Application No. 77492

THE STATE OF NEVADA

APPLICATION TO APPROPRIATE WATER

Name of Applicant:	**HAWTHORNE GEOTHERMAL, LLC**
Source:	**UNDERGROUND**
Basin:	**WALKER LAKE VALLEY-WHISKEY FLAT-HAWTHORNE SUBAREA**
Manner of Use:	**INDUSTRIAL**
Period of Use:	**JANUARY 1ST THROUGH DECEMBER 31ST**
Priority Date:	**10/15/2008**

****

DENIAL OF STATE ENGINEER

This application is hereby denied on the grounds that there is no unappropriated water at the proposed source in quantities available to support the applications and its approval would conflict with existing water rights and would threaten to prove detrimental to the public interest.

IN TESTIMONY WHEREOF, I, JASON KING, P.E.,

State Engineer of Nevada, have hereunto set my hand and the seal of my office, this 27th day of April, A.D. 2012

J. King P.E.

State Engineer

Application No. 77492

APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF NEVADA

THIS SPACE FOR OFFICE USE ONLY

Date of filing in State Engineer's Office OCT 1 5 2008

Returned to applicant for correction _____

Corrected application filed _____ Map filed OCT 1 5 2008

The applicant Hawthorne Geothermal, LLC

730 Sandhill Road, Suite 250 (Street Address or P.O. Box) of Reno (City or Town)

NV 89521 (State and Zip Code) hereby make(s) application for permission to appropriate the public waters of the State of Nevada, as hereinafter stated. (If applicant is a corporation, give date and place of incorporation; if a copartnership or association give names of members.)

Foreign Limited Liability Co. in Deleware; File Date: 8/14/08

1. The source of water is Underground (Name of stream, lake, underground, spring or other sources.)
2. The amount of water applied for is 3.34 cfs ~~N.T.E. 4,585 afa~~ second feet. (One second foot equals 448.83 gallons per minute) 10/21/2008 JCT
   (a) If stored in reservoir give number of acre-feet _____
3. The water to be used for Industrial (Irrigation, power, mining, commercial, domestic or other use. Must limit to one major use)
4. If use is for:
   (a) Irrigation, state number of acres to be irrigated _____
   (b) Stockwater, state number and kind of animals _____
   (c) Other use (describe fully in No. 12) _____
   (d) Power:
      (1) Horsepower developed _____
      (2) Point of return of water to stream _____

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110C-M1

5. The water is to be diverted from its source at the following point: (Describe as being within a 40-acre subdivision of public survey, and by course and distance to a found section corner. If on unsurveyed land, it should be so stated.)

NE¼ NE¼ Section 18, T.5N., R.31E. M.D.B.&M or at a point which from which the SW Cor. of said Section 18 bears S. 45° 29' 19" W. a distance of 6,608.66 feet. (Well #1)

6. Place of use: (Describe by legal subdivision. If on unsurveyed land, it should be so stated.)

See Attachment "A"

7. Use will begin about January 1 (Month and Day) and end about December 31 (Month and Day) of each year.

8. Description of proposed works. (Under the provisions of NRS 535.010 you may be required to submit plans and specifications of your diversion or storage works.) (State manner in which water is to be diverted, i.e. diversion structure, ditches and flumes, drilled well with pump and motor, etc.)

Proposed wells, pumps, storage tanks and distribution system

9. Estimated cost of works: $130 Million

10. Estimated time required to construct works: Three Years
(If well completed, describe works.)

11. Estimated time required to complete the application of water to beneficial use: Five years

12. Provide a detailed description of the proposed project and its water usage (use attachments if necessary):
(Failure to provide a detailed description may cause a delay in processing.)

See Attachment "B" & tables for cooling tower water demand calculations & justification. Water rights are requested under NRS 534.120(2) as a preferred use & renewable energy under NRS 701.080. Hawthorne Geothermal is requesting a total combined duty not to exceed 4,585 afa to be developed from a combination of up to four wells shown on the supporting map as wells #1-4.

13. Miscellaneous remarks:

See Attachment "C" for further information.

chris@gbis.com
E-mail Address

(775) 323-1804
Phone No.

Chris C. Mahannah, PE, Agent
Type or print name clearly

By
Signature, applicant or agent

Mahannah & Associates, LLC
Company Name

P.O. Box 2494
Street Address or P.O. Box

Reno, NV 89505
City, State, Zip Code

APPLICATION MUST BE SIGNED BY THE APPLICANT OR AGENT

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$250 FILING FEE AND SUPPORTING MAP MUST ACCOMPANY APPLICATION

Revised 11-07

ATTACHMENT "A"

HAWTHORNE GEOTHERMAL, LLC

PROPOSED PLACE OF USE

¼ ¼	Section	Twn	Rng
E2	12	5N	30E
E2, SENW, E2SW	13	5N	30E
ALL	24	5N	30E
ALL	25	5N	30E
E2E2	26	5N	30E
ALL	16	5N	31E
ALL	17	5N	31E
ALL	18	5N	31E
ALL	19	5N	31E
ALL	20	5N	31E
ALL	21	5N	31E
ALL	29	5N	31E
ALL	30	5N	31E

This place of use is consistent with the legal description shown under USDOI BLM Geothermal lease boundaries under Serial Numbers: NVN85710 & NVN85711 effective September 1, 2008.

ATTACHMENT "B"

The Whiskey Flat Project will consist of seven geothermal powered turbine & generator sets with associated facilities producing a net of 42 megawatts. The supporting calculations (see attached tables) detail the water requirements for cooling one turbine unit in three scenarios: average, winter and summer. Annual consumption on the average will be 4,585 acre-feet.

ATTACHMENT "C"

Renewable Portfolio Standard: In 1997 Nevada passed a Renewable Portfolio Standard as part of their 1997 Electric Restructuring Legislation (AB 366). It required any electric providers in the state to acquire actual renewable electric generation or purchase renewable energy credits so that each utility had 1 percent of total consumption in renewables. On June 8, 2001, Nevada Governor Kenny Guinn signed SB 372, at the time the country's most aggressive renewable portfolio standard. In June 2005, the Nevada legislature passed a bill during a special legislative session that modified the Nevada RPS (Assembly Bill 03). The bill extends the deadline and raised the requirements of the RPS to 20 percent of sales by 2015. The Hawthorne Geothermal Whiskey Flat Project will fulfill a portion of the State mandated RPS.

State and County Economic Benefit: The Whiskey Flat project will bring significant economic benefit to the State and Mineral County. Development and construction of the project will create many temporary jobs during the next 1.5 years and plant operations will require 15+ permanent fulltime skilled employees. Construction and operation will increase sales tax revenues and the project will be subject to net proceeds of mines and property taxes. Additional, under new federal legislation the State and County will receive 50% and 25 % respectively of royalties collected from inclusion of federal leases in the participating area of the geothermal resource. The plant and attendant transmission facilities are easily accessible and supported from existing County infrastructure and will not require significant additions to County resources.

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.... Cooling Tower Performance ..... 10/3/2008 4:21:55 PM

*** RUN IDENTIFICATION ***

Project Name	SSG annual operation
System	Binary single unit
Run Number	

*** COOLING TOWER DESIGN INPUTS ***

Atmos Press (psia)	12
Inlet Air Wet Bulb Temp (F)	41
Inlet Air Dry Bulb Temp (F)	51
Hot Water Temp (F)	85
Approach = TCold-Twb (F)	29
Liquid/Gas Ratio (lb/lb)	1
Circulating Water Flow (gpm)	36903
Blowdown Cycles of Conc	3
Drift Loss (%)	.001
Makeup Water Temp (F)	60
Fan Total Press (inH2O)	0.5
Fan Efficency (%)	75

*** RESULTS, TOWER CALCULATIONS ***

Number Transf Units (KAV/L)	.68337
Cold Water Out Temp (F)	70.
Temp Rise = THot-TCold (F)	15.
Water Evap Rate (gpm)	406.09
Blowdown Rate (gpm)	202.68
Driftloss Rate (gpm)	.36903
Total Makeup Reqd (gpm)	609.14
Exit Air Temp Sat (F)	63.45
Heat Rejected (mmBtu/Hr)	276.77
Dry Air Flow (klb/HR)	18,452.
Enthalpy Air In (Btu/lb)	16.969
Enthalpy Air Out (Btu/lb)	31.969
Specific Vol Exit Air (cf/lb)	16.547
Sat Exit Air Flow (1000 cfm)	5,088.5
Approx Fan Power (hp)	533.72
Approx Pump Power (hp)	442.84

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*** RUN IDENTIFICATION ***

Project Name	SSG summer operation
System	Binary single unit
Run Number	

*** COOLING TOWER DESIGN INPUTS ***

Atmos Press (psia)	12
Inlet Air Wet Bulb Temp (F)	55
Inlet Air Dry Bulb Temp (F)	71
Hot Water Temp (F)	85
Approach = TCold-Twb (F)	15
Liquid/Gas Ratio (lb/lb)	1
Circulating Water Flow (gpm)	36903
Blowdown Cycles of Conc	3
Drift Loss (%)	.001
Makeup Water Temp (F)	60
Fan Total Press (inH2O)	0.5
Fan Efficency (%)	75

*** RESULTS, TOWER CALCULATIONS ***

Number Transf Units (KAV/L)	1.1143
Cold Water Out Temp (F)	70.
Temp Rise = THot-TCold (F)	15.
Water Evap Rate (gpm)	495.35
Blowdown Rate (gpm)	247.31
Driftloss Rate (gpm)	.36903
Total Makeup Reqd (gpm)	743.03
Exit Air Temp Sat (F)	72.332
Heat Rejected (mmBtu/Hr)	276.77
Dry Air Flow (klb/HR)	18,452.
Enthalpy Air In (Btu/lb)	25.374
Enthalpy Air Out (Btu/lb)	40.374
Specific Vol Exit Air (cf/lb)	16.977
Sat Exit Air Flow (1000 cfm)	5,220.9
Approx Fan Power (hp)	547.61
Approx Pump Power (hp)	442.84

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*** RUN IDENTIFICATION ***

Project Name	SSG winter operation
System	Binary single unit
Run Number	

*** COOLING TOWER DESIGN INPUTS ***

Atmos Press (psia)	12
Inlet Air Wet Bulb Temp (F)	26
Inlet Air Dry Bulb Temp (F)	33
Hot Water Temp (F)	85
Approach = TCold-Twb (F)	44
Liquid/Gas Ratio (lb/lb)	1
Circulating Water Flow (gpm)	36903
Blowdown Cycles of Conc	3
Drift Loss (%)	.001
Makeup Water Temp (F)	60
Fan Total Press (inH2O)	0.5
Fan Efficency (%)	75

*** RESULTS, TOWER CALCULATIONS ***

Number Transf Units (KAV/L)	.52024
Cold Water Out Temp (F)	70.
Temp Rise = THot-TCold (F)	15.
Water Evap Rate (gpm)	333.69
Blowdown Rate (gpm)	166.48
Driftloss Rate (gpm)	.36903
Total Makeup Reqd (gpm)	500.53
Exit Air Temp Sat (F)	54.524
Heat Rejected (mmBtu/Hr)	276.77
Dry Air Flow (klb/HR)	18,452.
Enthalpy Air In (Btu/lb)	10.124
Enthalpy Air Out (Btu/lb)	25.124
Specific Vol Exit Air (cf/lb)	16.155
Sat Exit Air Flow (1000 cfm)	4,968.2
Approx Fan Power (hp)	521.1
Approx Pump Power (hp)	442.84