

# 奥の水利根

*Water of Okutone*

潤いを未来に

*Prosperity in future*



Water Resources Development public Corporation  
Numata Dams Integrated Operation and Maintenance Office

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奥利根—自然との語らい

新緑がまぶしい春の水面。<sup>みなも</sup>

夏はせせらぎの音が耳にさわやか。

秋は紅葉、溪谷に山水はひびき

降る雪はまた

冬の奥利根のひそやかな吐息。

*The forest-green of spring is mirrored in the surface of the lake  
Summer's murmuring of the brook falls fresh upon the ear  
Autumn color the mountains in red and yellow  
with the water's trickle echoing through the valley  
Okutake breathes a secret sigh, blanketed by the falling snow*



厳寒の奥利根湖  
Okutone lake in the coldest season



初夏のならまた湖  
Naramata lake in early summer



紅葉の奥利根  
Okutone with autumn leaves

# 利根川上流部流域の概要

## Outline of the upper course of the Tone River

### ●Outline of the upper course of the Tone River

The Tone River, or "Bandou Tarou" - the river often overflows - is one of the largest river in our country, and an important river on the Kanto region.

The Tone River originates from the mountainous region on the border of Gunma and Niigata prefectures.

The stream runs southeast through the Kanto plains, with receiving various large and small tributaries, and empties into the Pacific Ocean at Choshi City, Chiba Pref.. The drainage basin area of the Tone River is 16,840km², and the annual outflow is about 13 to 14 billion m³.

The Metropolitan area plays an important role in the society, economy and culture of our country. There is a large demand of water in this area, due to the recent industrial development and the concentration of the population. The maintenance of water supply has become a problem to be solved.

To guarantee the water resources and protect the Metropolitan area from floods, multi-purpose dams were built and have been operated at the mountains on the upper course of the Tone River. Also at the middle and the lower courses, regulating pondage・"diversion channel" such installations have been built and operated.

The upper course of the Tone River are the basin of 8,600km² drainage area, and from the upper course to the Kurihashi bridge, the drainage area is the half of that of the Tone River basin, and is classified by the characters of the lay of the land, the geology, the rainfall outflow conditions and so on roughly into four courses such as Okutone, Azuma River, Karasu-Kanna River, and Watarase River.

The annual average precipitation at the upper course is about 1,500mm, but there is a regional difference, and in the area of the Mt. Akagi and of the Mt. Haruna, located in the north of the Okutone-Azumagawa basin, there is much more precipitation than that of the south area.

The total annual outlet is about 6 to 7 billion m³. There is a tendency of increase of the outlet from the Okutone-Azumagawa basin in April and May, because of the snow-melt water. Usually the other basin have a maximum outlet



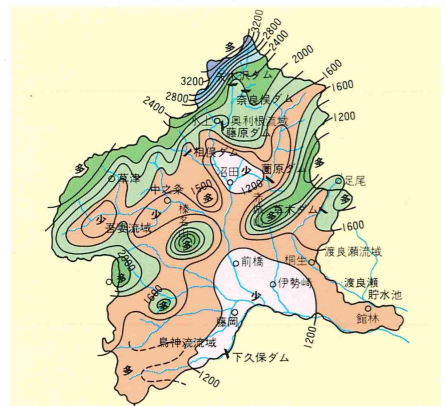
Water resources of Tone River(Snowy valley of Ou-minakami Mt.)



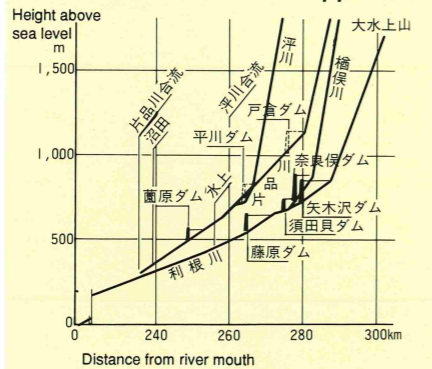
Monument of Tone river water resources

in typhoon season, in August, September, and October. The Yagisawa dam was completed in 1967, and the Naramata and five other multi-purpose dams are been completed now, at the upper course of the Tone River. Under the control of the dam groups of the upper course, the seven dams are contributing to the flood control and the water supply.

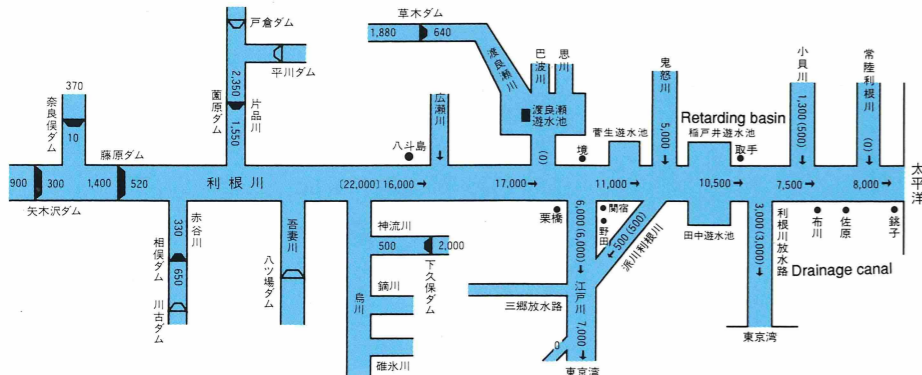
### Annual average equi-rainfall diagram



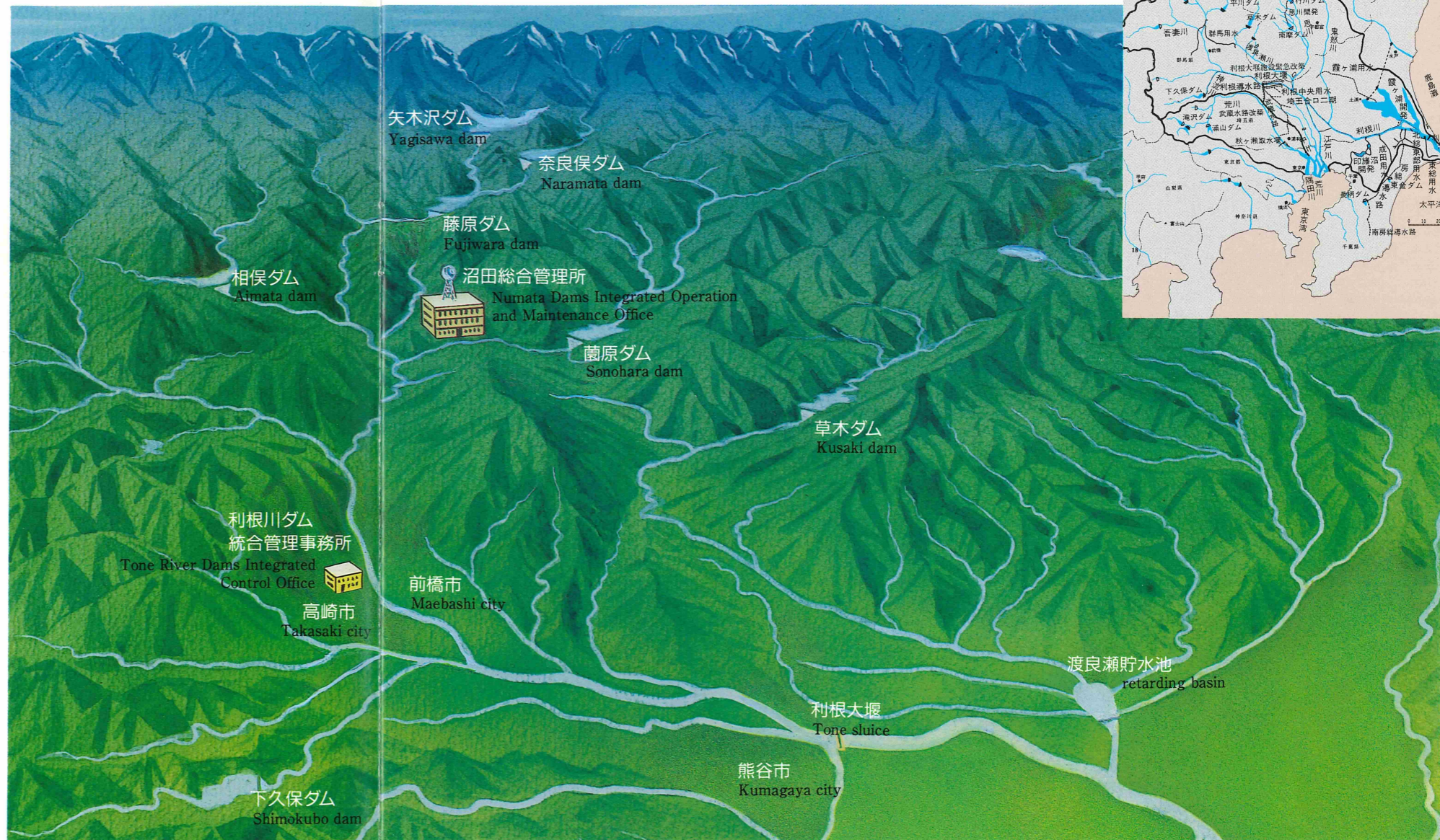
### Longitudinal section diagram of Tone upperreach



### Estimated high water discharge diagram of Tone River



単位: m³/s ( ): 分合流量 ( ): 基本高水ピーク流量  
Unit Normal high water peak discharge



### ●Flood control planning

The " Catherine typhoon ", which attacked the Kanto region in September 1947, brought a record heavy rain and caused a huge outflow of earth and sand all over the Mt. Akagi.

It had disastrous consequences on river structures, such as levees, bank protection, " revetments " in both main river and sub rivers.

Since the Meiji era, the flood control plan for the Tone River has been revised every time there is huge floods. On the occasion of the 1947's typhoon, the normal high water was revised to 14,000m³/s (3,000m³/s out of 17,000m³/s should be adjusted by dam).

The basal planning on the construction enforcement at the present time was revised in 1980. The revision, which target was the flood occurred in November 1947, was also based on the survey conducted about the past amount of rainfall and outflow of the Tone River basin. The basal line of revision decided that the peak flow of the normal high water for the Tone River is 22,000m³/s "Yattajima" point, the distribution flow to with after adjustment of 6,000m³/s by a group of dams of the upper course is 16,000m³/s.

### ●Water supply planning

The demand for water in the Metropolitan area still shows a tendency to increase with the increase in population, the improve of living conditions, the growth of economy, and the development of industries. In order to cope with this increasing demand for water supply, the construction of water resources development installations have been promoted.

In the Tone River system, the Yagisawa dam and other various installations have been built, also water for irrigation have been developed.

The vested water supply in the Tone River consists mainly of irrigation water, and than domestic water, industrial water, and the water for maintenance of normal functions of the river.

The water resources development basal plan estimates that from 1986 to 2000, the Tone and Ara River water system will draw up.

This plan includes the outlook of demand for water and the water-supply needs of the Metropolitan area and the 5 Pref. located at the Tone River basis, and also of the Kanagawa Pref. regions. In the twenty first century, these area are thought to depend on the Tone and Ara River water system for the various water supply.

## Outline of Tone River・Ara River water system water resources development plan



### Table of development water discharge relates to Tone River

Institution name	Municipal water			Irrigational Gunma canal	Total	Complete year
	Domestic water	Industrial water	Total			
Yagisawa dam	東京都 4.00 群馬県 3.20		7.20	8.66	15.86	昭42
Naramata dam	8.045 (東京都 2.07 群馬県 2.435 茨城県 0.179 埼玉県 0.951 千葉県 2.41)	群馬県 0.65	8.695	0.69	9.385	平3
Shimokubo dam	14.20 (東京都 12.60 埼玉県 1.60)	埼玉県 1.80	16.00		16.00	昭43
Kusaki dam	7.04 (東京都 5.68 埼玉県 0.54 桐生市 0.52 佐野市 0.30)	1.88 (東京都 0.98 群馬県 0.60 足利市 0.30)	8.92	3.45	12.37	昭51
Kawaji dam	2.63 (栃木県 2.01 千葉県 0.62)	4.49 (栃木県 1.83 千葉県 2.66)	7.12	3.47	10.59	昭58
River mouth barrage of Tone River	18.76 (東京都 14.01 千葉県 3.60 埼玉県 1.15)	1.24 千葉県 1.24	20.00	2.50	22.50	昭46
Inbanuma development		5.00 千葉県 5.00	5.00		5.00	
Watarase retarding basin (1st reservoir)	2.50 (東京都 0.505 茨城県 0.505 埼玉県 0.505 千葉県 0.505 小山市 0.349 野木町 0.131)		2.50		2.50	平1
計	60.375	15.06	75.435	18.77	94.205	

# 沼田総合管理所のあらまし

## Outline of Numata Dams Integrated Operation and Maintenance Office

### ●Outline

The number of dams under the integrated control increases now in the whole country, as the need for water systems results on the increase of dam construction.

The development of the integrated operation and maintenance of several dams has been important for the sake of the effective utilization and the efficient management of the dams.

Also in Okutone region, the necessity of an effective, efficient, and economical control and management of the dams in this area lead to the start of the controlled operation of Naramata dam in 1991, in addition to that of Yagisawa dam, since 1967.

Numata Dams Integrated Operation and Maintenance Office was established in Numata city, on Gunma Prefecture, with the purpose of integrating the operation and maintenance of dams in Okutone region, in behalf of the future dam arrangement and the traffic condition, and moreover, thinking on the future control of both the two public corporation dams already completed, and the dams to be constructed from now on.

The dams of public corporation under construction, are going to be controlled by the integrated operation and maintenance, for effective and efficient control management.

### ●Integrated operation and maintenance

① The Numata office always collects and controls the weather information, the water-related information, and the dam-control conditions in both Yagisawa and Naramata dam branch control offices. For the grasp of synthetic conditions, also the weather information and so forth are collected separately. For the sake of the efficient and safety operation of both dams, when preventing flood and water shortage, the indicative contacts are unified between Numata office and the Ministry of Construction, Tone River Dams Integrated Control Office.

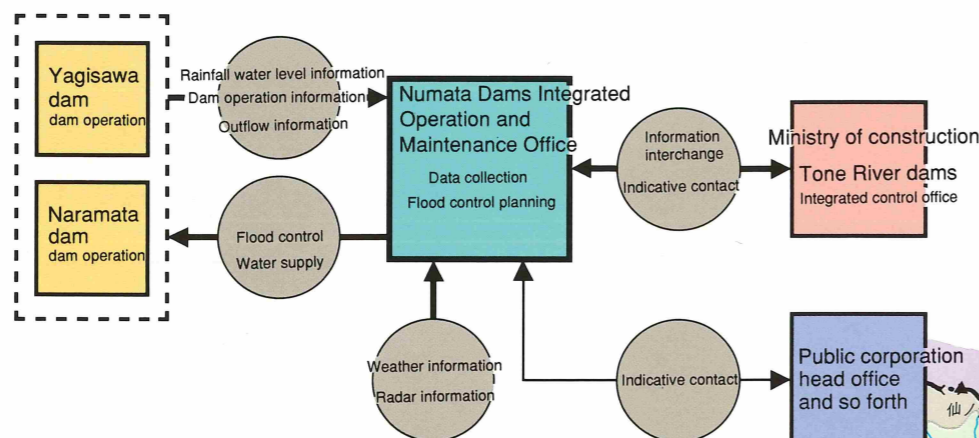
② Carries out the economical dam control, for example, the simplification of the organization, the labor-saving of staff, and the rationalization of the management office by the bureaucracy concentration.

③ Corresponds synthetically to the diversifying needs, such as the water quality maintenance, the environmental servicing of dam environments, the removal of accumulated sand, the correspondence to the visiting person, the providence to the water shortage, and so forth.

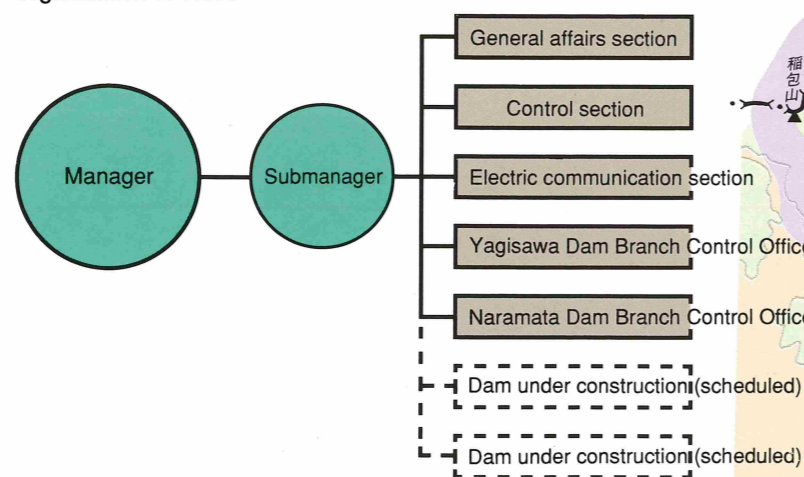


矢木沢ダム渇水状況

### Integrated operation and maintenance system



### Organization of office



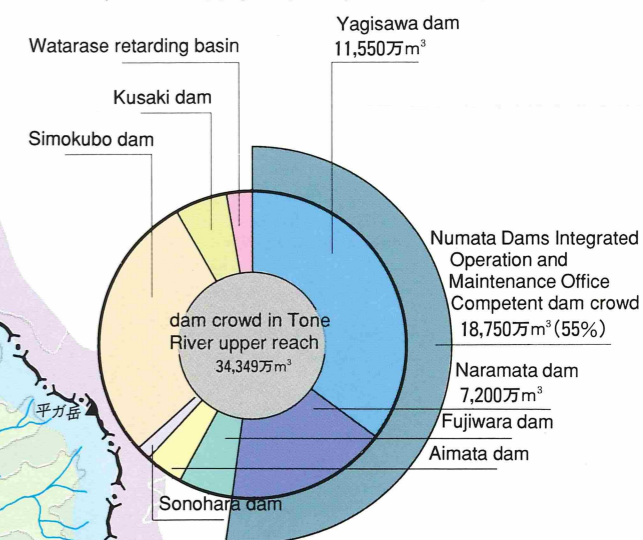
legend  
 Public corporation dam  
 Other dam

沼田総合管理所(空撮)

### ●History

- April 1959  
Yagisawa dam construction start
- October 1967  
Yagisawa dam control start
- April 1947  
Naramata dam survey start
- June 1978  
Naramata dam construction start
- April 1991  
Naramata dam control start
- April 1991  
Establishment of Numata Dams Integrated Operation and Maintenance Office

### Storage capacity of Tone River upper reach dam crowd (water supply capacity in summer)



## 新潟県



# 矢本沢ダム

Yagisawa dam

## ●Outline of Yagisawa dam

Yagisawa dam is a multi-purpose, arch type concrete dam, 131m high, built on the upper region of the Tone River.

In 1959, Ministry of Construction started its construction, and it passed the control to the Water Resources Development Public Corporation, when it was established in 1962.

The construction work was completed in 1967, conquering severe geographic and weather conditions.

## ●Purpose of the dam

### ●Flood control

By controlling the flow at about 600m<sup>3</sup>/s, out of the estimated high water discharge of 900m<sup>3</sup>/s during floods, the dam diminish the high water discharge at the lower course, at the dam site, in coordination with the other dams at the upper course of the Tone River.

### ●Maintenance of normal functions of the river water

Yagisawa dam supplies water for irrigation to accomplished farmland around the Tone River, in coordination with the dams at the upper course of the Tone River.

### ●Water supply

#### Water for Irrigation

The amount of water for irrigation that the Yagisawa dam supplies is 8.66m<sup>3</sup>/s in average (15.89m<sup>3</sup>/s maximum) through the Gunnma irrigation channel, for a farming area of 10,000 ha, which is expanding at the Akagi Haruna foothills.

#### Domestic water

For the Gunma Prefecture the dam provides ,for domestic water, 3.20m<sup>3</sup>/s (maximum), and for the Tokyo Metropolitan area, 4m<sup>3</sup>/s in the irrigation period, through the Gyouda point.

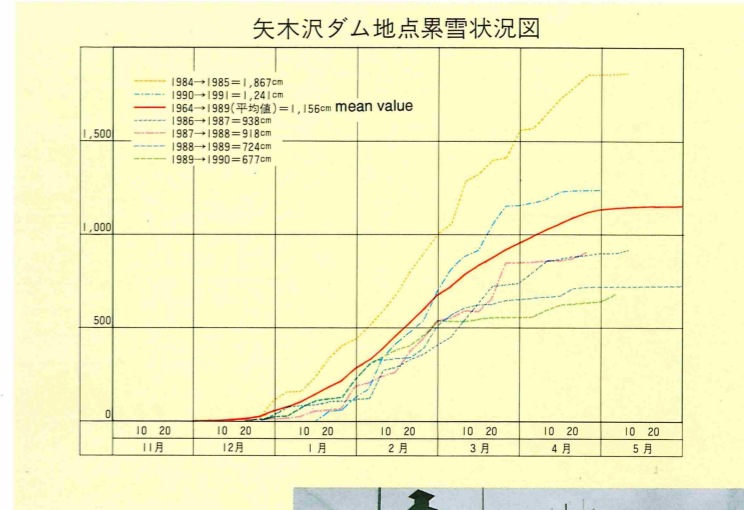
### ●Power generation

Localized in the lower side of the dam, the Yagisawa power station, operated by Tokyo Electric Power Corporation, generates 240,000kw of electricity on full pumping-up.

Moreover the dam increases the generative output of the others power stations in the lower course.



## Total snowfall diagram in Yagisawa dam



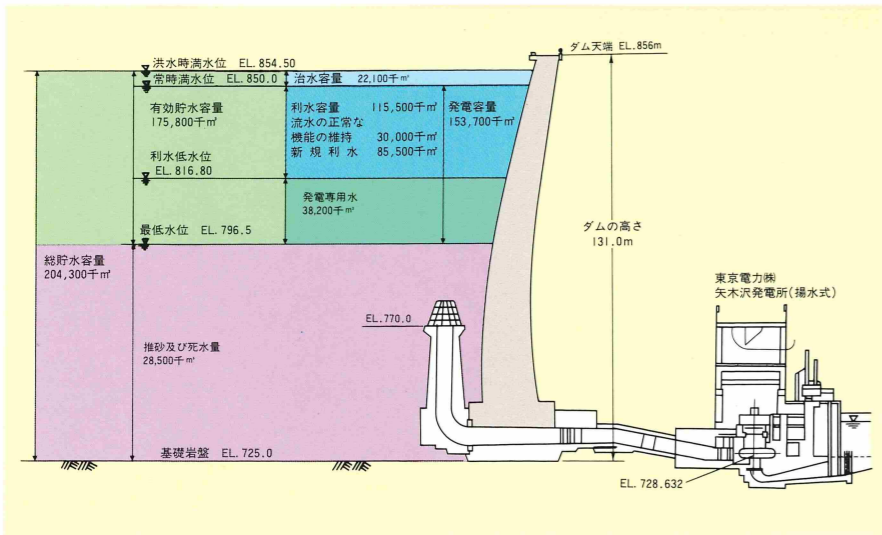
Environs of Yagisawa dam near the mountain range of the Jouetsu border, is a prominent heavy snowfall region in Japan. The total snowfall of about 12m in average (about 18km in maximum), the maximum snowfall in one day of 1.0m, and the accumulated snow of about 2.0m in average (maximum 3.65m) are reached, respectively.



The entirely lie of the land travelling special vehicle 'Shirogane-gou' which plays an active part in the winter dam management.

HÄGGLUNDS BV206D

## Storage capacity distribution of reservoir



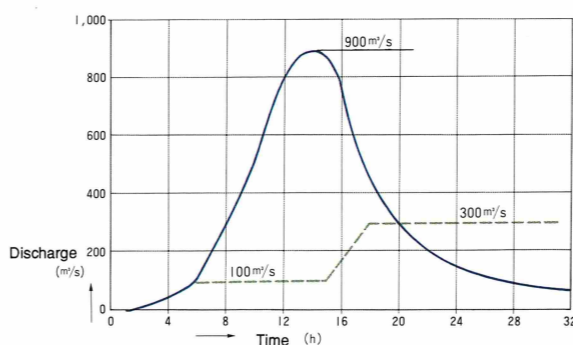
## ●Specifications of the dam

河川名	River's name	: Tone River system Tone River
位置	Location	: Yagisawa, Fujiwara, Minakami-machi, Tone-gun, Gunma prefecture
形式	Type	:
堤高	Height	: 131.00 m
堤頂標高	Crest elevation	: 856.00 m
堤頂長	Crest length	: 352.00 m
堤頂幅	Top width	: 7.90 m
堤体積	Volume of dam	: 570,000 m <sup>3</sup>

## ●Specifications of the reservoir

名称	Name	: Okutone lake
集水面積	Drainage area	: 167.4km <sup>2</sup>
湛水面積	Reservoir area	: 5.67km <sup>2</sup>
常時満水位	Normal water level	: EL. 850.00m
満水期制限水位	Flood control water level in flood season	: EL. 854.50m
最低水位	Lowest water level	: EL. 796.50m
総貯水容量	Gross storage	: 204,300,000m <sup>3</sup>
有効貯水容量	Active storage	: 175,800,000m <sup>3</sup>
堆砂容量	Storage capacity filled with sediment	: 28,500,000m <sup>3</sup>

## Flood control hydrograph



## Water supply for metropolis and prefectures

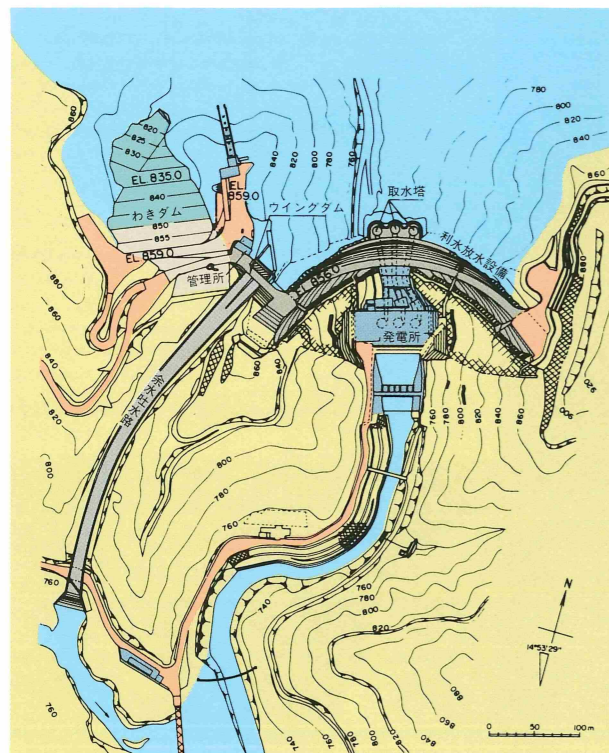
Prefectures	Water supply unit	
	Domestic water	Irrigational water
Tokyo	4.00	
Gunma	3.20	8.66
Total	7.20	8.66
		15.86



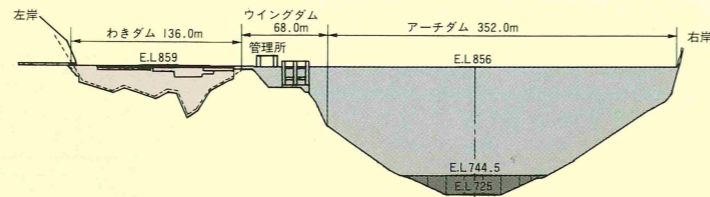
# 矢木沢ダム

Yagisawa dam

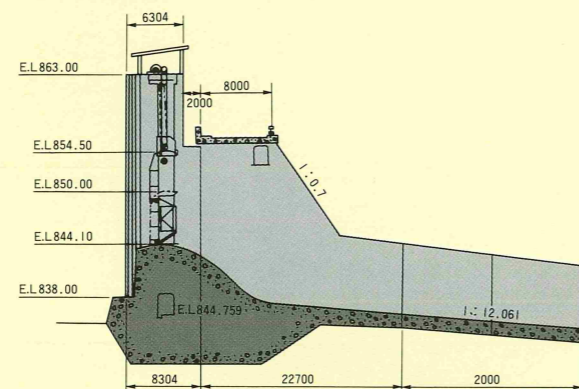
## Dam structure



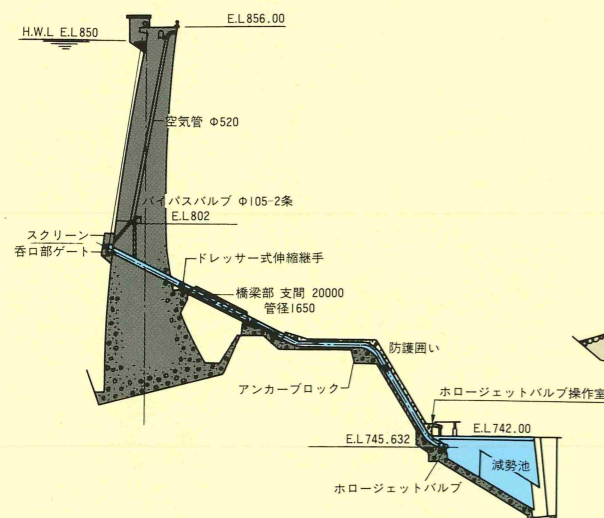
Longitudinal section of dam



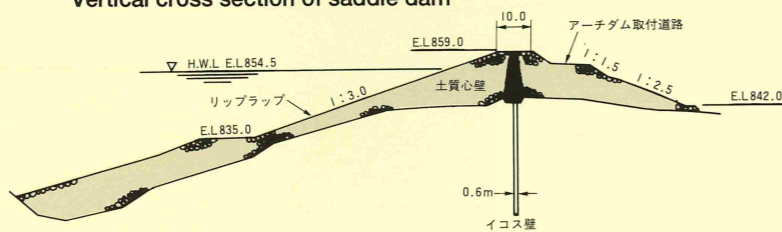
Vertical cross section of Wing dam



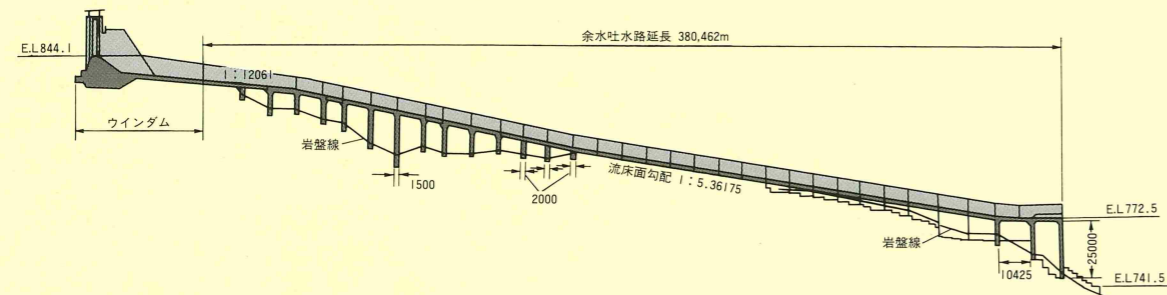
Typical cross section of water supply facility



Vertical cross section of saddle dam



Vertical cross section of spillway



# 奈良俣ダム

Naramata dam



## Outline of Naramata dam

Built on the Naramata River - one tributary of the Tone River - the Naramata dam is a multi-purpose dam, 158m high, and besides the water from the Naramata River, the dam reservoir receives water from the Yunokoyasawa River through a "intake weir" and "diversion tunnel". The initial

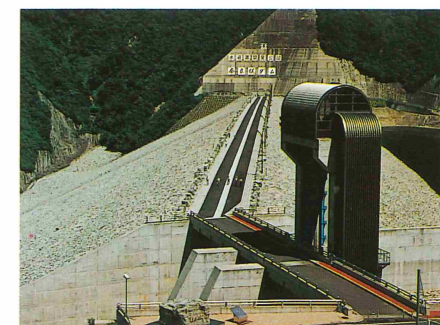
studies started in April 1974, and in January 1981 the dam was ordered. The Naramata dam was completed in 1991, conquering severe weather conditions.

## Specifications of the dam

河川名 River's name	: Naramata River in Tone River system
位置 Location	: Naramata, Fujiwara, Minakami-machi, Tone-gun, Gunma prefecture
形式 Type	: Rockfill with central impervious core
堤高 Height	: 158.00 m
堤頂標高 Crest elevation	: 896.00 m
堤頂長 Crest length	: 520.00 m
堤頂幅 Top width	: 14.00 m
堤体積 Volume of dam	: 13,100,000 m³
導水路延長	: 3,100m (horseshoe-shaped, inside dia meter ;2.65m)

## Specifications of the reservoir

名称 Name	: Naramata lake
集水面積 Drainage area	: 95.4km²
直接流域(橋俣川) Main basin (Naramata River)	: 60.1km²
間接流域(湯ノ小屋沢川) Sub basin (Yunokoyasawa River)	: 35.3km²
湛水面積 Reservoir area	: 2.0km²
常時満水位 Normal water level	: E.L. 888.00m
満水期制限水位 Flood control water level in flood season	: E.L. 881.00m
最低水位 Lowest water level	: E.L. 800.00m
総貯水容量 Gross storage	: 90,000,000m³
有効貯水容量 Active storage	: 85,000,000m³
堆砂容量 Storage capacity filled with sediment	: 5,000,000m³



# 奈良保ダム

Naramata dam

## ●Purpose of dam

### ●Flood control

During the floods period (1st July to 30th September), the dam diminishes the high water discharge in the lower course area, by controlling the flow at about 360m<sup>3</sup>/s, out of the high water discharge of 370m<sup>3</sup>/s during floods, at the dam site, in coordination with the other dams in the uppercourse of the Tone River.

●Maintenance of normal functions of the river  
Naramata dam maintains and improves the normal functions of the river, such as the vested water supply in the Tone River, in coordination with the other dams in the upper course of the Tone River.

### ●Water supply

#### Water for irrigation

The dam supplies water for irrigation to the farmland in the Toso canal, and the amount of water is 0.69m<sup>3</sup>/s in average during the summer irrigation period (26th April to 30th September), and is 0.08m<sup>3</sup>/s in average during the winter irrigation period (1st October to 25th April).

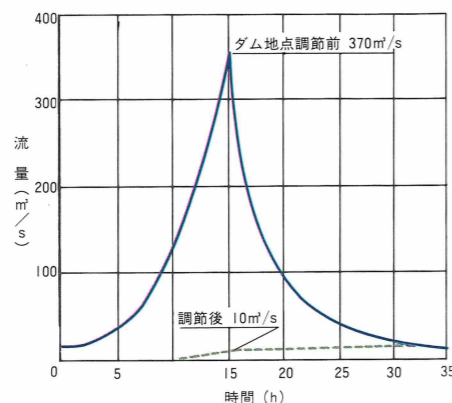
#### Water for town use

Ensure 8.695m<sup>3</sup>/s of water (maximum) for town-use water, for Tokyo metropolis and neighbor prefectures.

### ●Power generation

Naramata power station, in Gunma Prefecture, generates up to 12,400kw of electricity, with a maximum water flow of 11m<sup>3</sup>/s.

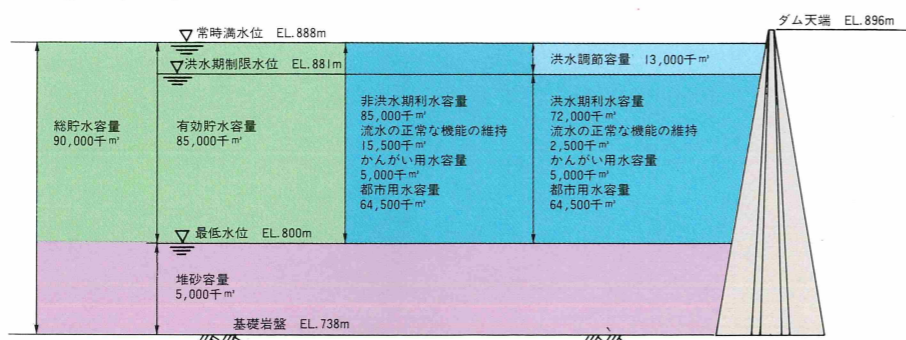
## Flood control



## Water supply for metropolis and prefectures

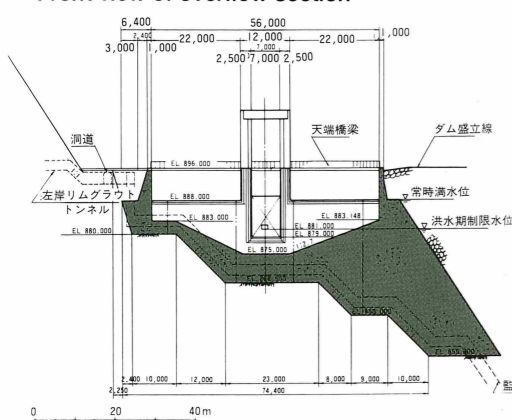
用水名	農業用水	水道用水	工業用水
都県名			
群馬		2.435	0.65
茨城		0.179	
埼玉		0.951	
千葉	0.69	2.41	
東京		2.07	
合計	0.69	8.045	0.65

## Storage capacity distribution of reservoir

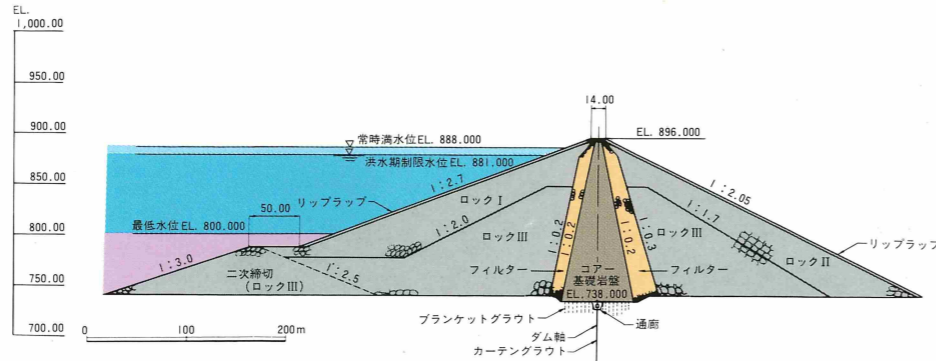


## Dam structure

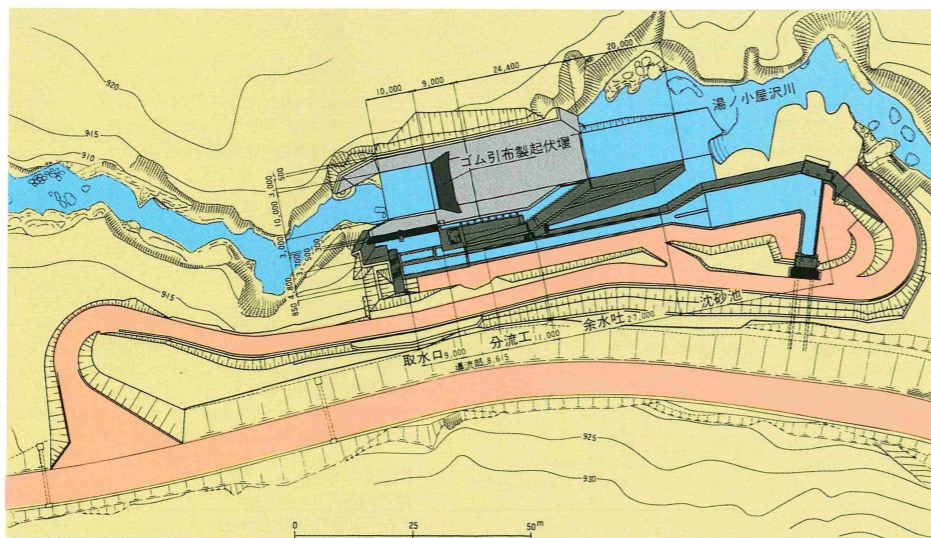
### Front view of overflow section



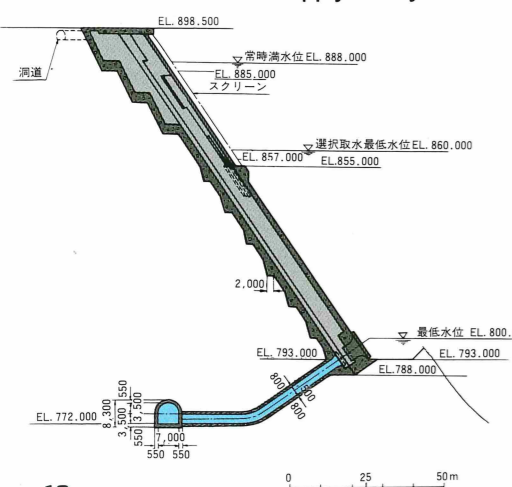
### Typical cross section of dam



## General plane figure of diversion works intake weir.



### Cross section of water supply facility



## ●Creating the environment in the dam surroundings

The environmental service in Naramata dam surroundings offers spaces to rest, relax, and for the leisure of the citizens, who have better living conditions and more free time. Also, it's expected increase the activity of the water resources region.

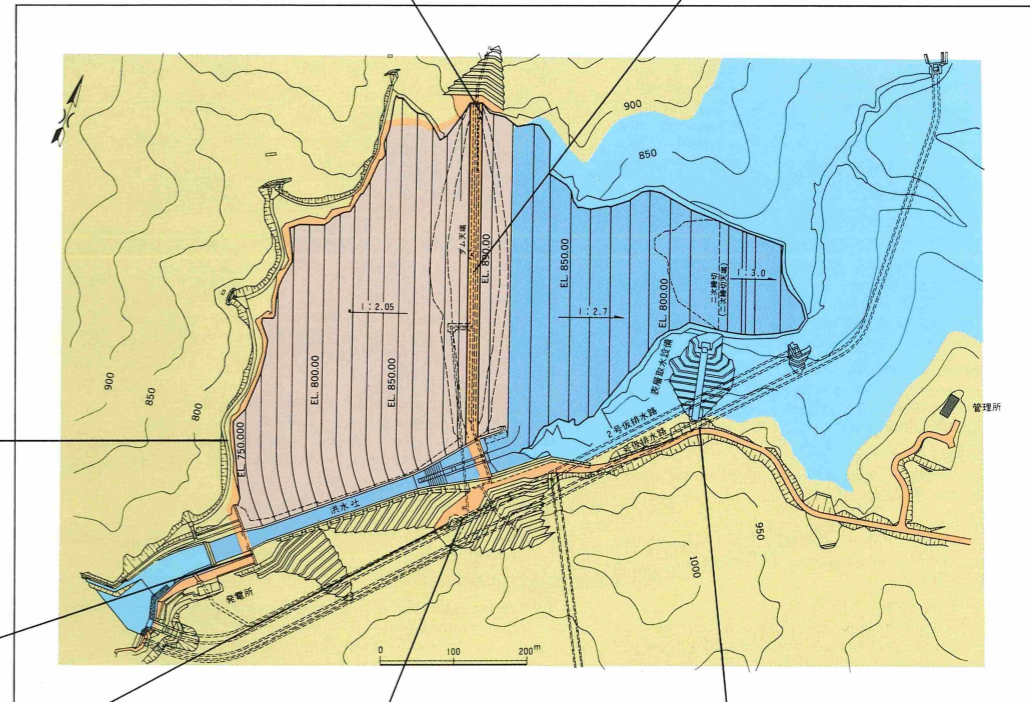
In the dam and the surroundings, there are squares, promenades, and a reference room which looks like a mushroom. These are tourist attractions in Okutone.

### ◎Promenade

The stone promenade has about 700 steps, and it can be climbed from the right bank, in the top of the dam, to the downstream left bank square. The dam can be seen closely. Two rest places are arranged in the halfway.



## Dam site general plane figure



### ◎Downstream left bank square

When coming through the square entrance, the dam appears huge and imposingly. The tile painting in the square pavement represents the scene of going up, from the Pacific ocean, to the Tone River dams.



### ◎Left bank square

Left bank square, located at the side of "spillway", is the main saucer in Naramata dam. There are a reference room which is the central spot in the square, a parking area for visitors, a service center (stands, snacks), and a public lavatory.



### ◎Naramata dam reference room

There is the reference room which looks like a mushroom. It's established to deepen the visitor's understanding of the roles and importance of dams and of the water and water resources developments. In the reference room, the nature of Okutone, the construction of Naramata dam and its roles, and the water resources developments, are explained in detail to the visitors, by means of images, panels and models.



### ◎Monument of construction square

The monument commemorating the completion of the Naramata dam construction work is in the center of the square. Above the monument, a bronze statue of a worker who is constructing "bedding materials" to tell the life of the rockfill dam.



### ◎Right bank square

The square is arranged in the right bank of the dam top. The three circles in the dam front represents the universe and the relationship between human, water and nature, and the cloud is a geometric circle.



### ◎Dam top sidewalk

In the both sides of the 520m-long sidewalk on the dam top, there are balustrades made from massive rock. From the sidewalk, in the midst of the road, the lakes and the downstream landscape can be seen, as well as the stone benches drawing an up and down scenic landscape.



# 利根川の水源を訪ね、奥利根を探訪。

Trace the Tone River to its source and visit Okutone

- ① Go up the Tone River from Maebashi to Okutone basin

**Numata**  
Numata is one of the main towns in the north Gunma Prefecture. It is well known as the gateway to the sightseeing of Oze and Nikko.

Numata was a under castle town and prospered as the residence of the Houjou family, the Sanada family, and the Toki family, in which the history of the old days are still alive. Places of scenic beauty and historic interest can be visited, such as the historic famous grave related to the Sanada family.

- ◎ Ruins of Numata castle · Numata park  
The beautiful park which have a flower bed and a belfry symbol.

◎ Kashouzan Mirokuji temple  
Temple, on northern Numata city, stands on the south mountain side of the Mt. Kashouzan (1,322m high), where old cryptomeas are growing thick. The Mt. Kashouzan is famous as one of the three great mountains in the Kanto region, together with the Mt. Takao and Mt. Furumine.

◎ Tan-bara plateau  
There is a plateau which expands in the east foot of the Mt. Hotaka in the north of Numata city suburb. Here, visitors can enjoy hiking, camping, skiing, and playing tennis, and more-over skunk cabbage blooms in season.

- ② Going up the Katashina River which is a branch of the Tone River  
**Romantic road**

The world-wide famous Romantic road (die Romantische Strasse) is an old main road which goes to "Füssen in Alps", from Wuerzburg, in Germany. The Japanese Romantic road is a road 230Km long, which goes to Nikko through Karuizawa, Kusatsu, Numata, the Tone village, and Katashina from Komoro in Nagano Pref. Both are charming in history and literature. The natural scene along this road is not inferior to that of the original one.

- ③ Going up the Tone River to Minakami from Numata

◎ Suwakyou-gorge  
It is located at the outskirts of Minakami hot spring town. Promenades of 3.5Km are continuing along the Tone River. Visitors can enjoy the clear beauty from Sasafue Bridge, the harmony of mountain streams and the Tanigawa mountain range.

◎ Minakami hot spring  
It is the center of a hot spring villages. And it's scattered along the Tone River valley in the background at Mother Nature of the Tanigawa-dake mountain.

◎ Tanigawa hot spring  
The quiet hot spring located in the southern foot of the Tanigawa-dake mountain.

◎ Unose hot spring  
Located near the confluence of the Tone River and the Yunohiso River. The former name of the Unose hot spring was Ouana hot spring.

◎ Yubiso hot spring  
It is located along the Yubiso River, which is the tributary of the Tone River. It's said that the name Yubiso was based on the calling name of the discoverer, Oze Sadaji, who was a soldier defeated in battle in the Kamakura era, as "Yu-no-hisomura", which means "The village where the hot spring hides".

In rapport with literature in nature

◎ Literary monument of Dazai Osamu  
It stands in the road that goes along the entrance of the Tanigawa hot spring.

◎ Song monument of Wakayama Bokusui  
Stands at the foot of the Minakami bridge.

◎ Literary monument of Yosano Akiko  
Stands at the foot of the Sasafue bridge, in the Suwa valley. Also, there are scattered monuments for Kitahara Hakushu, Hayashi Fusao, Yoshii Isamu, and Saijou Yaso.

- ④ From Yubiso, going up the Yubiso River which is the of the Tone River.

◎ Tanigawa-dake mountain  
The Tanigawa-dake mountain is the main peak of the Mikuni range of mountains.

The height above sea level is 1963m. The mountain has deep swamps and rock walls, such as the Ichinokura-sawa, which has fascinated the many climbers.

As the visitors climb the Tenjin-daira by a rope way, the spreading plateau where alpine plants are blooming can be seen, and the charm of the mountains can be enjoyed in all aspects.

◎ Ichinokura-sawa  
It lies between the Ichinokura ridge and the South ridge, and the climb route from the Ichinokura-sawa is counted in Japanese, as one of three great craggy places, together with the Hodaka-dake mountain and the Tsurugi-dake mountain, in the Japanese northern Alps.

- ⑤ Going up the Tone River from Yubiso to Fujiwara dam

◎ Fujiwara dam · Fujiwara lake  
Fujiwara dam is a gravity type dam completed in 1958, and the lake area is about 1.7km<sup>2</sup>, growing in north and south directions. It is located in the lowermost course of the four Okutone lakes.

◎ Fujiwara village (The Heike family's refuge)  
The descendant of the Oushu-Fujiwara family's, Hidechira · Yasuhiro, who was defeated by the Yoritomo's Oushu attack, found refuge in this village. It is the origin of the name Fujiwara, that the descendent reveal the identify at the family name.

◎ Urami waterfall  
There are promenades in the back sides of the waterfalls, and the view from the back side has a different effect.

◎ Takarakawa hot spring  
There is a legend that Yamato-takeru, one of the Japanese gods, went to this spring as a white colored hawk and healed his disease there. The most wonderful open-air bathes in Japan are located there.

- ⑥ Going up from Fujiwara lake to Sudagai dam

◎ Sudagai dam · "Dougen lake"  
It is a "gravity type dam", with the first complete underground power station in Japan. The lake is about 1.3km<sup>2</sup>, with a forked form. The lake of left side leads to the Tone River, where there is the Yagisawa dam, and the lake of right side leads to the Naramata River.

- ⑦ Going up from Dougen lake to Naramata dam

◎ Naramata dam · Naramata lake  
It is newest dam of the four dams in Okutone, and it is a rockfill type, with a beautiful landscape. Going up the lake, which is about 2.0km<sup>2</sup> extent, leads to the Oze ridges, where there is a important mountain, the Mt. Shibutsu.

- ⑧ Going up the Yunokoyasawa River, which is a tributary just below the Naramata dam.

◎ Yunokoya hot spring  
Located in the inner part of the Minakami hot spring village, many aficionados come to practice climbing, and there is abundant hot spring water, which is praiseworthy by the people.

◎ Teruha gorge  
It is a valley with almost unexplored waterfalls. It was named by Mizuhara Shuu-oushi and there are twelve large and small falls, such as the Tsumino-taki fall and Higurashino-taki, and the scenery is particularly beautiful on Autumn, during the season of the red leaves.

- ⑨ Crossing the the Konroku ridge leads to the Hatomachi ridge which is the entrance of the Oze.

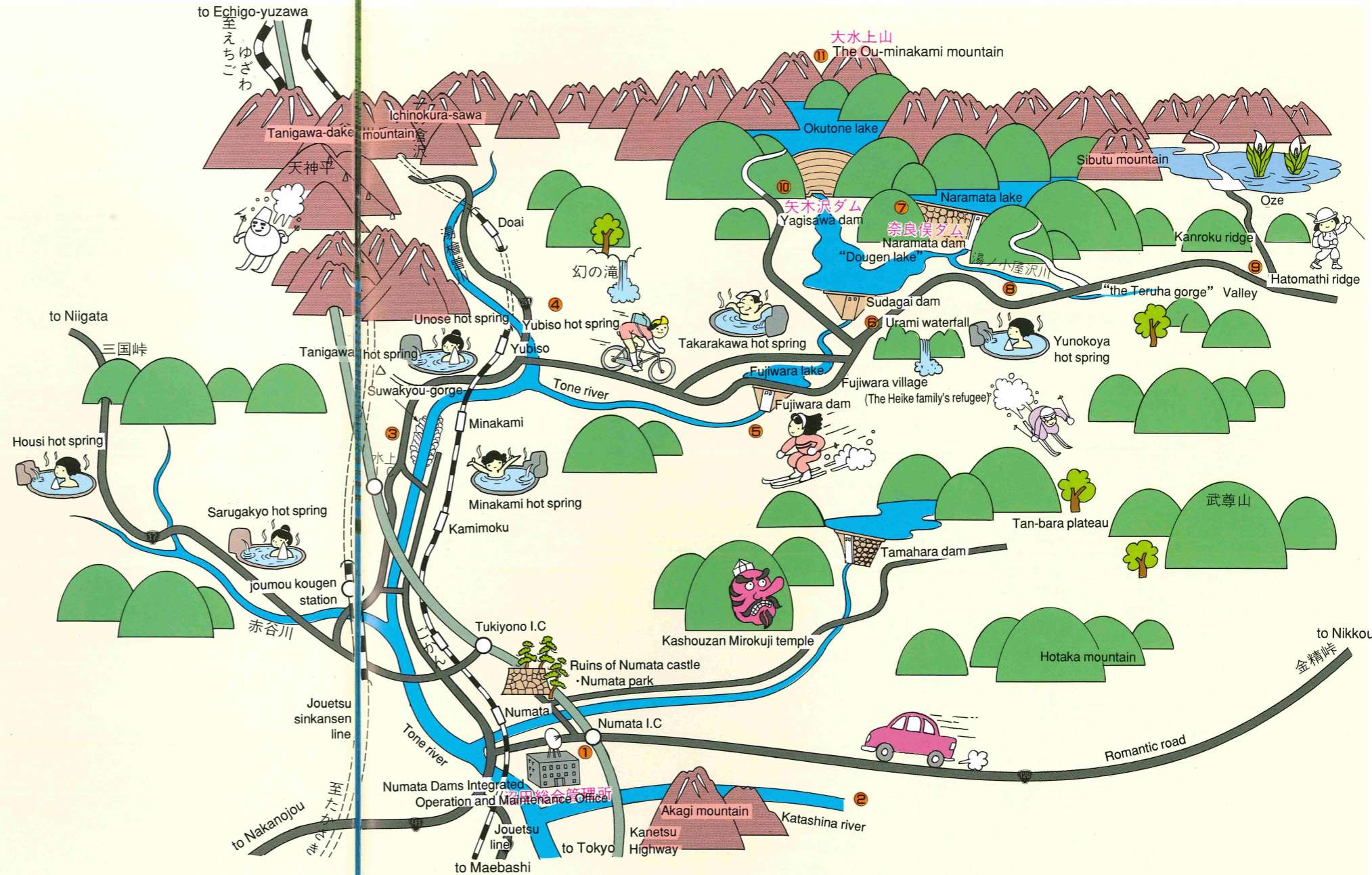
◎ Oze  
The Oze is a rich repository of Mother Nature and has different landscapes, with mountains, lakes and marshes, marshy areas, swamps, and forests. There are many plants and animals difficult to be seen elsewhere, such as alpine plants and marsh plants.

- ⑩ Going up to Yagisawa dam from Dougen lake

◎ Yagisawa dam · Okutone lake  
The arch type dam located at the entrance into the Tone River source. The Okutone lake is the biggest lake of the four lake in Okutone, the extent being about 5.1km<sup>2</sup>. The lake is surrounded by a virgin forest, having an atmosphere of an unexplored region.

- ⑪ Leaving to the Tone River source from Okutone lake

◎ The Ou-minakami mountain, which is the water resource of the Tone River  
Going up 322km from the Tone River mouth, in Choshi city, the Ou-minakami mountain is reached, and it is just the origin of the Tone River. The Ou-minakami mountain is located in the Jou-etsu border region, and the steepness of the mountain range delayed the discovery of the origin of the river, until 1925. The water from this mountain has been blessing the people in the overall Kanto region.



## 交通のご案内 Transportation

Numata Dams Integrated Operation and Maintenance Office

### ◎ Train

■ Ueno station → Jouetsu line (approx. 2 hours and 5 min.) → Numata station Car (4km/10min. approx.) → Numata Dams Integrated Operation and Maintenance Office

■ Tokyo station → Jouetsu shinkansen line (approx. 1 hour and 20min.) → Joumou kougen station → Car (14km/30min. approx.) → Numata Dams Integrated Operation and Maintenance Office

### ◎ Car

■ Kanetsu-nerima I.C. → Kanetsu Highway (126km/1hour and 30min. approx.) → Numata I.C. (front of the exit ramp) → Numata Dams Integrated Operation and Maintenance Office

Yagisawa dam

### ◎ Train

■ Ueno station → Jouetsu line (2hours and 20min. approx.) → Minakami station Car (27km/40min. approx.) → Yagisawa dam

■ Tokyo station → Jouetsu shinkansen line (1hour and 20min. approx.) → Joumou-kougen station → Car (37km/60min. approx.) → Yagisawa dam

### ◎ Car

■ Kanetsu-nerima I.C. → Kanetsu Highway (141km/1hour and 40min. approx.) → Minakami I.C. → Car (32km/45min. approx.) → Yagisawa dam

Naramata dam

### ◎ Train

■ Ueno station → Jouetsu line (2hours and 20min. approx.) → Minakami station Car (24km/40min. approx.) → Naramata dam

■ Tokyo station → Jouetsu shinkansen line (1hour and 20min. approx.) → Joumou-kougen station → Car (34km/60min. approx.) → Naramata dam

### ◎ Car

■ kanetsu-nerima I.C. → Kanetsu Highway (141km/1hour and 40min. approx.) → Minakami I.C. → Car (20km/45min. approx.) → Naramata dam