggesting when and how to retain an environmental consultant. The third section describes the

consulting services listed in this directory. It is intended to help readers determine what services are needed. A reference table for locating consultants who perform the needed services follows the third section.

The final section is an alphabetical listing of firms, including their addresses, telephone numbers, and additional services they provide. General comments, staff size, and primary types of clientele are also listed here.

Before You Hire a Consultant

Obtaining guidance before hiring an environmental consultant can be a very important and cost-effective step. The solutions for some problems may be relatively simple and inexpensive, so it makes sense to familiarize yourself with the services available in your community or region.

Professionals, such as well drillers, underground storage tank contractors, or septic system contractors, may be hired for various problems. Government agencies such as the Michigan Department of Natural Resources (DNR) and the U.S. Environmental Protection

Agency (EPA) can provide up-to-date information and expertise. Other resources include public libraries, local and state health departments, Michigan State University Extension offices, and the Natural Resources Conservation Service. These professionals will offer assistance or direct you to a qualified expert. Appendix A contains more information and contacts.

An environmental consultant should be considered when a project or program requires scientific and engineering expertise that cannot be obtained from other sources.

Selecting a Qualified Consultant

The client should study the proposed project and its engineering needs so that it is known what is required from and expected of the consulting engineer. Selection of a consulting engineering firm should be guided by one primary consideration—the qualifications of the consulting staff for the project to be undertaken.... The client should approach the selection of a consulting engineer with the same attitude that would apply to the choice of a doctor or lawyer. Skill, availability, reputation and experience are all factors to consider....

—Wisconsin Association of Consulting Engineers
1991-1992 Directory

Obtaining the greatest value from a consultant is largely a matter of providing detailed information, clearly defining responsibilities, and establishing open lines of communication between the consultant and the client. To provide the greatest service, the consultant must have the full information regarding the project at the onset. Writing a concise request for proposals (RFP) is a good way for the client to accomplish this. See Appendix B for an example.

The consultant must translate the ideas from the RFP into a usable work plan. This initial step lays the

groundwork for the project and allows the client to evaluate various proposals before negotiating and selecting a consultant.

When selecting a consultant, one should not rely solely on competitive price bidding. Numerous studies have shown that one or more of the following could happen if this is done: inferior professional service, increased operational and maintenance difficulties, incomplete development of design, increased overall project costs, and needless risks. Before selecting consultants, be sure that they

- are fully informed about the services required for the project;
- have the experience and qualifications for the services to be provided;
- will provide the staff and facilities necessary to complete the project;
- possess the ethical qualities and standards of a professional.

Finding a qualified firm can sometimes be difficult because environmental consultants are not necessarily certified or licensed to practice in all areas of service. Many of the consultants listed in this directory are certified in some form. It is useful to know

what the initials after the consultant's name mean—and don't mean. Some of the common degrees and certifications are as follows:

MS	Master of Science
PS	Professional Surveyor
PhD	Doctor of Philosophy
RLS	Registered Land Surveyor
PE	Professional Engineer
LS	Land Surveyor
CPG	Certified Professional Geologist
QUSTP	Qualified Underground Storage Tank Professional
CGWP	Certified Ground Water Professional
QUSTC	Qualified Underground Storage Tank Contractor

Certain projects require the services of consultants with specific qualifications. For example, a Qualified Underground Storage Tank (UST) Contractor must remove a UST and perform any immediate pollution abatement measures. If the tank leaked, a Qualified UST Professional must conduct the necessary hydrogeologic investigations.

One of the most common certifications for practicing engineers is the Professional Engineer (PE). To become a PE-certified engineer, one must pass a comprehensive examination and have practiced engineering for a certain number of years. In Michigan, the PE certification requires four years of experience. The National Council of Examiners for Engineering and Surveying (NCEES) is the agency that oversees this certification process. Professional surveyors are certified under the same agency but are not certified practicing engineers. If a consultant has these or other initials after his or her name, do not hesitate to ask what they represent.

Selection of the Consulting Engineer is one of the most important of the Client's decisions during development of any engineering project. Upon the experience, skill, integrity, and judgment of the Engineer rest the cost, suitability, and structural soundness of the proposed work for its intended function. The Engineer's decisions based on these factors affect costs that influence the economic feasibility of the entire undertaking.

—American Society of Civil Engineers,
Consulting Engineering—A Guide for the Engagement of Engineering Services, Manual of Practice No. 45

Selecting a consultant should be done carefully on the basis of a firm's qualifications for the specific project to be undertaken. We suggest the following selection process:

1. Use this directory to screen firms. Read the description of environmental services to determine those most applicable to your situation. Find individual firms in the table of services (page 7) that can perform the type(s) of work required. Look up those firms in the alphabetical listing and contact any from which you would like more information, including statements of qualifications. Prepare an RFP and send copies to the appropriate firms.
2. Ask firms to appear for separate interviews after you establish the scope and criteria for a project from the proposals received. At each interview, discuss the qualifications of the firm, its capability to complete the task in the allotted time, key personnel to be assigned to the project, and names of previous clients. Carefully check any references they provide.
3. Rank the firms in the order of preference, taking into account the following factors:
 - technical qualifications
 - reputation with other professionals and clients
 - experience with similar projects
 - knowledge of up-to-date technologies
 - timeliness, flexibility, and current workload
 - familiarity with government regulations

Verify each firm's experience and quality of performance with regulatory agencies and previous clients. Other considerations include the firm's location, financial standing, size, and personnel availability. Every successful project is a partnership between the client and consulting firm. You should not underestimate the importance of feeling comfortable with the firm you hire.

4. Invite the most qualified firm to appear for a second interview. At this interview, discuss the project further to establish and define the contract being formed. Be sure you have a clear and concise understanding of the nature and extent of the project before negotiations or signing of any agreement. If you cannot reach agreement with the top-ranking firm, notify them of your decision, and continue the process with the second or third choice until an agreement is reached.
5. Request a written proposal from the chosen firm and confirm its acceptability to both parties. The client should negotiate fair and reasonable compensation, generally using the consultant's cost as a starting point. Keep in mind that a typical consulting firm's fees must cover administrative and clerical help, technical payroll, supplies and equipment, office space, taxes, travel, and a per-

centage as profit. Costs range from hundreds up to millions of dollars, depending on the project.

6. After you select a firm, define the extent of the project, and agree upon consulting fees, both parties should sign an agreement.

Summarized List of Services

This section describes the environmental services listed on the table that follows (page 7). It summarizes what each service category might include. Categories may overlap, and specific services under each heading may vary by firm. Contact the firms listed under the particular services for more detailed information.

On the survey forms, the consultants indicated the technical services they perform as a primary focus or secondary activity. Primary means someone on staff is likely to have a project requiring that service at any given time. A secondary activity is performed occasionally or subcontracted.

(1) Water Systems and Treatment

Water systems deliver water to a point of use. These systems are designed to satisfy the water requirements for domestic, commercial, industrial, and fire-fighting purposes. Services include the design and installation of a new system or the upgrade and management of an existing system to bring it into compliance with federal and state regulations under the Safe Water Drinking Act. Private wells are generally not included. Systems may include pumping stations, well fields, storage towers, distribution lines, and filtration or other treatment facilities. Systems may also be designed to meet the needs of specific industrial processes.

(2) Wastewater Treatment

Wastewater treatment systems collect and treat water leaving a point of use. These systems collect and transport surface drainage and waste flows from residential, commercial, and industrial sites, usually to a central treatment facility. Consultant services include the design and installation of a new system or the upgrade and management of an existing system. Some firms might include on-site sewage disposal systems or stormwater management in this category.

(3) Waste Minimization/Recycling

Waste minimization programs cover waste reduction, reuse, and recycling. These services can be useful to businesses, industries, or institutions that want to cut costs and generate less waste, or to communities that would like to start curbside recycling or composting programs.

(4) Solid/Hazardous Waste Management

Solid and hazardous waste management covers the design of waste disposal systems, landfills, waste processing facilities, transfer stations, and waste-to-energy systems (incineration). These services range from large contracts with municipalities to small-scale industrial projects. Economic considerations are a major concern; however, public health and safety is paramount.

(5) OSHA and Environmental Audits

Environmental audits, sometimes called compliance audits, are a preventive measure taken by industry or business. Audits evaluate current programs and recommend management practices that ensure compliance with environmental laws and regulations. Related services may include training in Hazardous Waste Site Operations (HAZWOPER), development of contingency plans for spills of hazardous materials, or addressing other health and safety concerns.

(6) Air Emission Control and Permitting

The objective of air pollution control is to maintain air quality so that pollutants do not impact human activities. The best way to control air pollution is to not produce the pollution. The federal government regulates air emissions under the Clean Air Act. Any type of environmental control or permitting requires that strict, and sometimes confusing, guidelines and regulations be followed. Compliance with these regulations influences the development and implementation of any project.

(7) Environmental Site Assessments

On sites where environmental liability is in question, lenders commonly require site assessments prior to financing property transfers. Assessments usually take a multiphase approach. Phase I is the identification and evaluation of the site; Phase II is further investigation and sampling for contamination; and Phase III is clean-up or remediation and monitoring of any contamination found. The assessment is a tool to protect owners and lending institutions against liability for contamination that occurred before the property transfer.

(8) Land Surveying

The initial stage of a project may require licensed surveyors to locate property lines, building locations, roads, utilities, and other site features. Many consultants subcontract these services to licensed surveyors, who own and operate the necessary equipment. Other services may include topographic or water surveys, mapping, site plans, and oil- or water-well locations.

(9) Land-Use Planning

Land-use planning is a process by which communities or landowners determine how different areas of land will be used in the future. Planning seeks to guide growth and development, achieve specific goals, protect property values, solve current problems, and avert future problems. Land-use management tools include zoning, tax incentives, conservation easements, purchase or transfer of development rights, subdivision ordinances, capital improvement programs, and coordination of development, public services, and transportation.

(10) Geographic Information Systems

A geographic information system (GIS) is a computer-assisted database and mapping tool that allows different types of information to be located relative to one another, commonly for planning or design purposes. GIS software packages help create maps and three-dimensional images, which may contain roads, zoning and political boundaries, land-use and land-cover types, soil types, well locations and logs, water-table depths, and so on. A GIS may contain data scanned from maps, collected from airplanes or satellites (remote sensing), or entered from paper records, such as well logs or plat books.

(11) Analytical Laboratory Services

Analytical laboratory equipment is very expensive to own and operate, and testing is closely regulated by government procedures and lab licensing. Many consultants subcontract these services, which include testing of water or soil samples for organics, metals, and any other substances in question. The U.S. EPA or state health departments certify some labs to perform environmental analyses by certain methods, such as the toxicity characteristic leaching procedure (TCLP) for hazardous wastes. Labs may offer sampling services in addition to analyses.

(12) Water Supply Exploration and Permitting

Water supply exploration involves searching for water of sufficient quality and quantity to meet the needs of a consumer (e.g., household, commu-

nity, industry). Evaluation of potential groundwater and surface water sources often compares costs for pumping and treating the water for a particular use. Government regulations control water supply activities, which may require state or local permits.

(13) Aquifer Evaluations and Pump Tests

Aquifer evaluations define the hydrogeology (sub-surface water flow) of an area. The tests estimate aquifer characteristics such as porosity (space between particles) and permeability (ease of flow through the material). These characteristics, in turn, influence the rates of water flow and contaminant transport in the aquifer and determine how much water can be extracted from the ground per minute. Pump tests are a good way of evaluating an aquifer.

(14) Monitoring Well Installation and Sampling

Monitoring wells are tools to help evaluate groundwater sources or the extent of groundwater contamination. Investigators measure water elevations and take samples from these wells, which are often placed around landfills, contaminated sites, underground storage tanks, industrial and transportation sites, and hazardous material storage sites. Consulting firms with no well drillers on staff usually subcontract and supervise any drilling and sampling their projects may require.

(15) Groundwater Modeling

Modeling is an investigative tool to help understand and predict the flow direction and velocity of groundwater and contaminant plumes. Computer-modeling programs generate contour maps that help visualize the current conditions and responses to changes in the system. These models generally use water-well data and information from geophysical investigations and soil borings.

(16) Wellhead Protection

A wellhead protection program is a voluntary planning and management approach designed to protect public groundwater supplies from contamination. Protection plans identify where groundwater is recharged from the surface and what surface activities pose contamination threats. Consulting firms may oversee the wellhead protection process from beginning to end, or a community may hire a consultant only for technical assistance with wellhead protection area delineations. After the Michigan Wellhead Protection Program approves a wellhead protection plan, the community may qualify for exemption from some water-quality monitoring requirements of the federal Safe Water Drinking Act.

(17) Groundwater Contamination Studies

These studies identify the amount, extent, and possible sources of groundwater contamination, which may persist in an aquifer for decades or even centuries. Contaminants may migrate, and often require removal or in-place treatment. Techniques include bioremediation, air stripping, soil vapor extraction, free-product recovery, and other treatments. Consultants may also help clients comply with regulations and perform remedial investigations and feasibility studies.

(18) Underground Storage Tanks

Growing concern over leaks and spills from underground storage tanks (USTs) has led to federal and state regulations. Consultant services include compliance with these regulations through the proper removal and closure of tanks, management and installation of new UST or above-ground storage systems, and investigation and remediation of contamination. Consultants assist clients with technical requirements for corrosion protection, spill protection, leak detection and monitoring, reporting procedures, and financial responsibility.

(19) Geophysical Investigations

Data from soil borings or monitoring wells represent a localized area. Geophysical investigations usually explore a much larger volume of the subsurface. Specialized equipment helps to evaluate subsurface conditions by detecting changes with depth. Investigations locate contaminant plumes, buried drums, underground tanks, and waste pits, as well as determine the character of the subsurface geology. Geophysical methods, sometimes referred to as nondestructive subsurface explorations, include seismic refraction, electrical resistivity, electromagnetic, gravity, soil-gas, and ground-penetrating radar surveys.

(20) Soil Boring and Sampling

Soil borings are holes drilled into the ground to evaluate subsurface (underground) materials. Data collected from these bore holes are underground "snap shots," and subsurface conditions between borings are inferred. Licensed drillers usually bore deep holes, while hand augers suffice for shallower depths. Samples taken from these borings further define the soil composition and contamination levels. Soil bores are useful for evaluating the potential of a site for buildings, landfills, or on-site sewage treatment systems, and for investigating and monitoring soil contaminant plumes.

(21) Soil Contamination Studies/Remediation

These studies identify the amount and extent of soil contamination, usually above the groundwater. As with groundwater contamination, there are many possible sources of soil contamination, which may persist for years or decades. Remediation is very important because soil contamination is often directly connected to the groundwater. Techniques include bioremediation, air stripping, soil vapor extraction, and other treatments.

(22) Runoff and Erosion Control

Erosion, which removes soil or other materials from one location and deposits them elsewhere, can occur naturally or as the result of human activities. For example, road or building construction, agricultural operations, and logging practices may cause erosion. Erosion-control measures reduce soil loss, sedimentation of waterways, and undermining of structures, such as buildings or roads; they are also used to stabilize shorelines. The Natural Resources Conservation Service (NRCS) has developed methods to evaluate erosion and runoff. Many consultants adapt these methods in their design and analysis.

(23) Wetland Assessment and Mitigation

Water levels, soil characteristics, and plant types define wetlands, which include marshes, swamps, bogs, wet meadows, and shrub-scrub areas. Consulting services include wetland identification and boundary delineation; permit applications for construction, dredging, or other alterations; pond and greenbelt construction; environmental impact assessments; vegetation inventory and mapping; wetland restoration; and mitigation planning, design, and monitoring.

References:

- 1992-1993 Membership Directory, Consulting Engineers Council of Minnesota*, Minneapolis, MN
- 1991-1992 Membership Directory, Wisconsin Association of Consulting Engineers*, Madison, WI
- Environmental Engineering Selection Guide 1993. A Directory to Board Certified Specialists in Consulting & Education*, American Academy of Environmental Engineers, Annapolis, MD