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## Geothermal No Problem in Smaller Oregon Homes



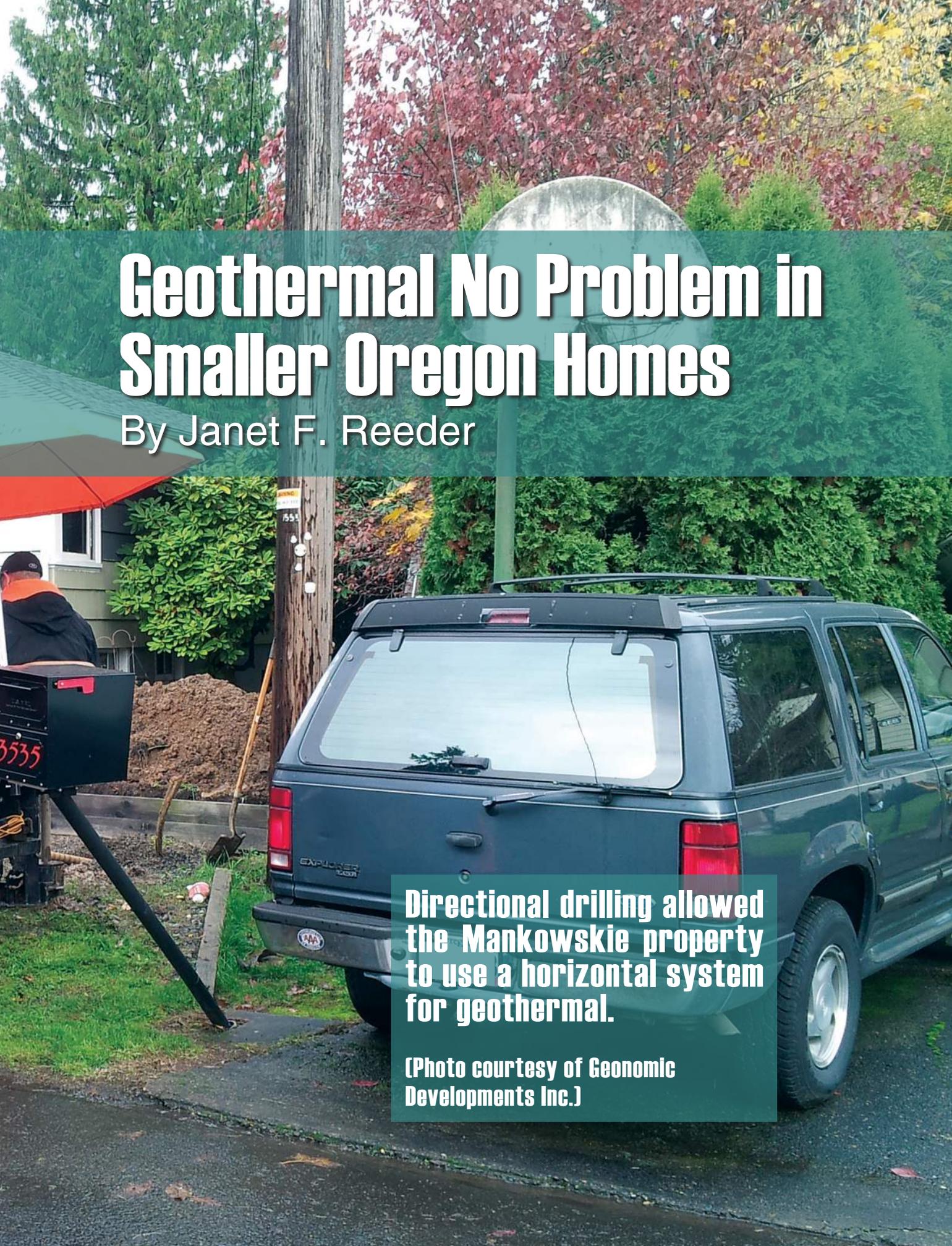
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RESIDENTIAL

# 10

COVER STORY





# Geothermal No Problem in Smaller Oregon Homes

By Janet F. Reeder



Directional drilling allowed the Mankowskie property to use a horizontal system for geothermal.

(Photo courtesy of Geomic Developments Inc.)

Eric Mankowskie thought that geothermal heat was the deep earth heat used in Iceland and other unusually cold areas. He had never heard of ground-source heat pumps.

When the Mankowskies moved into an older home in Portland, Oregon, in 2004, they were introduced to a fossil-fuel burning, inefficient and costly, but common heating source.

“It had an oil heater which I knew nothing about,” Mankowskie said. “It was the first home I had been in that used oil to heat. And I really didn’t like that,” he says. Both the environmental and the political consequences of using

oil were troublesome to him. Like a growing number of people in the Pacific Northwest, he had a genuine interest in sustainability.

Several years after he and his wife had settled into the small home, they learned about a special group-buying plan for solar power using PV panels. They took advantage of that to install a 3.2 kW system. Portland General Electric, their local power company, sent them a magazine about green power at about the same time. One of the magazine articles really struck Mankowskie.

“It highlighted a geothermal project,” Mankowskie said. “That was the first

exposure I had to the technology.” Mankowskie says he didn’t know anyone who had geothermal.

“I didn’t think that it would work at first. But an angle in the article talked about smaller lots and geothermal systems that made it seem like maybe there was a way to do it for us,” he said.

For the most part, owners of smaller homes have been left out of the energy efficiency bonanza afforded by installing ground-source heat pump systems. They don’t always fare well when you

**(Opposite Page) Richard Laws uses locating equipment to check the directional drilling for the Mankowskie’s geothermal heat exchange system.**

**(Photo courtesy of Geonomic Developments Inc.)**

**A small area was needed for the completed drilling of four ground loops and the connection to the heat pump in the basement.**

**(Photo courtesy of Geonomic Developments Inc.)**







**(Below) Remains of the old oil furnace system removed to make room for the new geothermal heat pump system will be hauled away.**

**(Photo courtesy of Geomic Developments Inc.)**



put a pencil to the return on investment for the expected energy savings. They also usually lack sufficient lot size for the ground heat exchange installation.

But two partners who have worked to include that smaller home market in the vicinity are doing well. Nicholas Mitchell and Nicholas Cagianca, co-owners of Geomic Developments

**Stubbed out loops and the small amount of excavation needed for manifolding the ground loop system is shown.**

**(Photo courtesy of Geomic Developments Inc.)**

Inc., located in Portland, are dedicated to finding ways to install geothermal systems in their area. While they do commercial projects as well as new residential installations, they have also been able to focus on retrofitting Portland's older homes.

"We specialize in smaller-than-usual residential geo installs," Mitchell says.

**(Opposite Page) The basement area installation of the new system.**

**(Photo courtesy of Geomic Developments Inc.)**





## Nick Cabianca and helper Brian Johnson work to fuse piping

(Photo courtesy of Geomic Developments Inc.)

“The average Portland home is old, relatively small, and in need of an energy remodel.”

Mitchell and Cabianca started working together after they met and worked on an engineering project at the University of Arizona. Their original focus was on the “ground loop side of geothermal,” Cabianca says.

From the earlier interest in the ground heat exchange aspect of geothermal, they continued their focus on the geology and climatology of the Pacific Northwest and California. They now do projects in Washington, Oregon and California. “We work from San Juan Islands to San Francisco,” Cabianca says.

With a new interest in geothermal, Mankowskie says he looked in the yellow

pages to find geothermal businesses in the Portland area. He ended up with bids from several companies. With nearly a half-acre of land, several of the initial bids included horizontal loops for the heat exchange. One of the bidders told Mankowskie that horizontal would not work for his property. They suggested using directional drilling. “But their price was exorbitant,” Mankowskie says.

Geonics had been the first call that Mankowskie made in his pursuit of geothermal. And he says that working with Geonics in the bid process had left him feeling very positive about their business and skills.

“They had a lot of information that was presented in a really accessible

way,” he says. “They gave us everything from videos from the heat pump manufacturer to magazine articles and brochures that they had. And they just spent a lot of time talking to us over our dinner table, and that was great,” he said. “They weren’t pressuring me for the sale,” Mankowskie said. “I liked that it was a small company and that the owners were young and passionate about their work.”

Even though Geonics original bid on the project was for horizontal loops, Mankowskie called Nick Mitchell and asked him what he thought the directional drilling possibilities were for his property.

When the re-bid from Geonics to do the project with directional drilling came in and fit the budget, Mankowskie said the deal was cinched.

“Part of what makes us different is that we are really focused on making the ground loop more accessible for smaller



## Manifolding of the horizontal directional drilled loopfield is straightforward on the Mankowskie project.

(Photo courtesy of Geonomic Developments Inc.)

homes,” Cabianca said. “We do a lot of urban projects on the other end of the scale—much smaller lots in an urban city environment,” he says. “Which is pretty uncommon for geothermal. More than anything else, we have been focused on how this can become a more practical application for mass adoption.”

Both Mitchell and Cabianca say that the Portland market is very interested in sustainable practices. At the same time, clients who tell them they have been told that geothermal was not possible for

their property always surprise them. The glitch is that most of the homes located in urban areas are very small and sit on corresponding small lots. Residential Portland is largely made up of 40’ or 50’ x 100’ lots.

When Geonomics came to the Portland area from Arizona, Cabianca says they bought a custom vertical drill with a smaller mast and compact size. They sold it and turned more to innovative solutions for the projects they were bidding. They ended up

customizing a directional drill unit made by Ditch Witch.

“What we have done since then,” Cabianca said, “is almost exclusively directional drilling in house.” He says they are turnkey now and do full system installation. Most of their service territory gives them the ability to do directional drilling and they have concluded that it is the most cost effective and most versatile for their company.

“Geonomics has crafted a proprietary method of u-bend installation using

directional drilling,” Mitchell said. “It is the only option on these smaller lots,” Cabianca says.

“Mitchell does the design engineering on the ground loop side and we have our installers that do the drilling,” Cabianca says. “We have a small shop that does the sheet metal and makes custom connections for ductwork.” Geonomics does about 50 projects annually, with about half of them new construction. By doing most of the work in house, Geonomics is able to control and keep costs down.

“Portland is not a heavy heat load with minus temperatures, but you are heating a tremendous amount of time at seven months out of the year,” Cabianca says. He adds that hot water options are generally limited. Being able to provide hot water through the geothermal system is an added benefit for clients.

“Air conditioning was also a bonus for the Mankowskie home,” he said. Cabianca says the project was a straightforward job similar to 10 to 15 other retrofit projects they do a year. Geonomics installed a 3-ton Bosch CE 036, 2-stage water to air unit.

“A lot of the time when they have been using oil or propane,” Cabianca says, “their ducts are so nasty, we’ll do duct cleaning when we are replacing systems. It’s all part of the job.” They also tear out and remove the old oil burning systems.

“We are really, really happy with it,” Mankowskie says. “It’s invisible to us. It is just something you stop thinking about. The air is much crisper and cleaner than the oil heat was.”

Mankowski says that geothermal does pay off financially. “We’re just one family, but if more people can learn

about this and engage with it they would see the advantages,” Mankowskie said.

“And it just feels good to be off of petroleum.”

Editor’s note: Eric Mankowskie mentioned IGSHPA material he saw during his research into the possibility of geothermal for his Portland home. He said it was informative and helped influence his decision.



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