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Stuart Bedard, owner of Bedard Excavating Ltd., drills orifice holes for a pressure distribution sand mound system, one of many he installs in his British Columbia territory. (Photography by Rob Siebert)

From Mountains to Sea

Soils and terrain helped make Stuart Bedard a specialist in advanced systems — largely sand mounds with pressure distribution

By Doug Day

Bedard Excavating Ltd., Langley, B.C.

OWNER: Stuart Bedard

FOUNDED: 1980

EMPLOYEES: Solo operator

SPECIALTY: Sand mound systems with pressure distribution

AFFILIATIONS: British Columbia Onsite Sewage Association, Board member of Applied Science Technologists and Technicians of B.C.



Stuart Bedard was planning on a career in drafting after high school, but that path took a detour, thanks to a family friend in the excavating business.

“He said if I bought a machine, he could get me lots of work, so I did,” Bedard recalls. So, Bedard Excavating Ltd. was born in Langley, B.C., about four miles from the United States border with Washington and about 25 miles east of Vancouver.

A short time later, the friend recommended Bedard for a conventional septic system drainfield job. “Once I did that one, I just continued doing them,” says Bedard, the owner and only employee of the company. So, onsite wastewater became his life.

“I do anything from the most basic conventional gravity-fed system up to Type 3 installations with pressure distribution sand mounds,” he says. Raised sand mound systems with pressure distribution make up about 90 percent of his work. “I don’t do many gravity

systems anymore,” he says. “There are not many areas where they are allowed.”

Changing soils

The soils around Langley, about halfway between the Pacific Ocean and the Coast Mountains in the lush Fraser River Valley, make advanced designs necessary in many locations. Soils are mainly clay-based with about a foot to 18 inches of topsoil. Conditions can change quickly to rocky soil and steep, bedrock-lined slopes, or even areas with heavy gravel, which means fast drainage.

Closer to the ocean, Bedard has to contend with wet peat and clay-based soil with very fine sand and silt, usually only about 3 feet above sea level. Because of the high ground water table and poor soil permeability, these areas require Type 3 systems with disinfection, a sand mound, and pressure distribution.

In addition, all fiberglass tanks in such soils, and even some con-

“I worked closely with several environmental engineers... I’ve maintained a good working relationship with local health inspectors over the years.”

— Stuart Bedard

crete tanks, need anti-flotation features, making design and installation all the more difficult. “You have to do it when the weather is dry, that’s for sure,” Bedard says. He also needs to be aware of the ocean tides: “The tides will determine when you excavate for the tank, because the ground water level is affected by the tides.”

Because of the local soil conditions, Bedard sticks to tracked equipment with low ground pressure. An example is his 2004 135C RTS John Deere excavator with 28-inch shoes that apply only about 4.5-psi ground pressure. “This size of machine allows me to excavate



Bedard changes a bucket on his John Deere 135C RTS excavator during installation of a residential onsite system.

for larger tanks and have a long reach that reduces the amount of travel required for installation," he says. "I don't allow any vehicle traffic over the disposal field area before or after installation of the pipes."

On sloped sites, Bedard accesses the field only from the high side to avoid compaction of the effluent-receiving area down-slope. "It is important to construct systems only during dry conditions to avoid damaging the soil structure," he stresses.

His fleet also includes a 2001 Peterbilt gravel truck and a tri-axle tilt-bed trailer.

Changing regulations

When he started Bedard Excavating in 1980, an installer could learn the business simply by doing installations, which is what he did. Most installations were simple 3-inch pipe-in-trench gravity systems — only a few used pumps.

"I followed the Provincial Policy Manual for onsite sewage disposal

and the B.C. sewage disposal regulations," Bedard says. "I worked closely with several environmental engineers. The local health departments would also send out newsletters explaining any guideline changes. I've maintained a good working relationship with local health inspectors over the years."

That kind of networking has helped him keep up with the many changes in technology and regulations. His industry connections also include memberships in the B.C. Wastewater Association and the B.C. Onsite Sewage Association, and membership on the board of the Applied Science Technologists and Technicians of B.C., which certifies installers in the province.

After he attended the province's first conference on small wastewater systems in 1994, he was asked to sit on a Health Department committee to design a course for the certification of installers, at the same time the province was updating its regulations.



Lisa and Stuart Bedard in front of their 2001 Peterbilt gravel truck at their property in Aldergrove, B.C.

Boy Meets Girl

"I've maintained a good working relationship with local health inspectors over the years," says Stuart Bedard, owner of Bedard Excavating. That helped him learn the business early in his career and allowed him to keep up with changing regulations.

Besides that, he's been going home to one of those inspectors every night for two decades. "He came into the office one day," says Lisa Bedard. It was 1988 and she was a health inspector working for an environmental consulting firm. "You kind of notice somebody right from the beginning. We did design work, so we'd do site investigations. We often had Stuart help us. We'd be exploring sites together and sometimes they were pretty rough and wooded. We spent some good time together."

Not long after that first meeting, he went to watch her play in a baseball game. Then she went to see him play in a

band performing a concert in the park. They've been together ever since.

He also did system installations for the consulting firm, and part of her job was to inspect his work before the government inspection to make sure the plans were followed and the system was installed correctly. "I never rejected any of his work," she says.

Lisa left the private sector and went to work for the provincial government after their children were born. Part of her job was septic system inspection. "She was working in a region where I didn't do work," Stuart notes. She was also prohibited by the government from inspecting her husband's work.

Today, she works in the food safety program of the Fraser Health Authority, a regional health department. They have a son and two daughters and more than 20 years together — all because of onsite wastewater.

Once enacted, the stricter regulations required more engineered C-33 sand mounds with pressure distribution in place of soil fill pads to support aerobic treatment of the effluent. While these systems did a better job of protecting the environment, the change meant larger and more complex installations at the greenhouses, RV parks, institutions, and homes that make up his custo-

mer base. Instead of the 30 systems he installed every year, a normal year now sees about 15 installations.

Bedard is licensed as an installer and planner for Type 1 and Type 2 septic systems. He can also install Type 3 systems, but they have to be designed by an engineer. Bedard prefers to focus on installation, so engineers design nearly all of his projects.

Classifying Systems

British Columbia regulations delineate three types of onsite installations:

- Type 1: Treatment by septic tank only.
- Type 2: Treatment that produces effluent consistently containing less than 45 mg/l TSS and less than 45 mg/l BOD5.
- Type 3: Treatment that produces effluent consistently containing less than 10 mg/l TSS, less than 10 mg/l BOD5, and a median fecal coliform density of less than 400 colony-forming units per 100 ml.



Ralph Giuriato (left) of Bell & Giuriato Surveying & Engineering Ltd., homeowner Brent Sands (center) and Stuart Bedard perform a squirt test on drainfield piping.

Competitive environment

The area around Langley is urban in character, but much of the development takes place on rural properties of one or a few acres, and on small hobby farms. "There's a lot of development going on, so there are a lot of contractors," says Bedard. Since he has no employees, he often works with other installation companies.

One of these, owned by Reg McRae, almost qualifies as a partner. The two significantly work together and call on each other to



Bedard finishes installation of an effluent pump with a 2-inch Schedule 40 PVC force main exiting the pump chamber riser.

help with larger projects. "He took over from his father, so he's been doing it most of his life," says Bedard. The two offer 70 years of combined experience.

Their most recent large project was at Holiday Trails Resort, an RV park in Bridal Falls where McRae installed the original septic system more than 20 years ago. In response to extensive expansion of the park, they put in a new system this year.

The park added 60 sites with an estimated daily flow of 80 gpd per site, for a total of 4,800 gpd, including the washroom building and showers. The system has a 3,000-gallon trash tank, a 3,000-gallon flow equalization tank with duplex pumps, a Biogreen BG22-SL1 treatment unit installed in five modified 2,000-gallon concrete tanks, and a 2,000-gallon pump chamber with duplex pumps and pull-out rail system.

The raised sand mound is 56 by 210 feet with eight 101-foot laterals. "To closely monitor flows for future expansion of the park, we installed an Installer Friendly Series In-Site duplex control panel from SJE-Rhombus," says Bedard.

Going green

The two have also worked together on greenhouse projects. Growing conditions in the area make greenhouses very common — and very large. One recent project for Bedard was Windset Greenhouse in Ladner, B.C. It has more than 400 employees: 45 full-time office and management staff and 360 people working in the greenhouse and packing plant. About 130 of those are migrant workers living on site.

Both the size and demand characteristics offer special challenges, something the installers around the area have learned to deal with. "The first greenhouse systems had on-demand dosing that would overload the distribution fields during the day," Bedard says. "Most have been changed to timed-dose pumping, and all new systems have that type of dosing."

The Windset Greenhouse started with three 200-foot sand mounds about 30-feet wide with a central pumping station for the first three phases of the greenhouse. Bedard added another mound when the greenhouse added its fourth phase, and he is now doubling the size of the distribution field to have four 140- by 35-foot sand mounds with a four-zone HydroTech valve, and a central pumping station for the worker housing units.

It also has a MicroFAST package treatment plant (Bio-Microbics Inc.) in a two-chamber concrete tank with UV disinfection. The UV equipment is installed in a separate 2,000-gallon pump chamber with Goulds duplex pumps and an Aquaworx control and alarm panel pumping to the distribution field. Bedard says more treatment plants will be installed as the housing complex for workers expands in the future.

Doing commercial projects has taught Bedard to watch for increases in flow over time. "When it happens, we usually end up upgrading the system, increasing the size of holding tanks and the distribution field," he says. "Sometimes it takes just a larger pump chamber and changing to a timed-dose instead of on-demand, especially if they have a lot of employees and use a lot of water at certain times of the day."

He tries to help customers by educating them about their systems and what it takes to keep them working right: cleaning the filters, flushing the lines, and following the maintenance plan. He finds that homeowners have not yet taken on the mindset of hiring someone to do maintenance — most prefer to do it themselves.

"Flushing lines is recommended once a year on pressure systems, and people just don't do it," Bedard says. "That's one of the main problems. Some people don't pump their tanks often enough."

Helping customers not only keeps systems working correctly —

"Quite a bit of my work is from return calls. I rarely charge for going back to fix something the customer doesn't like, even if I feel it's not my responsibility."

— Stuart Bedard

it builds trust. "Quite a bit of my work is from return calls," Bedard says. He recently installed a system for a customer from 14 years ago who is building a new home. "I rarely charge for going back to fix something the customer doesn't like, even if I feel it's not my responsibility."

It's a small sacrifice that leads to a stronger business in the long run. "They know you're not going to take advantage of them and charge them too much," Bedard says. "You're just going to do the job the best you can, and give them the best price you can." ■

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