

# General Outlines of the Matsumoto Sabo Work Office

## Complex and Brittle Geological Features Caused by Uplift, Great Fault, and Volcanic Activities

The Hida mountain range commonly known as the "North Alps" with the tall and sharp peaks, crests, and snow patches stretching all the way directly to the top of the "Alps" gives it its appearance. From the geological viewpoint, the granite and the porphyry that are the igneous rocks that constitute the sedimentary rock that was created during the paleozoic era, which is in part covered with the debris from a volcano. The beautiful slopes were made by gradual weathering of a group of 20th century mountains through the action of volcanic activities added after the force of uplifting movements during the paleozoic era and the mountain-range movements of the great fault. The North Alps is still undergoing uplift although it is not noticeable. In the meanwhile, the brittle sedimentary rocks are being uplifted by the force of the great fault. The origin of the Hida mountain range is the Fossa Magna and the Toba-Shizuka tectonic line. The Fossa Magna is a great fault that runs from the north to the south. The Toba-Shizuka tectonic line runs from the north to the south. The Fossa Magna and the Toba-Shizuka tectonic line are the main tectonic lines in the Hida mountain range. The Fossa Magna is a great fault that runs from the north to the south. The Toba-Shizuka tectonic line runs from the north to the south. The Fossa Magna and the Toba-Shizuka tectonic line are the main tectonic lines in the Hida mountain range.

### The earth that breathes - the North Alps

### Collapse of Mt. Hieda

In the drainage area of the Hinokawa River that flows into the Hinokawa River, there are distributed a collapsed area of Mt. Hieda known as one of the three greatest collapses in Japan and many other areas. It is recorded that the collapse of Katsuyama-mura, Mt. Hieda in the 11th year of the Kyōto era (1770) and the great collapse of Mt. Hieda in the 14th year of the Meiwa era (1777) and the collapse of the Hinokawa River, and caused a disaster. The latter, in particular, was a great disaster, and thirty-three lives were lost. It was a disaster brought about by a large-scale collapse because of the brittle geological features of Mt. Hieda.

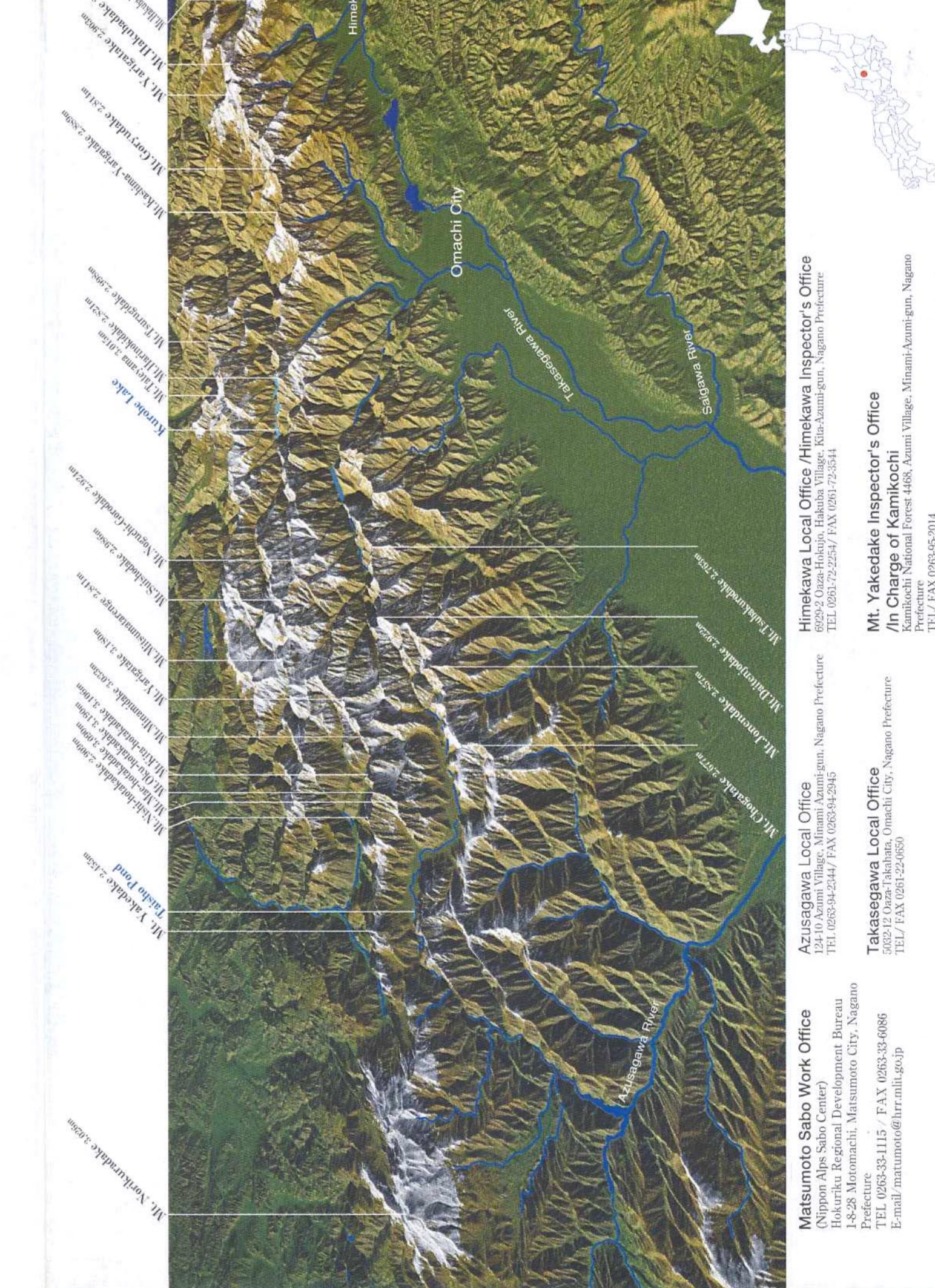
### Sediment produced without intermission

The geological features in the North Alps area can be divided roughly into the sedimentary rock and the igneous rock in the new tectonic zone of Fossa Magna to the east and the granite in the old tectonic zone to the west along the border of Fossa Magna. The majority of the geological features that form the drainage area of the Takasegawa River is occupied by the granite.

The granite made of coarse grains is extremely vulnerable to weathering, and is the root of sediment production when the conditions are added such as complicated faults, weathering through the action of a hot spring, and area of rocks exposed ascending the forest hills. The soil that flows out without intermission poses a threat of sediment-related disaster to the drainage area.

### Mt. Yakedake that produces volcanic soil

Lava and magma spilled out from Mt. Yakedake that erupted an eruption in 1915, and forms an extremely brittle ground. Again from the viewpoint of the geological features, Mt. Yakedake is a volcanic mountain. The volcanic soil that flows out without intermission poses a threat of sediment-related disaster to the drainage area.



## Three drainage areas within the jurisdiction

### Drainage area of the Hinokawa River

Length of flow channel: 51km  
Average flow: 100 m³/sec  
Upper reaches of Hinokawa bridge  
Average bed slope: 1/10

**Alluvial fan developed because of many rapids and branches**

The Hinokawa River has its source in the southern part of Hakuba Village. Gathering many small branches together, it runs from the northern part of Nagano prefecture through the southern part of Nagano prefecture all the way to the coast. The upper reaches of the river are the site of great collapse discharges a large quantity of sediment. The Hinokawa River that runs almost along the "Hida-Shizuka tectonic line" is one of the fastest flowing rivers in Japan with frequent occurrences of disasters.

### Drainage area of the Takasegawa River

Length of flow channel: 27km  
Average flow: 100 m³/sec  
Upper reaches of Takasegawa bridge  
Average bed slope: 1/10

**Nature of the rock vulnerable to weathering and steep slope**

The drainage area of the Takasegawa River is made up of three drainage areas including the Hinokawa River and the area of Mt. Yakedake plus two other branches. The geological features in the drainage area are mostly the granite that is vulnerable to weathering. Moreover, the forests are not so dense as in the upper reaches of the river. For this reason, the shallow landslides and the torrent erosion are in progress. Weathering through the action of a hot spring is also taking place, and the sediment is discharged repeatedly to the sea. This is one of the causes of disasters.

### Drainage area of the Azusagawa River

Length of flow channel: 31km  
Average flow: 100 m³/sec  
Upper reaches of Azusagawa bridge  
Average bed slope: 1/10

**Sediment accumulation in the devastated upper reaches**

The drainage area of the Azusagawa River is made up of three drainage areas including the Hinokawa River and the area of Mt. Yakedake. The mountains in the drainage area are mostly the granite that is vulnerable to weathering. Moreover, the forests are not so dense as in the upper reaches of the river. For this reason, the shallow landslides and the torrent erosion are in progress. Weathering through the action of a hot spring is also taking place, and the sediment is discharged repeatedly to the sea. This is one of the causes of disasters.

## Major disasters in the drainage area

- ### Major disasters in recent years
- 1978: A landslide occurred in the Hinokawa River drainage area.
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  - 1980: A landslide occurred in the Hinokawa River drainage area.
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  - 2020: A landslide occurred in the Hinokawa River drainage area.
  - 2021: A landslide occurred in the Hinokawa River drainage area.
  - 2022: A landslide occurred in the Hinokawa River drainage area.
  - 2023: A landslide occurred in the Hinokawa River drainage area.
  - 2024: A landslide occurred in the Hinokawa River drainage area.

## Story of the founding of the Matsumoto Sabo Work Office and history of its work

- ### Origin and development of the Matsumoto Sabo Work Office
- 1876: A local office of the Civil Engineering Bureau in the Ministry of the Interior was founded.
  - 1879: Sabo works directly controlling the Sano-gawa River of the Shinano-gawa River.
  - 1880: A local office of Nagata, the Ministry of the Interior, was founded.
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## Sabo Technology for disaster prevention in harmony with nature

### ~Various Sabo facilities~

All three major rivers including Azusa River, Takasegawa River and Hinokawa River under the jurisdiction of Matsumoto Sabo Control Office have their stream sources in the North Japan Alps and flows into the Japan Sea. Matsumoto Sabo Work Office covers a wide range of areas from the upper reaches toward the midstream and takes diversified measures according to the characteristics of each section of the streams, actively working on the construction of a variety of Sabo facilities.

### Sabo allowing sediment flow out

There are a large number of steep rivers with shorter channels in Matsumoto Sabo control jurisdiction, with volcanic areas and devastated mountains typical of the North Japan Alps extending upstream. A large amount of sediment outflow in these steep rivers makes river courses unstable and sediment-related disasters serious. In the normal condition, allowing sediment to flow downstream is necessary for stabilizing the river courses, maintaining the function of various facilities, reducing impacts on the ecosystem and preservation of coastal areas. In this respect, comprehensive sediment control is required in view of the consistency of the whole river system covering the whole water flow from the mountains toward the coast. In the comprehensive river-system control, strategy for sediment movements should not be addressed merely from the upper reaches, but also from the midstream and lower reaches, but also in the whole areas from stream source toward the river mouth in cooperation with the river management division. In this monitoring campaign, we implemented through optical cables to monitor drifting sediment and suspended sediment for realization of comprehensive sediment control. Furthermore, attempts have been made to develop Sabo dams which hold back sediment in floods and allow to flow down in normal time.

### Urakawa Super Conduit Sabo Dam

Urakawa Super Conduit Sabo Dam is a dam with a large amount of sediment storage capacity. It is one of the three largest landslides in Japan, keeping a large amount of sediment. Urakawa Super Conduit Sabo Dam supplies sediment to the downstream side at normal time and controls sediment in abnormal torrential flow. The levee crown is used as a road for administration.

### Silt-type Sabo Dam

Silt-type Sabo Dam is a dam with a large amount of sediment storage capacity. It is one of the three largest landslides in Japan, keeping a large amount of sediment. Urakawa Super Conduit Sabo Dam supplies sediment to the downstream side at normal time and controls sediment in abnormal torrential flow. The levee crown is used as a road for administration.

## Sabo Information Technology Project

### Kamikochi Region Optical Cable Project Layout

There is an active volcano, Mt. Yakedake, in Kamikochi region which is vulnerable to a large number of disasters. Once a sediment-related disaster occurs, serious damage can be caused. In "Kamikochi Region Optical Cable Project", it is planned to connect monitoring devices including monitoring cameras and optical cables to the Sabo Work Office through optical fiber. This project ensures speedy and reliable collection of real-time information on collapsed lands and torrents for alerting the industries to related organizations and residents.

### Urakawa Region Optical Cable Project Layout

"Urakawa Region Optical Cable Project" is a project for developing and installing related disaster monitoring system in Urakawa Region with Mt. Yakedake, one of the largest landslides in Japan. Optical cables are connected from Matsumoto Sabo Work Office to Urakawa Region to enable real-time accurate tracking and monitoring of sediment movements in bed load sediment and suspended sediment. In addition, image data are quickly alerted to related organizations and local residents, thereby improving the information communication in case of disasters.

### Debris flow observation at Mt. Yakedake

Debris flow is being watched all the time through monitor cameras at Yakedake Monitor Station in Kamikochi.

## Sabo for the activation of region and communities

### Kashima River Sabo Forest Development Project (Omachi City, Nagano Prefecture)

In the upper stream of Kashima River, Sabo dams are under construction for disaster prevention. The mid-stream of the river, with gentle river slopes, meanders, resulting in erosion of riverbanks and deposit of sediment. Omachi City Sabo Forest Development has suffered disasters due to repeated sediment outflow and deposits. "Kashima River Sabo Forest Development Project" efforts have been positively made the best use of the present status of the river. For this purpose, groups of groundworkers are formed on a wide range to develop a sediment retaining system with natural control facilities, and the forest along the river are utilized as protection against sediment discharge. A council consisting of residents and scholars has been organized to discuss the specific concepts of the Sabo forest project.

### Nomugi Pass Channel Works (Nagava Village, Nagano Prefecture)

Nagava Village is planning a plan to regenerate the area around Nomugi Pass as a "History Zone". For walking in natural and historic spots as a part of the activation plan of local communities, "Nomugi Pass Channel Works" function in the core of this project, reflecting the locality by the best use of natural beauty such as water and existing facilities. The project is in progress under the slogan "Sabo channel friendly to people and nature".

## Landscape with natural environment

### "Landscape Model Project" has been advanced to construct facilities in harmony with natural environment with cooperation of local communities.

### Kamikochi Landscape Model Project

Located in the National Park, Kamikochi is attracting about two million people every year with its beautiful landscape. Special attention is paid to shapes, materials and landscape in the landscape rich in natural beauty. The works are carried out during winter, not in summer tourist season.

### Environmental survey

Kamikochi is known by its rich ecosystem and aesthetically precious plants such as plants including the yellow honeycreepers, lilies, larkspurs and higher plants. In addition to adopting environmentally friendly construction methods, surveys on landscape, surrounding water and fish and aquatic organisms have been undertaken to find the impact of Sabo facilities upon the landscape and river ecosystem.

### Matsukawa Landscape Model Project

Matsukawa River, upper stream of Hinokawa River, has a large amount of sediment in Mt. Hieda and Mt. Karanishi of Hida Mountains Range. By downstream large alluvial fans is located at the center of Habakusa resort. Precious plants including alpine plants designated as the special natural heritage are numerous in Kamikochi. Matsukawa River is a treasure house of nature with rare species of plants and animals. The Sabo forest project, and other Sabo works (Chir and Yamane trust).

### Conservation of endangered species

A conserved milk vetch, "Tsumogoy" is an effort to reduce the impact of the groundworks upon the local vegetation, an indigenous species. "Tsumogoy" growing along Hinokawa River was transplanted to the upper stream under the guidance of local specialists. "Tsumogoy" is designated as an endangered species in the red data book by the Nature Conservation Society of Japan. Kuribayashi Corollaria, also designated as an endangered species in the red data book by Environmental Agency.

### Matsukawa River Groundwork Works

In Matsukawa River groundwork works, chutes, pools and shrubs are created among a natural stream to preserve environment for various creatures to survive. All the groundworks are provided with fish ways and Kamayama gully, indigenous plants around Matsukawa River are transplanted in chutes and along the banks, in harmony with nature. This Sabo work aims at the communication between people and nature.

## Effect of Sabo Works

### Effects of Sabo works and changes in land utilization

~In the area along Matsukawa River, Nagano Prefecture~

In July 1995 the area along Matsukawa River experienced the most serious flood in history. The area was hit with continuous rainfall three times as much as the normal amount. The flood was caused by the construction of Sabo dams and drainage works, the flood prevention and land utilization along the river. The Sabo works along the river have been developed by the Matsumoto Sabo Work Office.

### Area flooded with sediment and water in 1999

Area flooded with sediment and water in 1999

Normal Max. water level	3300 m
Continous rainfall	2110 m
Disaster	2100 m
Ground	2100 m
Channel	2100 m

### Area flooded with sediment and water in 1999

Area flooded with sediment and water in 1999

Normal Max. water level	3300 m
Continous rainfall	2110 m
Disaster	2100 m
Ground	2100 m
Channel	2100 m

### Status of river flow at the time of disaster in 1995

Status of river flow at the time of disaster in 1995

Normal Max. water level	3300 m
Continous rainfall	2110 m
Disaster	2100 m
Ground	2100 m
Channel	2100 m

### Sediment captured in Maruyama Sabo dam (at the time of disaster in 1995)

Sediment captured in Maruyama Sabo dam (at the time of disaster in 1995)

### Sediment captured in Nakamatsugawa River No.1 Sabo dam (at the time of disaster in 1995)

Sediment captured in Nakamatsugawa River No.1 Sabo dam (at the time of disaster in 1995)

### For international exchanges

For international exchanges

### Salt road

Salt road

### Sabo to support the area - For protection of safety and beautiful nature -

Sabo to support the area - For protection of safety and beautiful nature -

## Nature and sightseeing resources in Matsumoto Sabo Work Office Jurisdiction

Rich and precious natural environment surrounding Matsumoto Sabo Work Office is the most important factor to support the sightseeing industry, the greatest industry for local people. It is an important duty for Matsumoto Sabo Work Office to support these sightseeing resources.

### Salt road

Salt road

### Niigata prefecture

Niigata prefecture

### Traffic in Kamikochi

Traffic in Kamikochi

### Animals and plants growing in the North Alps

Animals and plants growing in the North Alps

### Snow grouse

Snow grouse

### Japanese Kamoshika (Serow)

Japanese Kamoshika (Serow)

### Teukumosu

Teukumosu

### Iwana (Char)

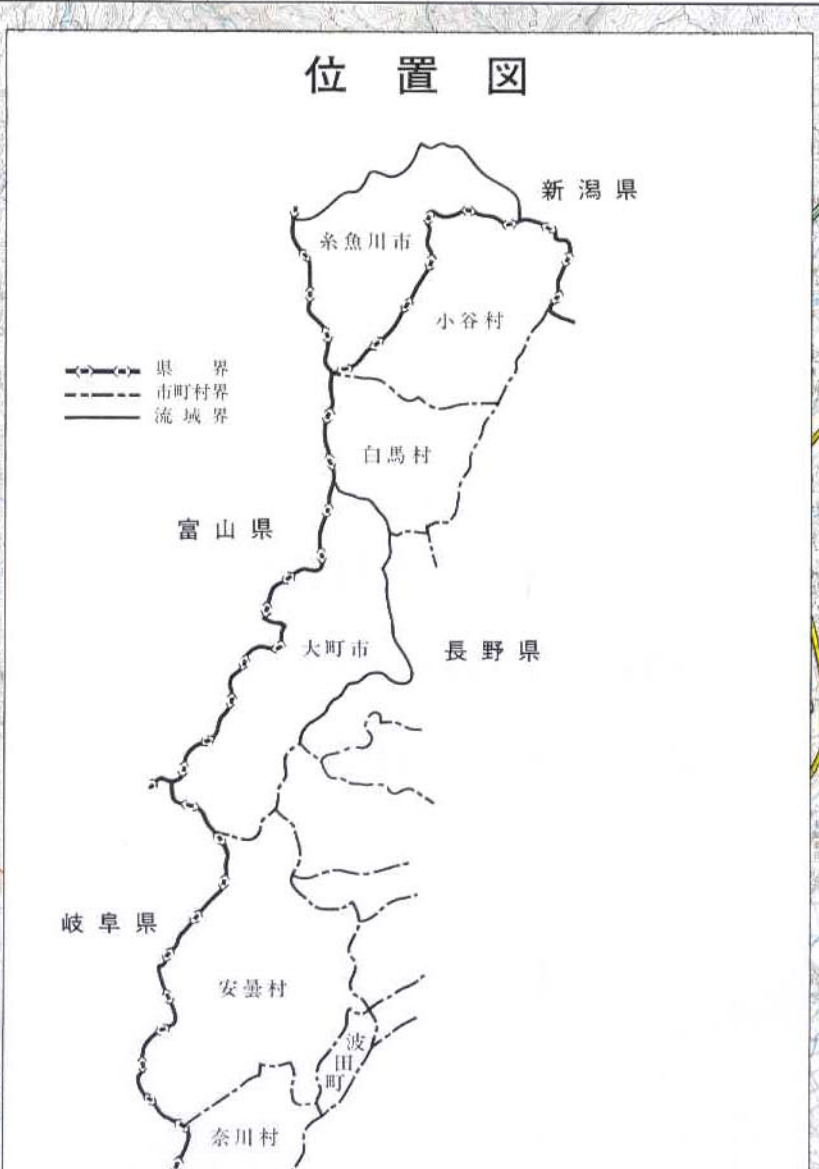
Iwana (Char)

### Ururuppo

Ururuppo

# 松本砂防工事々務所管内図

Territory of the Matsumoto Sabo Construction Office



本系	補助系	河川名称	基準点番号	河川名称	基準点番号	備考
K1	本系	千曲川	558.10	千曲川	558.10	
K2	本系	千曲川	559.9	千曲川	559.9	
K3	本系	千曲川	560.2	千曲川	560.2	

施設番号	施設名称	施設種別	施設形式	施設長さ	施設幅	施設高さ	施設面積	施設体積	施設重量	施設価額
1	千曲川上流砂防工事	砂防	堤防	1000	10	10	10000	100000	1000000	100000000
2	千曲川中流砂防工事	砂防	堤防	1000	10	10	10000	100000	1000000	100000000
3	千曲川下流砂防工事	砂防	堤防	1000	10	10	10000	100000	1000000	100000000

機関	名称	住所	電話番号
国土交通省	国土交通省	東京都千代田区千代田	03-3508-1111
国土交通省 国土院	国土院	東京都千代田区千代田	03-3508-1111
国土交通省 国土院 国土院	国土院	東京都千代田区千代田	03-3508-1111

機関	名称	住所	電話番号
長野県	長野県	長野県長野市	026-222-1111
長野県 土木部	土木部	長野県長野市	026-222-1111
長野県 土木部 土木課	土木課	長野県長野市	026-222-1111



---	工事事務所管内界
---	砂防指定地
---	流域
---	既設工事
---	建設中工事
---	直轄河川改修区間
---	一般河川工事区
---	国土開発幹線自動車道
---	一般国道
---	松本砂防工事事務所
---	出張所
---	関係事務所
---	河川監視所
---	水位観測所
---	国有林界
---	国土地公界