



**State of Alaska
Department of Natural Resources**

**PERMIT TO APPROPRIATE WATER
LAS 22301**

The State of Alaska, acting by and through the Department of Natural Resources, Division of Mining, Land and Water, P.O. Box 111020, 400 Willoughby Avenue, 4th Floor, Juneau, AK 99811-1020, hereinafter referred to as the grantor, under AS 46.15, the Alaska Water Use Act, and the regulations adopted under it, grants to:

Gustavus Electric Company
P.O. Box 102
Gustavus, AK 99826

The right to the following use of water:

SOURCE: Kahtaheena River
QUANTITY: up to 23 cubic feet per second
PERIOD: 1 January through 31 December
USE: hydroelectric generation

With a PRIORITY DATE of 29 September 1998.

The LOCATION of this water source:

Diversion dam and water withdrawal structure in the Kahtaheena River at approximately River Mile 2.4 within the SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 36, Township 39 South, Range 59 East, Copper River Meridian, within Alaska State Land Lease ADL 107234.

The LOCATION to which this appropriation is appurtenant:

Hydroelectric powerhouse on the right (West) bank of the Kahtaheena River at approximately River Mile 0.45 within the SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 12, Township 40 South, Range 59 East, Copper River Meridian, within Alaska State Land Lease ADL 107234.

The RETURN FLOW LOCATION of this appropriation:

Tailrace return flow to the downstream extent of the bedrock channel approximately 430 feet downstream from the lower falls of the Kahtaheena River and approximately 470

**PERMIT TO APPROPRIATE WATER
LAS 22301**

feet upstream from the powerhouse within the NW ¼ NW ¼ Section 1, Township 40 South, Range 59 East, Copper River Meridian, within Alaska State Land Lease ADL 107234.

Changes in the natural state of water are to be made in the manner and only for the purposes stated in this permit. This permit is subject to the pertinent statutory provisions in AS 46.15, Administrative Regulations in 11 AAC 93, and the following conditions:

The holder of this permit shall:

1. Follow acceptable engineering standards in exercising the privilege granted by this permit.
2. Except for claims or losses arising from negligence of the State, defend and indemnify the State against and hold it harmless from any and all claims, demands, legal actions, loss, liability and expense for injury to or death of persons and damages to or loss of property arising out of or connected with the exercise of the privilege granted by this permit.
3. Comply with all applicable laws, regulations and conditions.
4. Notify the grantor of any change of address, transfer of any real property identified in this permit, or any proposed change in the water appropriation.
5. Respond to any request for additional information during the duration of this permit per AS 46.15.100 and AS 46.15.175. Failure to respond may result in the termination of this permit.
6. Obtain and maintain permanent right of access to the property where water is to be withdrawn, impounded, or diverted, over which water is to be transported both to the point of use and to the point of discharge, per 11 AAC 93.040 (c) (4).
7. Obtain and maintain possessory interest to the property where water is to be used (hydroelectric power house site), per 11 AAC 93.040 (c) (2). This appropriation of water cannot be certificated until documentation of a present possessory interest in the property where the water is beneficially used is provided to the Department.
8. Pay an annual Administrative Service Fee that shall be assessed upon this appropriation of water, per 11 AAC 05.010 (a) (8) (m).

**PERMIT TO APPROPRIATE WATER
LAS 22301**

9. Release from the diversion dam to the bypassed reach a minimum flow of 5 cubic feet per second (cfs) or inflow to the project impoundment, whichever is less, from December 1 to March 31; and a minimum flow of 7 cubic feet per second (cfs) or inflow to the project impoundment, whichever is less, from April 1 to November 30. This flow may be temporarily modified if required by operating emergencies beyond the control of the permittee or for short periods upon agreement between the permittee and the U.S. Fish and Wildlife Service and Alaska Department of Fish and Game. If the flow is so modified, the permittee shall notify the ADNR, Water Resources Section as soon as possible, but no later than 10 days after each such incident.

10. File with ADNR, Water Resources Section, at least six months prior to operating the project, a copy of the Operational Compliance Monitoring Plan as required in the FERC License, Article 406, and include ADNR, Water Resources Section in the agencies to which data is provided, noncompliance events are reported, and with which consultation is undertaken, according to the terms of the Article.

11. Construct, operate, and maintain such intake screens or other fish exclusion devices as may be required by Alaska Department of Fish and Game in accordance with FERC License Article 408 and Appendix A, item 1.

12. Limit stream level fluctuations downstream from the tailrace to a rate of one inch per hour or less, to apply to all operations including start-ups and shut-downs, and monitor stream level fluctuations in accordance with the Operational Compliance Monitoring Plan as required in the FERC License, Article 406.

13. Construct, operate, and maintain a flow continuation device or devices at the turbine capable of limiting stream level fluctuations downstream from the tailrace to a rate of one inch per hour or less.

14. Measure and record all water diverted and all water used, by daily total volume or daily average flow rate, and report water diversion and use to ADNR, Water Resources Section monthly.

The permittee must follow all applicable statutes, regulations, and plan requirements of the Alaska Coastal Management Program (ACMP). This authorization is subject to ACMP Final Consistency Determination – Concurrence, AK 0412-03J issued 21 April 2005, and to its relevant alternative measures.

Information regarding appeals to this action is contained in the attached letter from the Director dated 28 February 2006, Re: Final Finding and Decision, Falls Creek Land Exchange, Early Entry Authorization, and other related actions.

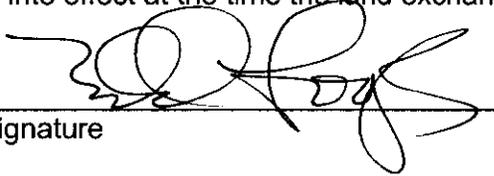
**PERMIT TO APPROPRIATE WATER
LAS 22301**

This Permit to Appropriate Water shall EXPIRE on FEBRUARY 28, 2016.

This Permit to Appropriate Water is issued by the authority of AS 46.15.080 and
11 AAC 93.120 on FEBRUARY 28, 2006.

This action goes into effect at the time the land exchange is consummated.

APPROVED:


Signature

Name

Title

MEMORANDUM

State of Alaska
Department of Natural Resources
Division of Mining, Land & Water
Water Resources Section

Date: 28 February 2006

To: Bruce Talbot, Land Manager
RADS

Through: Gary Prokosch, Chief 
Water Resources Section

From: John Dunker, Water Resource Manager
SE Region

Subject: Response to Comments, Public Notice LAS 22301
Falls Creek Hydro Project

Public Notice of Application for Water Right LAS 22301, Gustavus Electric Company, Falls Creek Hydro Project, was published 15 January 2006 and provided in accordance with AS 46.15.133 and 11 AAC 93.080.

Comments were received timely, and are hereby responded to as follows (summary of comments in italics; responses in regular font). Statements regarding terms or conditions of the water right are conditional upon the final decision.

The Hoonah Indian Association and allotment owners, are concerned about altering the river by withdrawing the water and putting it through the powerhouse and transfer pumps before returning it to the river. These include health concerns and concerns for the anadromous and resident fish. Concerns include adequate stream flows, agency consultation, and silting of the pool below the lower falls "thereby damaging or eliminating spawning habitat for fish."

Adequate stream flows would be provided for the survival of resident fish (Dolly Varden char) through a condition in the Permit to Appropriate Water (Water Right) that requires the Falls Creek Hydro Project (Project) to cease the diversion of water when stream flows in the bypass reach between the diversion dam and

the return flow from the powerhouse tailrace are 5 cubic feet per second (CFS) or less during the period of 1 December through 31 March, and 7 CFS or less during the period of 1 April through 30 November. This water right condition would substantively mirror the instream flow condition in the Federal Energy Regulatory Commission (FERC) Hydropower License (License, Article 404), which is incorporated by reference in the Alaska Coastal Management Program (ACMP) Consistency Determination.

Siltation of the pool below the lower falls is not expected to occur because of erosion control measures required for the Project in the License, Article 410, which is incorporated by reference in the Alaska Coastal Management Program (ACMP) Consistency Determination. Furthermore, since the Project would not be physically capable of diverting more than 30 cubic feet per second, natural high flows capable of transporting sediments would continue to be experienced in the stream, preventing any persistent siltation of the pool below the lower falls.

Regarding agency consultation, ADNR/Water Resources adheres to Administrative Order No. 186 of 29 September 2000 regarding the State of Alaska's relationships with tribes on a government-to-government basis. We recognize the Hoonah Indian Association (HIA) as a tribal entity with interests in the Kahtaheena River area. We recognize our responsibility to include HIA in all of our notifications of water right actions required by statute or regulation. We welcome HIA's comments and would welcome opportunities for future consultation.

The location where the water flows directly through one of the Native allotments, before discharging into Icy Passage, is a natural anadromous fish habitat that has been relied upon as a primary source of fresh drinking water and subsistence resources for many decades. It is home to a myriad of native plants and animals that exist in a complex system of natural habitats. These resources have been consumed by the allotment's occupants for generations. [Johanna Dybdahl, Hoonah Indian Association]

The flow rates and patterns in the portion of the Kahtaheena River flowing through the Mills Allotment will closely approximate natural flows, because the diverted Project water will be returned to a point upstream from the allotment boundary after it flows through the power turbine, and because the Project's lack of reservoir storage capacity prevents it from significantly altering the stream's natural flow pattern in the reach downstream from the return flow. The portion of the anadromous reach from the lower falls to the return flow point is a bedrock channel with poor anadromous habitat whose flow will be protected by the 5 CFS / 7 CFS bypass reach instream flow requirement. The only operational effects on flow through the anadromous reach downstream from the tailrace return flow are expected to be slight changes in water levels of up to 1" per hour, of short duration, during turbine flow adjustments to meet changing power demands. The

water right would be conditioned to require the turbine to have an instantaneous flow continuation capability in the event of turbine shutdowns.

The Hoonah Indian Association, in agreement with the allotment owners, remains concerned that altering the river, withdrawing the water and putting it through the powerhouse, and transfer pumps before returning it to the river, will degrade the pristine integrity of the Native properties by threatening the water quality and the many natural, water-related, resource interests of the Native allotment owners. These concerns include the concern for human health and our fears have not been resolved by evidence contained in the various environmental impact studies and mitigation plans. [Johanna Dybdahl, Hoonah Indian Association]

We understand this concern to be with water quality, which is not within the regulatory responsibility of ADNR/Water Resources, but rather lies within the responsibility of the Alaska Department of Environmental Conservation. Water quality protection is also addressed in the FERC License.

Do you know if 30 cubic feet per second flows in Falls Creek all the time? More? Is so, how much? Has anyone that is unbiased verified these figures about the water flow? Since our family feels that this loss of water from our native allotment #A-0442 and the supplemental native allotment (U.S. Survey # 11972 Alaska) will be detrimental to our family, we, the Mills family feel we have to oppose this water permit application. [Patrick Mills]

The US Geological Survey has monitored Kahtaheena River flow at two gage sites, and has published flow data for the periods of October 1998 through March 2001 for the lower gage below the lower falls, and for September 1999 through September 2004 for the upper gage above the upper falls. These flow records show that the mean or average of monthly streamflows at the lower gage site is less than 30 CFS during January, February, and March, and more than 30 CFS during the remaining months, ranging up to 114 CFS for June and 120 CFS for September. Daily mean flows have been measured as low as 10 CFS (on 29 March 2001) and as high as 1140 CFS (on 27 December 1999); 5.5 CFS was the lowest estimated daily mean flow (on 10 March 2000). Regardless, the Project would not result in loss of water to the Mills Allotment, since the Project would return all of its diverted water to the Kahtaheena River at the downstream extent of the bedrock channel, well upstream of the allotment boundary. The stream course through the allotment would experience flows undiminished and of essentially the same flow pattern as the natural flows.

**STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND & WATER
Water Resources Section
Southeast Regional Office**

**Finding and Determination
pursuant to the Alaska Water Use Act
AS 46.15.080**

**LAS 22301
Gustavus Electric Co.
Falls Creek Hydro Project**

Pending Action:

ADNR/Water Resources received an application on 29 September 1998 for a water right, from

Gustavus Electric Company (GEC)
P.O. Box 102
Gustavus, AK 99826

to appropriate up to 30 cubic feet per second of water from a diversion structure on the Kahtaheena River, also known as Falls Creek, within the SE $\frac{1}{4}$ SW $\frac{1}{4}$ Section 36, Township 39 South, Range 59 East, Copper River Meridian, for hydroelectric generation in a powerhouse within the SE $\frac{1}{4}$ NW $\frac{1}{4}$ Section 12, Township 40 South, Range 59 East, Copper River Meridian, year-round, subject to required bypass reach instream flows.

The water right application water amount was effectively amended by GEC's Application for FERC License, October 2001, in which the turbine hydraulic capacity was stated to be 23 CFS.

In order for a Permit to Appropriate Water to be issued, ADNR/Water Resources must make a written finding pursuant to AS 46.15.080, as follows:

AS 46.15.080. Criteria for issuance of permit.

[The text of the statute is in bold type; discussion is in regular type.]

- (a) The Commissioner shall issue a permit if the commissioner finds that
(1) rights of a prior appropriator will not be unduly affected;**

There are no prior appropriators of record who might potentially be affected by the proposed appropriation.

[See section (b)(6), harm to other persons, below, for information regarding closed file LAS 20240.]

(2) the proposed means of diversion or construction are adequate;

GEC's proposed means of diversion is a low diversion dam in the upper Kahtaheena River, including a gated section 36 feet long centered over the existing stream channel with a concrete gate foundation and stilling basin, a concrete wall on the left abutment (looking downstream), and an intake on the right abutment.

As a FERC-licensed project, dam engineering and safety are regulated by FERC and are governed by terms of the License. It is therefore found that the proposed means of diversion or construction are adequate.

(3) the proposed use of water is beneficial;

Water from the Kahtaheena River is proposed to be used for hydroelectric generation. "Beneficial use" is defined in the Alaska Water Use Act at AS 46.15.260(3) as "a use of water for the benefit of the appropriator, other persons or the public, that is reasonable and consistent with the public interest, including, but not limited to ... power, ..." (etc.). Therefore, the proposed use is found to be beneficial.

(4) the proposed appropriation is in the public interest.

Having made the considerations required by subsection (b) below, I find that the proposed appropriation is in the public interest.

(b) In determining the public interest, the commissioner shall consider**(1) the benefit to the applicant resulting from the proposed appropriation;**

Likely benefits to the applicant include the following:

- Reduced transportation, storage, and consumption of diesel fuel, resulting in reduced fuel costs and reduced uncertainty associated with diesel price volatility.
- Reduced hours of operation of diesel-powered generators, resulting in extended unit life.
- Additional generation capacity with which to meet future electric energy demand.
- Possible expansion of consumer base to include GBNPP.

There is no evidence in the file to indicate that the proposed appropriation would not be to the benefit of the applicant.

(2) the effect of the economic activity resulting from the proposed appropriation;

ADNR/Water Resources lacks an economic analysis capability, and must rely on the analyses of other agencies and commentors, and on other evidence in the record. In this instance, we rely primarily on the FERC and NPS-prepared FEIS, June 2004, and the summaries of its findings as presented in FERC's Order Issuing License, 29 October 2004. Also considered were commentors' critiques of the economic analyses in the Draft EIS.

The Socioeconomics section of the FEIS examined the project's effects on regional and local employment, population, energy rates, and private property values. Positive effects identified included short-term increases in local employment and local purchases from project-related spending, and more stable electricity costs. Negative effects identified included potentially higher local electricity costs in the first several years of project operation.

For the Falls Creek Hydro Project, FERC analyzed not only the net power benefit according to FERC's usual developmental analysis practice, but also employed a somewhat broader scope of analysis because of the requirement of the Glacier Bay National Park Boundary Adjustment Act of 1998 that project construction and operation be determined to be "economically feasible". FERC's developmental analysis estimated an annual net negative power benefit, but the current year approach of the analysis did not account for future increases in diesel fuel costs.

FERC's analysis of "economic feasibility" employed cost determinations for hydroelectric and diesel generation, and compared them through a thirty year projected period, for five scenarios of combined cost variables including diesel fuel cost escalation. This analysis yielded three economic parameters for each scenario: present value of annual net benefit, first year of positive annual net benefit, and year of positive cumulative net benefit. For the middle scenario (which used the most likely value for each variable), while hydro generation starts out 58% more expensive than diesel in the first year of operation, by the tenth year hydro would begin to cost less than diesel, and would realize a positive cumulative net benefit in the nineteenth year of operation, with net benefits increasing every year throughout the thirty-year period. While the low and low middle scenarios indicate a possibility that the project may fail to provide a net positive cumulative

benefit, FERC believes these overall results indicate that the project is economically feasible.

Four entities other than FERC submitted economic analyses in response to the DEIS. Eric Cutter submitted a report by 100th Meridian for the Sierra Club that predicts higher hydroelectric costs compared to diesel generation costs. GEC submitted comments including a cost-benefit analysis that predicts positive benefit-cost ratios. AIDEA submitted an analysis of project economics predicting a cumulative net benefit over a 30-year period. The National Heritage Institute submitted another 100th Meridian report and comments concluding that the project would result in costs to ratepayers greater than now charged. FERC's economic feasibility analysis appears to adequately consider those factors that have merit in these submissions, and FERC's responses to the comments in the Order Issuing License appear to be reasonable.

I consider that the effect of the economic activity resulting from the proposed appropriation, while not possible to predict with certainty, can reasonably be estimated to be positive owing to a reasonable likelihood that the project will result in long-term reductions in electric rates relative to the rates that would result from diesel generation, and an eventual cumulative positive benefit.

(3) the effect on fish and game resources and on public recreational opportunities;

The proposed project as licensed by FERC and as determined to be consistent with the ACMP is subject to several environmental measures designed to limit project effects on fish and fish habitat.

Anadromous fish habitat downstream from the lower falls is not expected to be significantly affected by project operations because the tailrace will return all diverted water to the downstream extent of the bedrock channel approximately 430 feet below the falls, which is a complete barrier to anadromous fish. The total of the diversion flow and the bypass reach flow will always closely approximate the inflow to the diversion dam plus drainage contribution below the diversion, since there is no usable storage in the catchment behind the dam. Flow continuation in the event of turbine shutdown will be required. Ramping rate limits will prohibit power setting changes from affecting stream levels by more than 1 inch per hour.

Dolly Varden habitat in the bypass reach will be maintained by instream flow requirements for flow rates predicted to provide for the persistence of a reduced fish population (5 CFS December through March, 7 CFS April through November).

The FEIS found that the reduction of habitat and likely reduction of the Dolly Varden population were justifiable because of the low value of this fish population to subsistence, sport, or commercial utilization; the improbability of loss of genetic resources; and the high cost of greater instream flows compared to the power values that would be lost thereby. FERC adopted the FEIS findings in a license condition, which was adopted by reference in the ACMP Consistency Determination. I concur with these measures and consider that this instream flow regime for the bypass reach is likely to result in achieving a reasonably optimal combination of water resource values.

The proposed appropriation is expected to result in some negative effects in the bypass reach on wildlife species that prey on Dolly Varden or on aquatic macroinvertebrates, due to streamflow reductions. Project infrastructure will directly reduce some forest, wetland, and riparian habitat. These effects are considered to be acceptable in light of their limited extent and the expected greater project values.

The proposed appropriation is expected to negatively affect the small amount of recreational use now made of the stream, by altering the wilderness character of the area and by reducing the visual quality of the falls due to reduced flow. In light of the low recreational utilization of the stream, the availability of superior and more accessible recreational resources, and the expected greater project values, I consider the affect of the proposed appropriation on public recreational opportunities to be minimal and acceptable.

(4) the effect on public health;

The Kahtaheena River has not been identified as a potential source for a public water system. The project would not diminish the quantity of water available for domestic use on the downstream Native Allotment, and is not expected to degrade the water quality. Shifting a significant amount of the community's power generation from diesel generation to hydroelectric generation could reasonably be expected to result in an improvement in air quality, with a likely positive effect on public health.

There is no evidence in the record of any detrimental effect on public health from this project.

(5) the effect of loss of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation;

[See section (b)(6), harm to other persons, below, for information regarding closed file LAS 20240.]

The project would not preclude domestic use of water by owners of the Native Allotment downstream from the project. While hydroelectric use of the water has not been mentioned in recent comments by allotment owners, it could be hindered by the proposed appropriation, since the project would decrease the proportion of time that flows above the lower falls would be greater than the required instream flows of 5 CFS during December through March and 7 CFS during April through November and therefore available for appropriation. This hindering of future use (if it can be considered to be an "alternate use") is considered to be reasonable in view of the greater electrical power benefits that the project would provide, at likely greater generation efficiency, to more people.

There is no other evidence in the record of alternate uses of water that might be made within a reasonable time if not precluded or hindered by the proposed appropriation.

(6) harm to other persons resulting from the proposed appropriation;

Closed water right application LAS 20240:

The record contains a closed application for a water right, LAS 20240, received from Thomas L. Mills on 23 April 1996, for up to 1 million gallons per day for hydroelectric generation and 3,750 gallons per day for domestic water for 5 homes (totaling approx. 1.55 cubic feet per second, CFS), to be diverted from the Kahtaheena River above the lower falls and used at a powerhouse location adjacent to the river and within Mills' native allotment, as it was expected to be expanded by a correction survey. The addition to the Mills Allotment was surveyed in the summer of 1997 (original allotment, US Survey 944; addition, US Survey 11972). Mr. Mills' proposed water withdrawal point above the falls was found to lie outside of the expanded allotment; thus Mr. Mills would have had to apply to the National Park Service for legal access to the withdrawal point and to the penstock alignment. Mr. Mills did not submit to DNR documentation of an application to NPS. On 24 September 1998 the Division sent Mr. Mills a Certified letter requesting documentation that all of the allottees agreed with Mr. Mills' project and did not object to the issuance of a water right in his name; the letter warned that

the application would be closed if Mr. Mills did not respond within 60 days. No response was received, and the water right application file was closed.

In considering the possibility of any harm to Thomas L. Mills from the proposed appropriation owing to his loss of a (senior) provisional priority date, it should be noted that Mr. Mills' application could not be processed further or adjudicated, so a water right was never created. The file was closed only after proper notice to Mr. Mills and the passage of 60 days' time without a response.

Closure of Mr. Mills' water right application does not preclude his applying in future for a water right for this or any other source. In fact, under NPS management, it is highly unlikely that Mr. Mills would have been able to obtain legal access to his proposed water withdrawal point and to much of the penstock alignment. Under State ownership and management, such legal access could be applied for and could be approved, subject to the concurrence of the lessee, and Mr. Mills' hydro project could be approved, subject to similar instream flow and other applicable environmental requirements to which the Falls Creek Hydro Project would be subject. Provision of domestic water to the Mills allotment by gravity flow would likely be feasible using an intake structure within the Mills allotment boundary; this would not require an easement from the State.

Comments in response to public notice:

Comments in response to public notice of the water right application were timely received and responded to. Since these comments imply possible harm to the commentators and others, the Division's response is attached and incorporated in this Finding and Determination.

Therefore, in consideration of the above, there is no evidence in the file indicating a likelihood of significant harm to other persons resulting from the proposed appropriation.

(7) the intent and ability of the applicant to complete the appropriation;

GEC has much experience in construction and operation of electrical utility infrastructure in the Gustavus area. FERC's economic feasibility analysis did not disclose any financial inability of GEC to complete the project. AIDEA evidently considers GEC to be able to complete the project, based on its grant of \$1,000,000.

Finding & Determination; AS 46.15.080

2/28/2006

There is no evidence in the file indicating a lack of intent or ability to complete the appropriation on the part of the applicant.

(8) the effect upon access to navigable or public water.

The navigability status of the Kahtaheena River has not been determined, but from informal observation in the field I believe it is unlikely to be navigable. In any case, access is currently constrained primarily by the private land through which its lower reach flows. The project will likely increase access to this public water, although regulatory and physical access limitations on the project road could result in no net change to the accessibility of the stream.

Therefore, the proposed appropriation is unlikely to reduce access to navigable or public water.

CONCLUSION

I have found in the affirmative as required by AS 46.15.080 (a) (1), (2), and (3), and have made the considerations required by AS 46.15.080 (b), which support a finding that the proposed appropriation is in the public interest, as required by AS 46.15.080 (a) (4). The finding and determination required by statute is therefore made, and the permit applied for shall therefore be issued, subject to conditions to protect the public interest.

This authorization goes into effect at the time the land exchange is consummated.



Gary Prokosch, Chief, Water Resources Section

2/28/06
(Date)



John Dunker, Water Resource Manager, SE Region

28 Feb. '06
(Date)