

# H4/ User's Behavior and Manners in a Water Park - Case Study in Katsushika and Edogawa City

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## Abstract

There are numerous rivers and waterways in the Katsushika and Edogawa city located in the eastern part of Tokyo in Japan, and the water park is made by covering them and rehabilitating the waterways. However, there are many signboards in the park that alert people to manners such as littering, which is considered to be a problem in the manner of users. Therefore, in this study, the behavior of users in the water park of both cities and consider what is necessary to increase the number of users and improve manners are investigated.

Field surveys of Hikifunegawa River Water Park in Katsushika City, Ichinoe-Sakaigawa River Water Park and Furukawa River Water Park in Edogawa City were conducted, and pictures were taken while grasping the condition of cleaning, biotope and water playing field in the park. And, the problem points were identified through observation and asked the two city offices who are administrators to ask the measures of the future water park. In addition, questionnaire surveys on usage and evaluation for people who use the Hukifunegawa River Water Park and Ichinose-Sakaigawa River Water Park were conducted, and the satisfaction level etc. were grasped. As a result of these investigations, the following conclusions were obtained.

1. The degree of satisfaction of the user about the water park is higher in Edogawa City than in Katsushika City.
2. Water park in the Edogawa City has many natural landscapes in the garden and the cleaning situation is relatively good.
3. Both cities saw bulletin prohibiting dogs, bicycles, etc in the water playing field, but the number of notices is more in the Katsushika City.

4. In order to improve the manners of the water park, it is important to keep the park as clean as possible and to create an environment that makes it difficult to litter garbage and leave the dog's feces.

## Keywords

Tokyo; Water park; Field survey; Questionnaire.

## 1 / Introduction

There are numerous rivers and waterways in the Katsushika and Edogawa city located in the eastern part of Tokyo in Japan, and the water park is made by covering them and rehabilitating the waterways. However, there are many signboards in the park that alert people to manners such as littering, which is considered to be a problem in the manner of users.

Therefore, in this study, the behavior of users in the water park of both cities and consider what is necessary to increase the number of users and improve manners are investigated.

## 2 / Method of Research

Field surveys of Hikifunegawa River Water Park in Katsushika City, Ichinoe-Sakaigawa River Water Park and Furukawa River Water Park in Edogawa City were conducted, and pictures were taken while grasping the condition of cleaning, biotope and water playing field in the park. And, the problem points were identified through observation and asked the two city offices who are administrators to ask the measures of the future water park. In addition, questionnaire surveys on usage and evaluation for people who use the Hukifunegawa River Water Park and Ichinose-Sakaigawa River Water Park were

Name	Hikifunegawa River Water Park	Ichinoe-Sakaigawa River Water Park	Furukawa River Water Park
Address	from 4 Kameari to 4 Yotsugi, Katsushika City, Tokyo	from 1 Ichinoe to 7 Funabori, Edogawa City, Tokyo	6 Edogawa, Edogawa City, Tokyo
Length	3.0 km	3.2 km	1.2 km
Establishment	1990	1996	1974

Tab. 6: Outline of targeted water parks.

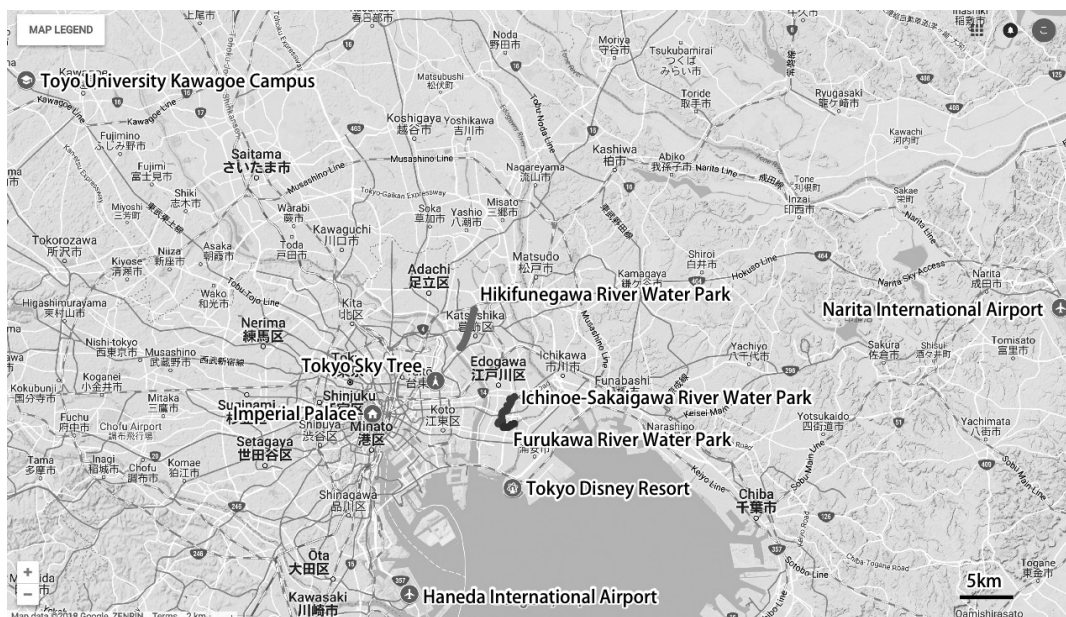


Fig. 1: Location of target water parks (Map data ©2018 Google, ZENRIN).

conducted, and the satisfaction level etc. were grasped. Table 1 shows an outline of targeted water parks and Figure 1 shows a location of target water parks. These water parks are about from the Imperial Palace in the center of Tokyo.

### 3 / Current state of the water park in the Katsushika City

Katsushika City is located in the northeastern part of Tokyo, with a population of 462,122 people (July 1, 2018) and an area of 34.80 km<sup>2</sup> 1). There are many rivers flowing in the area, such as Arakawa River, Edogawa River, Ayasegawa River, Nakagawa River.

The Hikifunegawa River Water Park is a park about 3 km north to south extension (from Yotsugi to Kameari) which has redeveloped the Hikifunegawa River (Kasai Canal) developed in the 17 th century as agricultural water and ship transportation.

Figure 2 shows a bird eye view of Hikifunegawa River Water Park. It is almost linear for an artificial canal, and now it is surrounded by buildings. In addition, “Hikifune” means to tow a boat with a rope (Figure 3).

Approximately 3 km of Hikifunegawa River Water Park was investigated on May 4, 2018 in order to grasp the state of facilities and the situation of users. At that time, photographs were taken and the principal place and state were recorded. A biotope with aquatic plants was filled with water, but there was no water in the water playground (Figure 4). And garbage was scattered on the bench. Also, a signboard on various prohibitions was seen (Figure 5). Bad manners of user were inferred.

Interview to the Katsushika City Office, the management situation of the water park was grasped in detail. The cleaning frequency of the park was twice a week.

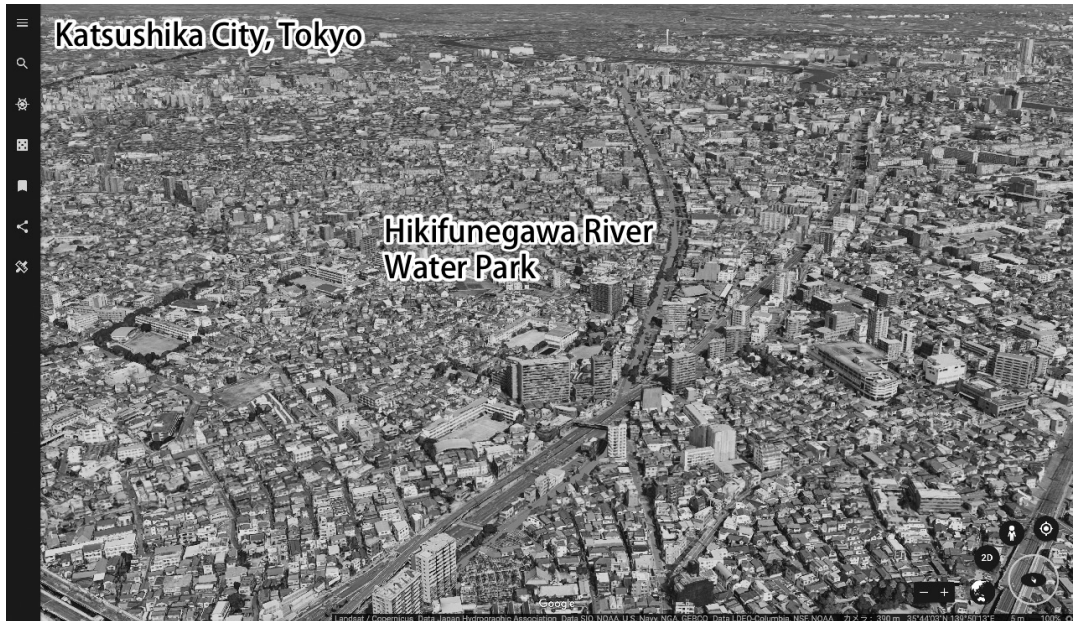


Fig. 2: Bird eye view of Hikifunegawa River Water Park  
 (Landsat / Copernicus Data Japan Hydrographic Association Data SIO, NOAA, U.S. Navy, NGA, GEBCO Data LDEO-Columbia, NSF, NOAA)



Fig. 3: "Towboats Along the Yotsugi-dōri Canal"  
 One Hundred Famous Views of Edo, 1857<sup>2)</sup>.



Fig. 4: Present condition of Hikifunegawa River Water Park (May 4, 2018).





Fig. 5: Signboards of Hikifunegawa River Water Park (May 4, 2018).



Fig. 6: Bird eye view of Ichinoe-Sakaigawa River Water Park and Furukawa River Water Park  
(Landsat / Copernicus Data Japan Hydrographic Association Data SIO, NOAA, U.S. Navy, NGA, GEBCO Data LDEO-Columbia, NSF, NOAA)

#### 4 / Current state of the water park in the Edogawa City

In Edogawa City is located in the eastern part of Tokyo, with a population of 697,695 people (July 1, 2018) and an area of 49.09 km<sup>2</sup> <sup>3)</sup>. Like the Katsushika City, there

are many rivers in Edogawa City such as Arakawa River, Edogawa River, Nakagawa River.

Ichinoe-sakaigawa River Water Park is a park with a total length of 3.2 km including the three zones of "Small stream

zone", "Encounter zone", and "Bustling zone". The flow path uses the former Ichinoe-sakaigawa River and was rebuilt in 1995 with the theme of "Regeneration of Stream". Furukawa River Water Park is a park with a total length of about 1.2 km. It is famous as a water park which was first made in Japan in 1974.

Figure 6 shows a bird eye view of both water park. Today, the surroundings of both parks are residential areas.

These were investigated on May 4, 2017 in order to grasp the state of the facilities and the situation of the user concerning Ichinoe-Sakaigawa River Water Park and Furukawa River Water Park (Figure 7-8). Since these water parks reuse natural rivers, the flow paths are meandering. Also, water flows through all the flow paths. In the Ichinoe-Sakaigawa River Water Park, there are three water

playground, here in the summer, tap water is recycled, bypassing the mainstream flow. Both of the parks are surrounded by "Landscape District", and rules such as how to build buildings are defined.

There are many expressions of "please" on attention of the signboard (Figure 9).

According to the question of the Edogawa City Office, the management situation of water parks and the existence of supporters were grasped. In Edogawa City, the cleaning of the water park is done every day. There is also a watershed organization called "Ichinoe-Sakaigawa River Water Park's Loving Association" and "Furukawa River Loving Association".



Fig. 7: Present condition of Ichinoe-Sakaigawa River Water Park (May 4, 2018).



Fig. 8: Present condition of Furukawa River Water Park (May 4, 2018).



Fig. 9: Signboards of Ichinoe-Sakaigawa River Water Park (May 4, 2018).

## 5 / Questionnaire survey

### 5.1 Purpose and method

The questionnaire survey was conducted locally for each user of the Hikifunegawa River Water Park in Katsushika City and the Ichinoe-Sakaigawa River Water Park in Edogawa City. It is aimed at considering contributing to improving the use manners of parks by grasping the impression and satisfaction that users have in the park. Table 2 outlines the questionnaire. Questionnaire is contents to ask about frequency of use, purpose of use, satisfaction with the cleanliness, manners and safety of the park.

A questionnaire survey was conducted for 31 users of

the Hikifunegawa River Water Park in Katsushika City on December 16 and 17, 2017, for 40 users of the Ichinoe-Sakaigawa River Water Park in Edogawa City on October 26 and November 4, 2017. The outline of the questionnaire is shown in Table 2. Attributes of respondents are shown in Table 3.

### 5.2 Results

The results of each item are shown by comparing Katsushika City and Edogawa City.

Table 4 shows transportation method and arrival time to the park. Both parks are on foot, and the time required is often less than 10 minutes. Edogawa City Ichinoe-Sakaigawa

City	Katsushika	Edogawa
Park	Hikifunegawa River Water Park	Ichinoe-sakaigawa River Water Park
Date	December 16-17, 2017	October 26 and November 4, 2017
Method	Interview with users	
Question	Q1. Sex, Q2. Age (9 categories), Q3. Transportation method (3 items), Q4. Usage frequency (7 categories), Q5. Arrival time to the park (7 categories), Q6. Main purpose of use (5 items), Q7. Cleanliness (5 stages), Q8. Manner (5 stages), Q9. Safety (5 stages), Q10. Reason of dissatisfaction (12 items, multiple answers acceptable), Q11. Other opinions (free response)	

Tab. 2: Outline of questionnaire survey.



City	Katsushika			Edogawa		
Park	Hikifunegawa River Water Park			Ichinoe-sakaigawa River Water Park		
Age	Male	Female	Total	Male	Female	Total
Under 20	1		1	2	1	3
20-29				1		1
30-39	4	3	7	3	9	12
40-49	5	6	11	2	4	6
50-59	5	3	8	3	1	4
60-69	3		3	3	3	6
70-79	1		1	3	3	6
Over 80				1	1	2
Total	19	12	31	18	22	40

Tab. 3: Q1 and Q2 - Attribute of respondent.

River Water Park is more frequent to use bicycles and take time to the park. This is considered to be one of the reasons that the length of the park is long.

Table 5 shows usage frequency and main purpose of use. Usage frequency has many "walking and jogging". Edogawa City Ichinoe-Sakaigawa River Water Park is more frequently used than the Katsushika City Hikifunegawa River Water Park, and has many uses of "playing or natural observation". While Katsushika City Hikifunegawa

River Water Park is often used as a passage, Edogawa City Ichinoe-Sakaigawa River Water Park is used as a destination.

Figure 10 shows the evaluation of cleanliness of the park, Figure 11 shows the evaluation of manners of park use, and Figure 12 shows the evaluation of Safety of the park. Edogawa City Ichinoe-Sakaigawa River Water Park is more highly rated than Katsushika City Hikifunegawa River Water Park. This is consistent with the results predicted from the field survey.

Figure 13 shows the reason for dissatisfaction. Excluding "not particularly", Katsushika City Hikifunegawa River Water Park is in order of "Scattered garbage", "Treatment of pets and wildlife", "Bicycle rides", Edogawa City Ichinoe-Sakaigawa River Water Park has many "Bicycle rides" and "Treatment of pets and wildlife". It is consistent with the items cautioned in the poster board in the field survey, and all items are attributed to the manners of the users. The Edogawa City Ichinoe-Sakaigawa River Water Park is a factor that includes a section where bicycle use can be used and a section that cannot be used. The Katsushika City Hikifunegawa River Water Park is considered to be an indirect factor as a result of the low frequency of cleaning.

#### Katsushika (Hikifunegawa River Water Park)

Transportation method / Arrival time	-2min	2-5min	5-10min	10-15min	15-20min	20-30min	30min-	Total
Walk	3	8	11	2				24
Bicycle			3	1	2			6
Train					1			1
Total	3	8	14	3	3			31

#### Edogawa (Ichinoe-Sakaigawa River Water Park)

Transportation method / Arrival time	-2min	2-5min	5-10min	10-15min	15-20min	20-30min	30min-	Total
Walk	6	8	9	4	1	1		29
Bicycle		3	4	1	1		1	10
Train					1			1
Total	6	11	13	5	3	1	1	40

Tab. 4: Q3 and Q5 - Transportation method and Arrival time to the park.

## Katsushika (Hikifunegawa River Water Park)

Purpose / Frequency	Everyday	2-3times a week	Once a week	2-3times a month	Once a month	Occasionally	Total
Walking or Jogging	4	5	2	1			12
Commuting or Shopping	2	4	4	1			11
Playing or Natural observation		1	1				2
Break or Talking	2	1	3				6
Cleaning in the park							
Total	8	11	10	2			31

## Edogawa (Ichinoe-Sakaigawa River Water Park)

Purpose / Frequency	Everyday	2-3times a week	Once a week	2-3times a month	Once a month	Occasionally	Total
Walking or Jogging	8	4	4	1			17
Commuting or Shopping	1	4	3				8
Playing or Natural observation		1	5	2	1	2	11
Break or Talking	3						3
Cleaning in the park		1					1
Total	12	10	12	3	1	2	40

Tab. 5: Q4 and Q6 Usage frequency and Main purpose of use.

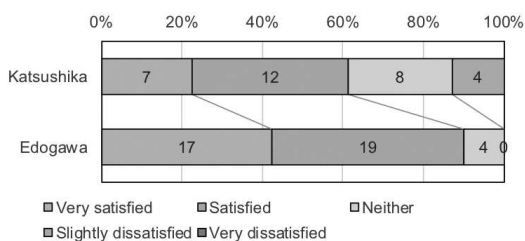


Fig. 10: Q7 - Cleanliness of the park.

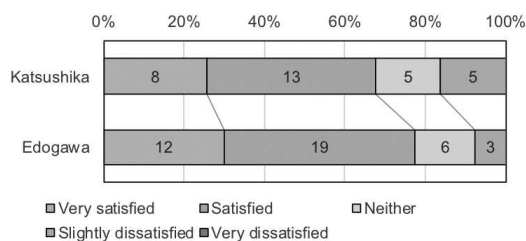


Fig. 12: Q8 - Manners of park use.

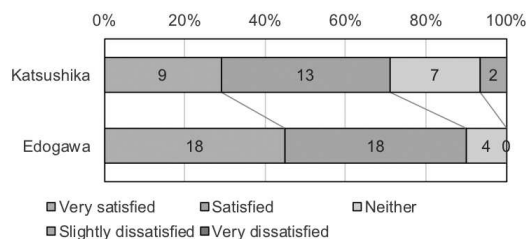


Fig. 12: Q9 - Safety of the park.



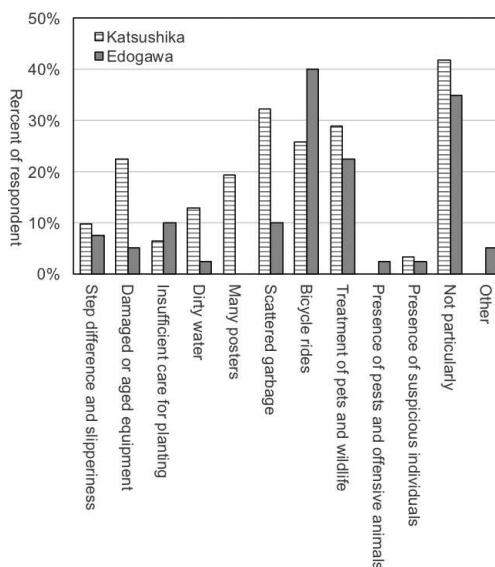


Fig. 13: Q10 - Reason for dissatisfaction (multiple answers acceptable).

## 6 / Discussion

As a result of carrying out on-site survey and questionnaire survey on the parks in both cities, there are many users who dislike nuisance acts such as garbage littering in the Katsushika City, and overall it is less satisfying than Edogawa City all right.

The Edogawa City Ichinoe-Sakaigawa River Water Park has more animals and plants than the Katsushika City Hikifunegawa River Water Park, and since there are also many explanatory boards on them, it is thought that emphasis is placed on touching nature.

In addition, sign boards for alerting attention to dogs and bicycle manners were found in both places, and it turned out that users were particularly dissatisfied with these two points. It is indispensable to improve the evaluation of the water park, to stop bothering such as riding a bicycle and returning without sacrificing the dog's feces. As for riding a bicycle, it is important to install a fence etc. to physically prevent intrusion. Regarding dog disinfection

and garbage littering, it is also important to keep the park clean while increasing the frequency of cleaning, and to create an environment where it is difficult for manners to violate.

## 7 / Conclusion

The purpose of this paper was to obtain materials that contribute to the increase of users and the improvement of manner in the water park. For that purpose, a field survey was conducted at the Hikifunegawa River Water Park in Katsushika City, the Ichinoe-Sakagawa River Water Park and Furukawa River Water Park in Edogawa City. In addition, we conducted a questionnaire survey at the Hikifunegawa River Water Park in Katsushika City and the Ichinoe-Sakagawa River Water Park in Edogawa City. And we got the following conclusion.

1. The degree of satisfaction of the user about the water park is higher in Edogawa City than in Katsushika City.
2. Water park in the Edogawa City has many natural

landscapes in the garden and the cleaning situation is relatively good.

3. Both cities saw bulletin prohibiting dogs, bicycles, etc in the water playing field, but the number of notices is more in the Katsushika City.

4. In order to improve the manners of the water park, it is important to keep the park as clean as possible and to create an environment that makes it difficult to litter garbage and leave the dog's feces.

## 8 / Acknowledgement

This paper was compiled by Daigo Masuda (graduate of Toyo University in 2017) in cooperation.

## 9 / References

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(<http://www.city.katsushika.lg.jp/>)
- 2) National Diet Library Digital Collections : "Towboats Along the Yotsugi-dōri Canal" One Hundred Famous Views of Edo (browsed on July 7, 2018)  
(<http://dl.ndl.go.jp/info:ndljp/pid/1312269/1>)
- 3) Edogawa City official Website (browsed on July 8, 2018)  
(<http://www.city.edogawa.tokyo.jp/>)

## 10 / Presentation of Author(s)



Hiroyuki Kose is the Professor at Toyo University, Faculty of Information sciences and arts from 2009. Special fields of study are plumbing engineering, water environment, reproduction of the agricultural and forestry industries by collaboration of citizens and an organization and community design for regional vitalization.

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