Useful Roles of Civil Engineering Facilities　No. 4 in a Series

Erosion control in the Mt. Fuji area by Fuji Sabo Works

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Osawa Collapse of Mt. Fuji

In the cities of Fuji and Fujinomiya and the town of Shibakawa-cho in the southern and western foothills of Mt. Fuji live 340,000 people. This area has a characteristic industrial structure with a concentration of industries that make use of the abundant groundwater from Mt. Fuji, including the papermaking and fine-chemical industries. Two rivers that flow in this region, the Urui River and the Shiba River, a tributary of the Fuji River, can be traced back to their source at *Osawa Kuzure* (Osawa Collapse), which extends to the summit of Mt. Fuji. The Osawa Collapse now has erosion control facilities and is the source of the Urui River. However, before the Ministry of Land, Infrastructure and Transport implemented an erosion control project in 1969 to control mudslides from the Osawa Collapse, the course of the river would change whenever flooding occurred near the Osawa alluvial fan, which now has erosion control facilities; and it often flowed into the Shiba River.

Shiraito Waterfall.

A three-dimensional bird's-eye view of the western slope of Mt. Fuji.

Mudslides from the Osawa Collapse

I had an experience which left me with a deep impression of the enormity of mudslides from the Osawa Collapse. This happened after World War II, when a mudslide had surged along the course of the Shiba River. It crushed enormous rocks upstream of the waterfalls, ground down lava, created a deep waterfall basin, and changed the shape of the Shiraito Waterfall, which has been designated as a special natural monument. On the east side, Otodome Waterfall receded visibly.

There is a bitter oral tradition about the Osawa Collapse in my family, which settled near Shiraito Waterfall in the late Heian Period. According to this story, the clan relocated to its current location on a plateau after a mudslide destroyed their homes at some indeterminate time in the past. This story probably refers to the time in the Middle Ages when the first Osawa Collapse wiped out the community of Hitoana.

The mudslides from the Osawa Collapse are characterized by a high content of volcanic gravel, or scoria, from Mt. Fuji. When water is added to scoria, it flows freely and then piles up when it reaches an alluvial fan or plain, burying waterways, farmland and homes. After every torrential rain, the communities on the foothills of Mt. Fuji spent countless hours restoring their waterways and fields.

The Urui River collects smaller rivers in the southern foothills of Mt. Fuji and pours from Tagonoura Port into Suruga Bay. Tagonoura Port is an important element of infrastructure for local industries, but it has been predicted that without erosion control facilities such as sand pockets, it could be filled up by a single mudslide and cease to function as a port.

Osawa River mudslide (1972).

Damage to a retirement home (1972).

The Osawa Collapse and Osawa sand pockets.

Erosion control on Mt. Fuji: As indispensable as air

After work began to control erosion on Mt. Fuji, maintenance to prevent landslide disasters in the foothill region was drastically improved. It seems that the 340,000 local inhabitants have grown accustomed to this sense of safety. Because disasters are prevented, residents would not even know about recent mudslides except for announcements issued by Fuji Sabo Works, the erosion control agency for the Mt. Fuji area.

About 11:30 AM on June 20, 1996, I was conducting measurements on flooding mechanisms in a forested area during torrential rain at the foot of Mt. Fuji when a mudslide occurred at the Osawa Collapse. When I finished my investigation and visited the sand pockets, I was astonished to see that rocks and scoria were piled up higher than the banks at about the middle of the sand pockets and upstream from there. If the mudslide had been able to flow downhill, it would surely have destroyed homes and buried factories and roads. There were no reports of damage downstream, and I had a keen appreciation for the value of the erosion control facilities.

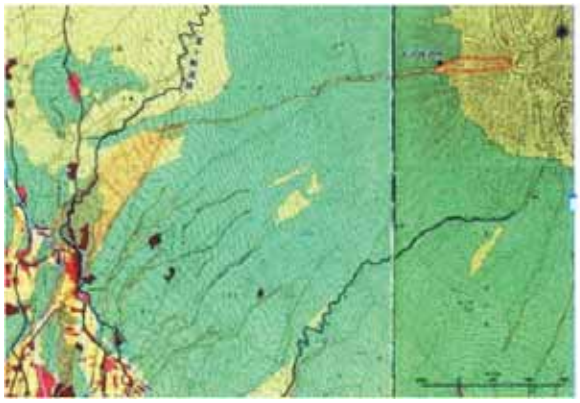
Although we cannot survive without air, we generally do not think much about the presence of air around us. This is similar to the relationship between local residents and the erosion control facilities at Mt.

Fuji. These facilities are playing a truly useful role in disaster prevention for the region.

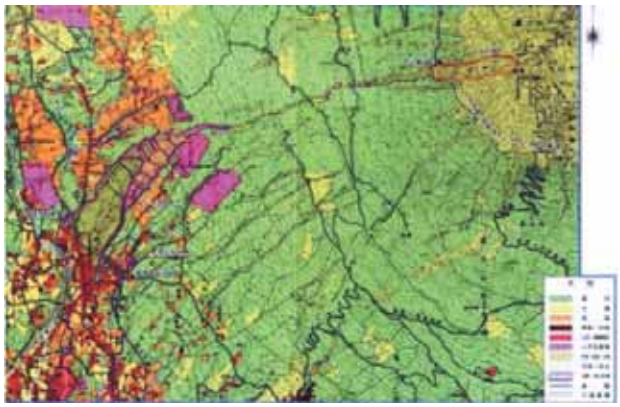
Another role of erosion control facilities

One characteristic of groundwater at Mt. Fuji is that the rainwater which falls at high elevations flows through groundwater veins located deep underground, while rainwater which falls at lower elevations emerges in springs at the surface. From the standpoint of regional advancement, it is desirable to maximize the ground penetration of rainwater at high elevations so that it will recharge the groundwater. It is important for rainwater to reach the groundwater veins, instead of flowing down as surface water.

In addition to their role in controlling erosion, the erosion control facilities on Mt. Fuji (erosion control dams, sand pockets, etc.) also function as water resource recharging facilities, in which flowing water is trapped by dams so that it can become groundwater. This function is not widely appreciated, but its benefits for the region are invaluable.



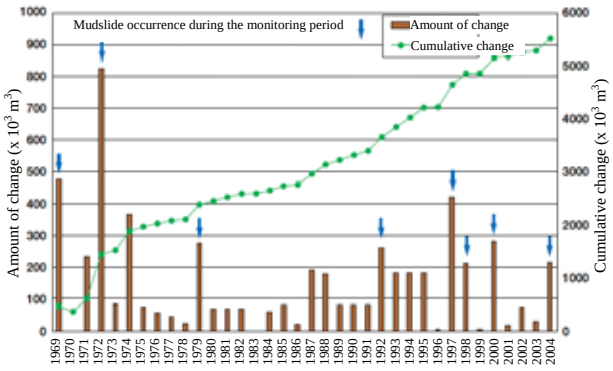
Land use in the area near the Osawa alluvial fan (1928).



Land use in the area near the Osawa alluvial fan (1992).

Osawa Collapse continues to expand

Day by day, the Osawa Collapse continues to expand. During the past 50 years, looking at Osawa from my home, I have gotten a real sense of the changing shape of Mt. Fuji. When I see the clouds of dust rising from the Osawa Collapse on sunny days, I feel that Mt. Fuji is moving. The accumulated debris is sure to become a mudslide during concentrated torrential rains, and the frequency of these occurrences is sure to rise. The erosion control facilities at Mt. Fuji will continue to play an increasingly important role in the safety of the Mt. Fuji region as time passes.



Continuing expansion of the Osawa Collapse and changes in volume of debris runoff
(Since the 1990s, a large-scale mudslide has occurred about once every few years.)