NOTICE OF INTENT (NOI) FOR NPDES GENERAL PERMIT AK-57-0000 FOR SMALL PUBLICLY OWNED TREATMENT WORKS (POTW's) AND OTHER SMALL TREATMENT WORKS TREATING DOMESTIC SEWAGE TO SECONDARY STANDARDS AND DISCHARGING INTO FRESH WATER

RESPONSIBLE PARTY *(Owner, Operator or Person responsible for overall management of the project):*					
First Name:	Steve	Last Name:	Leonard	Phone Number:	206-301-5221
Title:	Vice President & General Manager			Fax Number:	206-285-7152
Company Name:	Westmark Hotels			Email Address:	sleonard@hollandamerica.com
Address:	221 1st Avenue West, Suite 100				
City, State, Zip:	Seattle, Washington 98119				

FACILITY INFORMATION			
Facility Name:	Denali Canyon Lodge	Facility Address:	MP 238.6 Parks Highway
Population Served by this facility:	300 ± transient	City/State/Zip	Denali National Park, Alaska

OPERATOR INFORMATION OR ON-SITE CONTACT					
Name:	To be announced.	Title:	N/A	Phone Number:	N/A

PREVIOUS PERMITS OR AUTHORIZATIONS *(if applicable)*	None.

CHECK CATEGORY WHICH APPLIES TO THIS FACILITY	
X	Treatment plant (e.g. extended aeration, Fixed film e.t.c.). Indicate type (**Category 1**) **Package Type Aeration Plant**
☐	Passive waste stabilization pond (non-aerated lagoon) as principle process. Indicate number of cells (**Category 2**)
☐	Mechanically aerated waste stabilization pond (aerated lagoon) as principle process. Indicate number of cells (**Category 3**)

DAILY DISCHARGE FLOW RATES: (GPD)					
Average:	25,000	Maximum:	35,000	Design Capacity:	60,000

RECEIVING AREA INFORMATION ↑ **(See Attachment B for explanation of flows and capacity.)** ↑	
Receiving area type (e.g. lake, river, tundra, wetlands, etc):	River
Name of Receiving Waterbody or Area:	Nenana River

Latitude / Longitude of Discharge Point(s) in **either** *decimal degrees* **or** in *degrees: minutes: seconds*:

Latitude:	63°44'45.2" N	Longitude:	148°54'28.3" W

Lat/Long Coordinate Source:	☐ Internet	X Map	☐ GPS/Survey

Submit a site map showing the exact location, (latitude and longitude), of all facilities associated with the project. Mobile camps, which may move frequently during the season or from year to year, may designate an area where they may be operating. Include a topographic map or aerial photograph showing the general location of the facility, the expected flow direction of the discharge, and discharge area. Also provide approximate distance of the end of pipe from the edge of an existing wastewater mixing zone, if known. **See Attachment A.**

DESCRIPTION OF WASTEWATER TREATMENT AND OPERATION: Provide a brief description of the treatment process(es) provided by the facility including the level of treatment (e.g. secondary) and type of disinfection. Provide proof of approval of plans for the treatment works by ADEC. Include schematic flow diagram of the wastewater treatment process. Describe all disposal methods for any sludge, septage, grit, screenings, and other facility residuals generated from the treatment system. **See Attachment B.**

Are you a seasonal (non-continuous) discharger?	Yes	**If yes, which months do you typically discharge?**

Months: May 1 – October 1

INDUSTRIAL SOURCES: Provide the names, approximate flow rates and types of pollutants for any significant industrial users that discharge to the treatment works. **N/A**

For discharge to river, provide the once in 2 years, 3-day low flow (3Q2)	Based on USGS Station at Healy: Average River Flow during discharge: 8,500 ± CFS 3-day Low Flow Average: 2,000 ± CFS (Early May Only) 7-day Low Flow Average: 2,900 ± CFS (Early May Only)

EFFLUENT TESTING INFORMATION. Provide effluent testing data collected over the previous 12 months for the following parameters: pH (minimum, maximum), maximum and average flow rate, BOD_5, TSS, fecal coliform bacteria, and total chlorine residual or the previous 12 instances of monitoring data collected if there has not been 12 months of data for the previous year.

N/A – New discharge; no previous discharge monitoring data.

REQUEST FOR MIXING ZONE AND EFFLUENT MODIFICATION FROM ADEC

Do you wish to request for a mixing zone from ADEC?	**X Yes**	☐ **No**

THE FOLLOWING INFORMATION MUST BE PROVIDED IF REQUESTING A MIXING ZONE. The burden of proof for justifying a mixing zone through demonstrating compliance with the requirements of 18 AAC 70.240 – 18 AAC 70.270 rests with the applicant.

Distance from river or lake bank to discharge or first port on diffuser:	25 feet ±	Number of ports and spacing:	1
Diameter of port or ports:	6 inches	Length of diffuser:	N/A (single open pipe)
Water body temperature at time of low flow: **(Early May Only)**	5°C (data from USGS)	Depth of discharge or diffuser:	4 feet ± below water surface
Approximate width and depth of the receiving water body at low (3Q2) flow (for rivers only):			260 feet ±
Dimensions of lake/pond (for discharges to lakes or ponds only):			N/A

USES OF RECEIVING WATER AT DISTANCE FROM DIFFUSER:

USE	*DISTANCE*	*UNITS*
Supply for drinking water	N/A	
Supply for agriculture including irrigation & stock water	N/A	
Supply for aquaculture	N/A	
Supply for industrial use	N/A	
Contact recreation	N/A	
Secondary recreation **River Rafting**	Varies 0’ to 100’; 50’ typ.	feet
Fish spawning	N/A	
Harvesting and consumption of raw fish, or other aquatic life	N/A	

Certification:	Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.			
Signature:			Dated:	
Printed Name:	Jackson C. Fox		Title:	Environmental Analyst

MAIL COMPLETED NOI TO ADEC AND EPA:

US EPA, Mail Stop OW-130, 1200 Sixth Avenue, Seattle, WA 98101

Mail NOI to the ADEC’s address below nearest to the proposed discharge:

State of Alaska Department of Environmental Conservation, Water Division 610 University Avenue, Fairbanks, Alaska 99709-3643 Telephone (907) 451-2130 Fax (907) 451-2187 Email: wq_permit@dec.state.ak.us	State of Alaska Department of Environmental Conservation, Water Division 410 Willoughby Suite 303, Juneau, Alaska 99801-1795 Telephone (907) 465-5300 Fax (907) 465-5274 Email: wq_permit@dec.state.ak.us

State of Alaska Department of Environmental Conservation
Water Division
555 Cordova Street, Anchorage, Alaska 99501
Telephone (907) 269-7500 Fax (907) 269-7652 Email: wq_permit@dec.state.ak.us

ATTACHMENT A

Site Map

80 0 40 80 160
Scale: 1 inch = 160 ft.

N

63°44'55"

63°44'50"

63°44'45"

-148°54'30"

-148°54'20"

-148°54'10"

-148°54'00"

LEGEND:

PROPERTY LINE

W WATER LINE

S SANITARY SEWER LINE

ARAMARK LODGE

WASTEWATER TREATMENT PLANT

GUEST BUILDING

WESTMARK DENALI CANYON LODGE

WELL

4,200'± TO DENALI RIVERSIDE RV PARK MIXING ZONE EDGE

TREATED EFFLUENT DISCHARGE
LAT. 63°44'45.2" N
LONG. 148°54'28.3" W

RIVER FLOW

1,100'± TO DENALI PRINCESS MIXING ZONE EDGE

NENANA RIVER

GEORGE PARKS HIGHWAY

R.O.W.

R.O.W.

R.O.W.

STA. "O" 3602+24.22 P.T.

P.C.

SECTION 33, T13S, R7W

SECTION 34, T13S, R7W

DENALI PRINCESS WILDERNESS LODGE

845500C20

JANTZ PROJECT 0416

USKH
544 4th Avenue
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128
Architecture · Engineering
Land Surveying · Planning

PROJECT MANAGEMENT ARCHITECTURE
FAX (907) 456-2353
(907) 451-9353

JANTZ ASSOCIATES
1648 CUSHMAN STREET, SUITE 200
FAIRBANKS, ALASKA 99701

DENALI CANYON LODGE

DENALI PARK, ALASKA

SITE MAP

REV.

DATE: DEC. 16, 2005

C1.0

ATTACHMENT B

Wastewater Collection and Treatment Narrative
&
Wastewater Treatment Process Flow Diagram

WASTEWATER TREATMENT, DISTRIBUTION AND COLLECTION NARRATIVE

DENALI CANYON LODGE
DENALI PARK, ALASKA

December, 2005

Prepared for:
Jantz Associates
1648 Cushman Street, Suite 200
Fairbanks, AK 99707

Prepared by:
USKH Architects Engineers Surveyors Planners
544 4th Avenue Suite 102
Fairbanks, Alaska 99701

USKH WO#845500

TABLE OF CONTENTS

INTRODUCTION

The Denali Canyon Lodge project is located between the George Parks Highway and the Nenana River at approximately mile 238.6 of the highway, in the area known as “Glitter Gulch”. This proposed hotel and lodge development is located on roughly 25 acres. It is bordered on the north by a hotel development run by Aramark Inc, and on the south by a hotel development run by Princess Tours.

The proposed project includes the ultimate development of up to 630 lodging rooms distributed between 5 to 6 buildings, a number of restaurants and retail facilities, and hotel support functions such as a linen laundry and water and sewer treatment systems. The development will be spread over at least three phases constructed over 6 to 10+ years as demand for lodging warrants. The present phase, Phase I of the project includes only 30 existing cabins, and 135 new rooms in a single lodging building, and the water and sewer treatment systems, which are housed in a single building. There are no restaurants, linen laundry or other facilities in this Phase. These functions are provided offsite and on the adjacent properties run by Aramark and Princess in this phase.

This facility will be operated seasonally between approximately May 1 and October 1 each year.

This narrative discusses the development of sewer treatment and collection systems for the Denali Canyon Lodge.

The existing property is currently occupied by approximately 40 small cabins, houses, and other rental properties. Approximately 30 of these cabins will be remain on site for a period of 2 to 3 years until the remainder of the proposed Denali Canyon Lodge phases are constructed at which time they will be removed. However, until that time, they will contribute to the sewer demand for the site.

SEWER DEMANDS

Wastewater demands for the Denali Canyon project are generated by two primary sources: the hotel buildings, consisting of 135 new hotel rooms and 30 existing cabins; and second, water treatment plant wastewater. There is no onsite linen laundry or restaurants so the wastewater flow is somewhat lower than for the typical hotel.

Wastewater from the hotel buildings and cabins is projected at approximately 19,500 gallons per day. This is roughly equivalent to 120 gpm per room. This wastewater is ordinary domestic wastewater.

Wastewater from the water treatment plant consists of reverse osmosis reject water, and backwash water from the filtration system. The quantity will vary, but is expected to average approximately 5500 gallons per day. This wastewater from the water treatment plant consists of generally potable water with varying amounts of entrained hardness and sediments. The wastewater is pre-treated in the water plant by settling in a buffer tank to remove the bulk of the sediments, and then processed through the wastewater plant polish filter system to remove any remaining sediments before the water is discharged with the rest of the treated wastewater effluent.

Average total daily wastewater from all sources is expected to average approximately 25,000 gallons per day. Maximum wastewater from all sources is expected to be approximately 35,000 gallons per day.

WASTEWATER COLLECTION, TREATMENT AND DISPOSAL

Wastewater Treatment System Capacity
The proposed wastewater treatment system using the equipment discussed below has a maximum treatment capacity of 31,000 gallons per day of domestic wastewater treated to 30 / 30 standards, and a maximum treatment capacity of 60,000 gallons per day of combined domestic wastewater and water treatment plant wastewater, also treated to 30 / 30 standards.

Wastewater Treatment
It will be necessary to treat wastewater generated on site to ADEC and EPA secondary standards prior to discharging it into the Nenana River. In general, these standards require the removal of solids, bacteria, and biological oxygen demand (i.e. oxygen consuming nutrients) from the wastewater.

Based on historic testing data for other hotels in the park area collected by Mike Pollen of NTL Inc., the raw wastewater has been conservatively estimated at a BOD5 of 300 mgl and a TSS of 300 mgl. Secondary treatment standards require an average BOD5 of 30 mgl, and an average TSS of 30 mgl in the treated effluent, with a minimum removal of 85% of both BOD and TSS. In order to ensure that treatment equipment is not undersized, and to provide a design margin, treatment equipment has been specified to target a BOD5 of 20 mgl and a TSS of 20 mgl.

Fecal coliform levels in the treated effluent are expected to be less than 80 colonies per 100 ml on average at the point of discharge, with less than 20 colonies per 100 ml at the edge of the mixing zone in the Nenana River discharge. In order to ensure that treatment equipment is not undersized, and to provide a design margin, treatment equipment has been specified to target 20 colonies per 100 ml on average at the point of discharge.

Treatment will be accomplished using the following equipment:

- Packaged Wastewater Treatment Units (Aeration Plant) A premanufactured wastewater treatment unit manufactured by EEC Global has been selected for this project based on it's compact size, ease of operation, and expected level of treatment. Essentially, the plant combines two activated sludge and fixed film floating media stages with a tube clarifier in a single unit. The specified "15 CON 3" aeration plant is rated by the manufacturer for 31,000 gpd at a 30 / 30 treatment level, and at 21,000 gpd for a 20 / 20 treatment level. This is expected to be sufficient to meet or exceed 30 / 30 treatment at the expected 19,500-gallon daily flow of domestic wastewater from the hotel rooms and cabins. Additional aeration plants of this type will be added in later phases of the hotel project as warranted by wastewater volumes.

- Polish Filters To remove additional BOD and TSS, and to ensure the effluent has a sufficiently low turbidity for UV disinfection, multimedia wastewater filters are being provided. Two filters with an individual capacity of 30,000 gpd each will be provided, allowing one of the filters to be offline for backwashing or maintenance. Filtration is

expected to be 5 micron or better. The filters are backwashed using filtered effluent. Backwash waste from the polish filters is recycled to the equalization tank at the plant headworks. Settled filter backwash water and RO reject water from the water treatment plant is also routed through the polish filters to remove any remaining turbidity prior to this water being discharged into the Nenana river as treated wastewater effluent. Together, the two filters have a maximum capacity of 60,000 gpd of combined domestic wastewater and water treatment plant wastewater.

- UV Wastewater Disinfection To avoid issues associated with chlorination and dechlorination, the wastewater plant will use UV disinfection. The high intensity UV lamp units are integrated with the polish filter units, such that all effluent through the polish filters will be subject to UV radiation. As with the polish filters, each UV system is rated for 30,000 gpd, providing complete redundancy.

- Wastewater Grinder A small "muffin monster" wastewater grinder is located at the inlet to the equalization tank to reduce the size of any solids entering the treatment system. The grinder itself is protected by bar screen. This should be sufficient for Phase I of the project. Later phases of the project may replace the "muffin monster" with a screening system if entrained trash levels warrant it.

Wastewater Tanks

As part of the treatment plant, a number of wastewater tanks are necessary:

- Aerated Equalization Tank The aeration plant is capable of treating a maximum continuous flow of only 40 gpm. Peak flows from the hotel and cabins are expected to reach up to 88 gpm. In order to attenuate the peak flows, a large equalization tank is provided at the headworks of the sewer treatment plant. This welded steel tank has a nominal volume of about 30,000 gallons, and provides several functions. First, the tank is recessed into the floor of the wastewater treatment plant. This allows the collection system, and all of the treatment plant overflows to gravity drain into the tank. Second, the tank is capable of retaining about two days of flow from Phase I of the Denali Canyon project providing flow attenuation and emergency storage of wastewater (i.e., if the aeration plant is off line, or overflows for any reason). Third, the equalization tank is aerated, which provides additional treatment. Lastly, the volume of the tank will be used to recirculate wastewater through the treatment system during startup until treatment has reached an acceptable discharge level. Actual operating levels of the equalization tank is controlled by operator adjustment of the floats which control the pumps feeding into the aeration plant. The equalization tank is divided into two cells to allow half of the tank to be taken off line for cleaning or maintenance. Since the operating level of the tank varies from about one foot to 8 feet depending on variations in flow rate, coarse bubble aerators are distributed evenly over the floor of the tank to minimize "dead" zones. A second, similar tank will be added in later phases of the project as warranted by future increases in wastewater flows.

- Polish Filter Feed and Effluent Tanks Two relatively small tanks totaling 10,000 gallons are used to maintain a steady supply of effluent from the aeration plant clarifier to the polish filters, and to collect the filtered effluent. These are molded polyethylene tanks sized by, and furnished by the polish filter manufacturer as part of that treatment system. These tanks are aerated for the purpose of maintaining dissolved oxygen levels, but no real treatment is expected to occur in either tank.

- Sludge Storage / Digesting Wastewater treatment sludge generation has been estimated by the treatment plant manufacture at approximately 1% of the daily treatment volume. Accordingly, about 200 gallons of sludge per day will be generated in phase I of the project. The sludge will be stored and aerobically digested in a large tank inside of the treatment plant. This tank, with a nominal volume of 28,000 gallons will be able to store a month or more of sludge. Filter backwash sludge from the water treatment plant will also be piped into this sludge tank, were the heavy iron and manganese floc will help to settle and compact the wastewater sludge. Periodically, the sludge will be allowed to settle, and the supernatant pumped off with a suspended submersible pump (back into the equalization tank at the head of the plant), concentrating the sludge. Sludge will be pumped out of the tank periodically into a hauling truck for disposal at the Anderson Septage Facility. The tank will be constructed from welded steel, with a hopper bottom to facilitate sludge removal. The tank is divided into three cells to allow for maintenance of the tank, and to maintain greater depth in any individual tank cell to improve sludge settling. Coarse bubble aerators are located on one side of each cell to impart a stirring action. Aerator location, and the geometry of the cells provides a tank aspect ratio of between 1:1 and 1:1.4 (width to height) depending on operating depth, to maintain good tank mixing action. The volume of the tank will also be used to store wastewater during plant start up in a manner similar to the equalization tank.

Pumping and Blowers

The wastewater treatment system will incorporate a number of pumps and air blowers:

- Process Pumps. The wastewater system includes a variety of pumps integrated directly into the treatment process equipment.

- Blowers. The various tanks and equipment in the wastewater plant are aerated as required to provide mechanical mixing and oxygen for biological treatment. Blowers for the aeration plant are as specified by the aeration plant manufacturer to provide 120 cfm at 118 inches (water column). For the equalization and sludge tank, aeration requirements are based on the 10 State Standards of 1.25 cfm per 1,000 gallons in the equalization tank, and 30 cfm per 1,000 cubic feet in the sludge tank. This yields a requirement of 40 cfm for the equalization tank, and 120 cfm for the sludge tank. Pressure requirements will vary with the operating depths in the tanks, but will be a maximum of 100 inches (water column) for the equalization tank, and 170 inches for the sludge tank. Four identical positive displacement blowers capable of providing 10 to 140 cfm each will be provided, with one of the blowers standing by as a spare. Because of the variable speed drives, any of the blowers can operate at anywhere between 100 and 170 inches of pressure. Likewise, because of the variable speed drives, the volume of air can easily be adjusted to match operating requirements.

Treated Effluent Discharge / Mixing Zone Requirements

Treated effluent will be discharged into the Nenana River as discussed in the piping systems section of this narrative. The discharge will be the subject of an EPA and ADEC NDPES discharge permit application that will be filed when approval to construct the wastewater treatment system is granted by ADEC.

As part of the discharge permit application, a mixing zone will be requested. The mixing zone will be utilized to reduce the BOD, TSS, and fecal coliform levels in the discharged effluent to whatever levels the final discharge permit specifies. A mixing zone in the silt laden Nenana River would provide a substantial amount of dilution since the river has an extremely turbulent flow averaging in excess of 6000 cfs during the period of expected effluent discharge (river flow based on USGS data at the Healy Nenana River gauge, the closest gauge, located about 14 miles downstream). At the point of discharge, treated effluent is only 0.003% of the river flow within the plume. At the edge of the typical 50-meter mixing zone (164 feet), the effluent plume will be essentially non-detectable.

WASTEWATER TREATMENT SYSTEM BUILDING

The water and treatment systems discussed above are housed in a single building. The water system is separated from the wastewater system by a solid wall with no openings. In effect, the systems are in separate buildings with a common wall. The building is a two-story configuration. In general, the large, heavy tanks are located on the ground floor, while lighter treatment equipment, labs, offices, and building mechanical are located on the upper floor / mezzanine level.

The building construction is conventional, with concrete floors and foundation. The walls are a combination of concrete and wooden stud framing.

Floor drains are located throughout the building to contain any water, wastewater or chemical spills. These are routed to the backwash filter buffer tank and / or the wastewater equalization tank.

The building is located in a portion of the site containing discontinuous thaw-unstable permafrost. In order to eliminate the risk of differential settlement and foundation failure due to melting permafrost, the foundation is heavily insulated, and equipped with passive thermosiphons. This will maintain the subsoils in a frozen, stable state.

WASTEWATER DISTRIBUTION AND COLLECTION PIPING

Sewer Mains

Sewer mains will be constructed between the lodging buildings and the utility building. As the ground temperatures will be below freezing into early summer, to minimize heat loss and to guard against freezing, the sewer main will be constructed using arctic pipe with 2-inches of urethane foam insulation in a protective jacket. The main will be constructed of either Class 50 ductile iron or SDR 17 HDPE (the construction contractor is currently debating the cost and merits of the two materials) with pressure-tight bell and spigot type joints. The pipe will be buried a minimum of 4 feet below ground with a minimum slope of 0.5%

Portions of the pipe trench pass through soils susceptible to frost heaving. To prevent damage to the pipe, and to prevent non-uniform pipe movement and loss of pipe slope, the unsuitable soils will be completely removed, and replaced with compacted, non-frost susceptible gravel fill.

Manholes will be provided at all grade and direction changes, and at intervals not to exceed 300 feet. The manholes will be insulated, and wrapped in several layers of polyethylene sheeting to help resist frost-jacking forces.

Sewer Effluent Main (Nenana River Discharge)

Treated effluent from the wastewater treatment plant will be discharged to the Nenana River using a 6-inch SDR 17 HDPE effluent main with welded joints. As the ground may still be frozen into early summer, the effluent main will be insulated with 2-inches of urethane foam and a protective jacket to minimize the possibility of freezing. Where this pipe passes under the refrigerated foundation of the treatment building, additional insulation and electric heat trace are provided.

The effluent main will be located as shown on the project location map, and is generally buried under an existing cleared trail along the side of the river embankment. The pipe rises out of the ground on the bank of the river were it is anchored to a concrete block. A detachable section of pipe is connected at this location, and inserted into the river, such that the actual discharge of the effluent main is about 4 feet below river surface, 20 to 30 feet from shore, where the effluent will rapidly mix and dissipate into the river. At the end of the year, as the hotel is shut down for the winter and discharge is terminated for the season, the pipe will be detached and removed from the river to avoid winter ice damage.

Due to topography, the effluent main in constructed as an “inverted siphon” with the last 500 feet of pipe sloping upward. However, the effluent main originates in the wastewater treatment plant at the polished effluent discharge tank with an elevation of approximately 3247 (7 feet above the floor of the treatment plant). The discharge connection point on the riverbank is slightly below elevation 3233. Therefore, there is 14 feet of head over a distance of about 1100 feet. This gives a hydraulic gradeline slope of 1.27%, and a maximum pipe capacity of about 280 gpm.

Typical discharge into the river is expected to average approximately 70 gpm.

A manhole is being provided at the low point of the effluent main. This manhole includes cleanouts as required for cleaning of the effluent main, and a drain connection to allow the effluent main to be drained when the system is shut down for the winter. This drain point may also be used as an effluent sampling point.

WASTEWATER METER SCHEDULE

Designation	Service	Size	Type	Flow Range	Voltage / phase	Make	Notes
M-1	Wastewater volume meter	2-inch	Mag Meter	5-300	120 / 1	Badger	Furnish with electronic register with totalizing and rate of flow displays.
M-2	Wastewater volume meter	4-inch	Mag Meter	5-1200	120 / 1	Badger	Furnish with electronic register with totalizing and rate of flow displays.

PROCESS EQUIPMENT

Designation	Service	Capacity	Voltage / phase	Basis Of Design	Operating Parameters / Notes
MM-1	Wastewater Grinder	700 gpm	460 / 3	JWC Environmental Muffin Monster 30005-0018	1
Aeration Plant -1	Wastewater Treatment	**19,500 gpd min**	460 / 3 -120 / 1	EEC 15 CON3	2
Aeration Plant -2,3	Future	65,000 gpd	461 / 3 -120 / 1	EEC 27 CON3	
HC-1	Sludge Separation Hydrocyclone	---	---	As specified by Aeration Plant manufacturer	3
PF-1, PF-2	Wastewater Polish Filter	57 gpm	460 / 3	EEC multimedia filter.	4
PF-3, PF-4	Future	57 gpm	460 / 3	EEC multimedia filter	5
UV-1, UV-2	Ultraviolet Wastewater Disinfection	57 gpm	460 / 3	EEC ultraviolet disinfection unit with automatic controls	6
UV-3, UV-4	Future	57 gpm	460 / 3	EEC ultraviolet disinfection unit with automatic controls.	7

Operating Parameters/Notes:

1. 3 hp motor. Provide field fabricated adapter plate as required to fit to channel.
2. Influent BOD5 = 300 mg/l Target Effluent BOD5 = 20 mg/l, 85% min removal. Influent TSS = 300 mg/l Target Effluent TSS = 20 mg/l, 85% min removal.
3. Integral to Aeration Plant -1
4. Sized for Ultimate Flow
5. EEC multimedia filter sized for maximum of 5.0 gpm per ft^2 of filter bed. Provide with automatic and manual differential pressure based controls, pressure gauges and standard accessories. Sized for Ultimate Flow
6. **May be integrated with PF-1 and PF-2. Target Disinfection, 40 Fecal Coliform per 100 ml max, 20 per 100 ml avg.**
7. **May be integrated with PF-3 and PF-4. Target Disinfection, 40 Fecal Coliform per 100 ml max, 20 per 100 ml avg.**

PUMP SCHEDULE

Designation	Service	Flow	Head	RPM	Impeller Dia	Fluid	Body	Suction Size	Discharge Size	HP	Voltage / phase	Basis of Design Make / Model	Notes
SP-1, SP-2	Submersible wastewater pump	40 gpm	22 feet	1750	---	wastewater	iron	---	2 inch	1 hp min	460 / 3	Explosion Proof Hydromatic, Flygt or equal	1
SL-2	Sludge Return / Disposal	20 gpm	50 feet	1750	---	sludge	iron	---	---	.5 hp min	460 / 3	Moyno or equal	2
FF-1, 2	Polish Filter Feed Pump	57 gpm	---	---	---	---	---	---	---	---	460 / 3	---	3
FB-1,2	Polish Filter Backwash Pump	180 gpm	---	---	---	---	---	---	---	---	460 / 3	---	3
SP-3	Supernatant Decant submersible pump	50 gpm	24 feet	---	---	clear effluent	iron	---	2-inch	1.0 hp	460 / 3	Explosion Proof Hydromatic, Flygt, Zoeller or equal	4
SP-4	Submersible Sump Pump	100 gpm	18 feet	---	---	wastewater	iron	---	2-inch	1.5 hp	460 / 3	Explosion Proof Hydromatic, Flygt, Zoeller or equal	
BL-1,2,3	Process Air Supply	10-140 cfm	12-170 inches	variable 600-3750 rpm	---	air	iron	---	2-inch	5.0 hp	460 / 3	Roots EasyAir 8000 Package System with 42 URAI-DSL Blower or equal	5
												Deleted BL-4,5, Replaced with EasyAir Unit	6
MP-1	Nutrient / Ph Chemical Feed	**0 - 4 gph**	100 psi	---	---	water	plastic	---	---	30 W	120 /1	**LMI / Series B**	7
MP-2	Polymer / Spare Chemical Feed	**0 - 4 gph**	100 psi	---	---	water	plastic	---	---	30 W	120 /1	**LMI / Series B**	7

Notes:

1. As specified by Aeration Plant 1 manufacturer
2. Integral to Aeration Plant 1
3. **As specified by Polish Filter Manufacturer**
4. Fitted with hoist rope, lifting eye and 2-inch discharge hose.
5. Provide with standard equipment, discharge temperature gauge and temperature switch, variable speed motor controller / starter.
6. As specified by Aeration Plant 1 manufacturer
7. **Provide with combination bleed / check / degas valves. Pump capacity as verified by Aeration Plant-1 Manufacturer.**

FLOW REGULATING VALVES

Designation	Service	Size	Type		Operator	Make / Model	Notes
SG-1,2	Waste Water Flow Control	18" x 32" nominal	Sluice Gate	0-750 gpm	Hand Wheel	Plastifab Wedging Titeseal	Fabricate gate to conform to dimensions of Tank EQ-1 entrance trough.
	Isolation, Shutoff	Match Piping	Non-Rising Stem Gate Valve		Hand Wheel		Resilient Wedge on 3" and larger
N	Isolation, Shutoff	Match Piping	Rising Stem Knife Gate Valve		Hand Wheel		Required on raw sewage and sludge piping
	Isolation, Shutoff	Match Piping	Rising Stem Gate Valve		Hand Wheel		Resilient Wedge on 3" and larger
	Isolation, Shutoff	Match Piping	Full Port Ball Valve		Lever		
	Process Air Regulation	Match Piping	V Port Ball Valve		Lever		Provide level operator with indices
	Chemical Injection	1-inch	Full Port Ball Valve		Lever		Provide feed quill at all chemical feed locations.
	Sampling Point / Tap	1-inch	Full Port Ball Valve		Lever		Provide tapered hose barb.
	Check Valve	Match Piping	Non-clog Ball Style		---		

SEWER TANK SCHEDULE

Designation	Service	Nominal Working Volume	Pressure Rating	Working Pressure	Notes
EQ-1	Aerated Wastewater Surge Equalization	30,000 gal	NA	NA	See details. Split into two equal cells.
EQ-2	Future	30,000 gal	NA	NA	
PFT-1	Polish Filter Feed Tank	**5,500 gal**	NA	NA	**120" Diameter Polyethylene Tank**
PFT-2	Polish Filter Effluent Tank	4,500 gal	NA	NA	**102" Diameter Polyethylene Tank**
SLT-1	Aerobic Sludge Digesting and Settling	28,000 gal	NA	NA	See details. Split into three equal cells

SERVICES BUILDING
PERMITTING SET

STATE OF ALASKA — DEAN E. SWANSON — 10TH — REGISTERED PROFESSIONAL ENGINEER — 07/18/05

JANTZ PROJECT 0416

544 4th Avenue
Suite 102
Fairbanks, Alaska 99701
(907) 452-2128

USKH
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FAX (907) 458-2333
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PROJECT
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JANTZ ASSOCIATES
1646 COWAN STREET, SUITE 200G
FAIRBANKS, ALASKA 99701

DENALI CANYON LODGE
DENALI PARK, ALASKA

SCHEDULES

1 EQUIP UPDATES, D.E.S.
REVISED 11/10/05

REV.

DATE. AUGUST 8, 2005

M10.2

FROM RO SEE DWG. M9.4

FROM FILTER RINSE WASTE SEE M9.4

2" 6 CFM

114 GPM POLISHED EFFLUENT

FINISHED EFFLUENT TANK PFT-2

UV-4 UV-3 UV-2 UV-1

PF-4 PF-3 PF-2 PF-1

POLYMER POLYMER

FB-1 FB-2

4" M-2 TO RIVER

POLISH FILTER FEED TANK PFT-1

FF-4 (FUTURE) FF-3 (FUTURE) FF-2 FF-1

4" 180 GPM

2" 5 CFM

FROM BW-2 SEE DWG. M9.4

FROM SL-1 SEE DWG. M9.4

1-1/2" 20 GPM

2" HOSE

4" SLUDGE FILL

EXCESS AIR BLEED WITH SILENCER

SLUDGE TANK 1 SLT-1

SP-3

CAMLOCK FITTING TO PUMPER TRUCK

6" SLUDGE DRAIN

6" @ 1% OVERFLOW

6" @ 1% WWTP OVERFLOW MAIN

OVERFLOW FROM BUFFER-1 SEE DWG. M9.4

6" @ 1% OVERFLOW FROM BUFFER-1

8" @ 1% OVERFLOW

4" @ 1% SECONDARY EFFLUENT 400GPM

11 CFM

8" @ 1% SLOPE

FUTURE

FUTURE

FUTURE

FROM WTP SEE DWG. M9.4

1-1/4" WATER TO SPRAY NOZZLES

NUTRIENT MP-1

CLARIFER AERATION AERATION

HC-1

1-1/2" CLARIFIER SLUDGE

20 GPM

SL-2

AERATION PLANT

3" CLARIFER DRAIN

3" 120 CFM

3" 40 CFM

8" @ 1% SLOPE

2" 11 CFM

3" 40 CFM

INCOMING WASTE WATER

12" DIP

OPEN TROUGH

FUTURE EQ TANK 2

GRINDER MM-1

SG-1 18" X 32" OPEN TROUGH SG-2

EXCESS AIR BLEED WITH SILENCER

EQ TANK 1

SP-1 SP-2

M-1

8" FROM WWTP FLOOR DRAINS

SP-4 TANK PIT SUMP

170 " HEADER

118 " HEADER

100 " HEADER

BL-1 BL-2 BL-3 BL-4

BLOWER ROOM

MP-1 MP-2

NUTRIENT/PH POLYMER/SPARE

CHEMICAL VATS

LINETYPE LEGEND

- AIR SUPPLY
- GRAVITY PIPING
- PRESSURED PIPING
- FUTURE
- POTABLE WATER

NOTES:

1. SEE ENCOTECH DWG 8828-100 FOR PROCESS CONTROLS.
2. PROCESS AIR GAUGES TO BE LABELED IN INCHES OF WATER.

SERVICES BUILDING PERMITTING SET

STATE OF ALASKA REGISTERED PROFESSIONAL ENGINEER DEAN E. SYM CE-9349 4/8/05

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DENALI CANYON LODGE
DENALI PARK, ALASKA

WASTEWATER TREATMENT PROCESS FLOW DIAGRAM - SERVICES BUILDING

REV.	DATE	
1	AUGUST 8, 2005	EQUIP. UPDATES, FILTER AND RO CONFIGURATION REVISED. 11-18-05

M10.4

ATTACHMENT C

ADEC Approval to Construct

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF WATER
WASTEWATER DISCHARGE PROGRAM

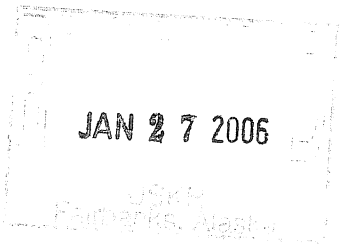
FRANK MURKOWSKI, GOVERNOR

610 University Avenue
Fairbanks, AK 99709
Phone: (907) 451-2108
Fax: (907) 451-2188
http://www.state.ak.us/dec/

File Number: 150.45.104
150.07.129

January 25, 2006

Dean Syta, P.E.
USKH
2515 A Street
Anchorage, AK 99503



Re: Denali Canyon Lodge – Phase 1
Approximately 16,000 GPD STP (Expandable)
8" HDPE Gravity Sewer – 339 LF
12" HDPE Gravity Sewer – 214 LF
6" HDPE Effluent Discharge – approximately 1,100 LF
Conditional Approval to Construct

Dear Mr. Syta:

On September 7, 2005 the Department received plans for the sewer and treatment facility for the Denali Canyon Lodge – Phase 1. The Department has completed a review of the wastewater submittal which includes an expandable package treatment plant manufactured by EEC Global, which is expected to provide the BOD/TSS (20/20) treatment for the 16,000 gpd Phase 1 flow. In addition to the STP approval, this approval also includes 339 lineal feet of 8" and 214 lineal feet of 12" HDPE gravity sewer line from Hotel #1 to the STP, and approximately 1,100 lineal feet of effluent line from the STP to the discharge point in the Nenana River. These plans were reviewed in accordance with Wastewater Disposal Regulations 18AAC 72 and found to be in substantial compliance. Therefore **Conditional Approval to Construct** is granted at this time. Below are items that need to be addressed before final approval to operate can be given:

1. As per our phone conversation on 1/23/2006, please provide a detail description of the process that will be used for cleaning the drinking water system that will send filter backwash water and RO cleaning reject water to the STP. This should include MSDS sheets for any chemicals that will be used in this process.
2. NPDES permit must be issued before approval to operate can be issued.
3. As more facilities are added, over the next 8-10 years, the STP will be expanded to meet increased flows. Engineered plans must be submitted for review and approval by the Department prior to any additional construction to expand the STP.
4. As part of the operator training, expressed on M10.1 – 1.3(D), a written Operation and Maintenance Manual must be prepared for the wastewater treatment and collection system.

Upon completion of construction, before final approval to operate is granted, the following must be submitted:

1. A request for approval to operate.
2. Complete the attached "Certification of Construction" form. The owner, contractor and the engineer must sign this form.
3. As-built or record drawings prepared (signed and dated) by the engineer responsible for observing the construction of the project.
4. EPA NPDES discharge permit.

Approval of submitted plans is not approval of omissions or oversights by this office or noncompliance with any applicable regulation. The Department's construction approval does not guarantee correctness or the functionality of the design, or waive the owner's responsibility for continued compliance with state regulations. Within 90 days of completion of the record drawing and fulfillment of the above stated conditions, Operational Approval will be granted.

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195- 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. **Informal review requests** must be delivered to the Division Director, 555 Cordova, Anchorage, Alaska 99501, within 15 days of the permit decision. **Adjudicatory hearing requests** must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived.

If you have questions please contact me at 451-2177 or by e-mail at bill_smyth@dec.state.as.us.

Sincerely,

William J. Smyth

William J. Smyth
Environmental Engineering Associate

Enclosure: Certification of Construction
Construction and Operation Certificate

cc: Jackson Fox/USKH
Steve Leonard, Vice President & General Manager

WS/ (g \water\wq\plan review\letters\2006\Denali Canyon Lodge - CCA.doc)

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CONSTRUCTION AND OPERATION CERTIFICATE
FOR
DOMESTIC WASTEWATER DISPOSAL SYSTEMS

A. APPROVAL TO CONSTRUCT

Plans for the construction or modification of **Denali Canyon Lodge – Phase 1**
Approximately 16,000 GPD STP (Expandable)
8" HDPE Gravity Sewer – 339 LF
12" HDPE Gravity Sewer – 214 LF
6" HDPE Effluent Discharge – approximately 1,100 LF
domestic wastewater disposal system, located in **Denali Park, Alaska**, submitted in accordance with 18 AAC 72.200 through 18 AAC 72.235 by **Dean Syta, P.E.** have been reviewed and are

☐ **approved as submitted** ☒ **conditionally approved (see attached conditions)**

(Reviewing Engineer)	Environmental Engineering Associate (Title)	1/25/2006 (Date of Approval)

If applicant fails to construct, alter, install, or modify the system within two years of the date of approval to construct, approval is void, and plans must be resubmitted for Department review and approval.

B. APPROVED CHANGE ORDERS

Change (contract order number or descriptive reference)

(Reviewing Engineer)	(Title)	(Date of Approval)

C. APPROVAL TO OPERATE

The **"Interim Approval to Operate"** section must be completed and signed by the Department before this domestic wastewater disposal system is made available for use.

Interim Approval to Operate:

The construction of _____ domestic wastewater disposal system was completed on _____. The system is hereby granted ***INTERIM APPROVAL TO OPERATE*** for 90 days following the completion date. It is illegal to operate the domestic wastewater disposal system beyond 90 days without **Final Approval to Operate** from the Department.

(Reviewing Engineer)	(Title)	(Date of Approval)

Final Approval to Operate:

Record drawings and other documents submitted to the Department, or an inspection by the Department, has confirmed that the domestic wastewater disposal system was constructed in substantial conformance with the approved plans. The system is hereby granted ***FINAL APPROVAL TO OPERATE***.

(Reviewing Engineer)	(Title)	(Date of Approval)