



THE STATE  
of **ALASKA**  
GOVERNOR MICHAEL J. DUNLEAVY

## Department of Natural Resources

DIVISION OF MINING, LAND, & WATER  
Water Resources Section  
Northern Office

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Fairbanks, AK 99709-4699  
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### TEMPORARY WATER USE AUTHORIZATION TWUA F2019-023

**ISSUED:** April 29, 2019  
**EXPIRES:** December 31, 2023

Pebble Limited Partnership  
3201 C Street, Suite 505  
Anchorage, AK 99503

Dear Environmental Management,

**Re:** Water Withdrawal –Exploration Operation- APMA A6118 / TWUA F2019-021, TWUA F2019-022, and TWUA F2019-023

The Alaska Department of Natural Resources (ADNR) Water Resources Section, has completed the review of your above referenced APMA and/or Application for Temporary Use of Water TWUA F2019-023 to withdraw, divert, impound, and/or use water in support of mineral exploration activities as detailed in the applicable sections of the APMA submitted to the ADNR Mining Section or in the TWUA Application submitted to the ADNR Water Resources Section. Pursuant to AS 46.15 (Alaska Water Use Act), and 11 AAC 93.210 and 220 (Temporary water use/Procedure for temporary water use) as amended and the rules and regulations promulgated thereunder, permission is hereby granted to Pebble Limited Partnership, 3201 C Street, Suite 505, Anchorage, AK 99503 (hereinafter authorization holder), and to the authorization holder's contractor(s) to conduct water use activities as described herein and on any attachment hereto.

**Please note all of the conditions on this authorization. If changes to this project are proposed during its siting, construction or operation, please contact this office to determine if further review is necessary.**

#### Project Description

Water will be used in support of exploration drilling activities associated with the APMA A20196118 Pebble Project as described in the '*PEBBLE PROJECT 2019-2023 Narrative of Operations (APMA Block 31)*'. The applicant proposes to withdraw water from a total of 15 surface water sources for exploration drilling activities (11 stream reaches and 4 ponds). All sources of water being requested are surface water sources. TWUA F2019-021 application requests two different quantities of daily water use (72,000 gallons per day (gpd) from each of two (2) water sources and 36,000 gpd from each of three (3) water

sources). The water withdrawal quantities requested for TWUA F2019-022 and 023 (a total of 10 surface water sources) are all 36,000 gpd from each source. Maps depicting the water withdrawal locations including stream reaches, ponds, water source identifications, preliminary intake locations (as up to date as applicant was able to provide), and proposed drill sites will be included with the issued TWUA F2019-021, -022, and -023 authorizations.

### **Daily Duration and Months of Use**

Water use activities will be conducted up to 24 hours per day (or as otherwise limited by the maximum authorized gpd) from May 1, 2019 through December 31, 2023.

### **Quantity of Water to Be Used**

Exploration Activities (exploration drilling) for TWUA F2019-023: A per source maximum withdrawal of 36,000 gpd utilizing only one pump per source at a maximum pump withdrawal rate of 25-gpm (0.056 cfs) from water sources SFK-S103, NFK-P46, NFK-P21, NFK-P33, and SFK-P08 for up to 31 days per month.

**Note: It is further restricted that no more than three simultaneously operating 25-gpm water supply pumps may be utilized for any combination of the 15 authorized water sources under the temporary water use authorizations TWUA F2019-021, TWUA F2019-022 and TWUA F2019-023.**

**Legal Description of Water Sources. For preliminary water intake locations on the authorized sources, see the corresponding locations on the attached water source maps.**

1. The reach of an unnamed stream (SFK-S103) flowing from NW1/4 Section 34, Township 3 South, Range 36 West, Seward Meridian to NW1/4 Section 3, Township 4 South, Range 36 West, Seward Meridian.
2. An unnamed pond (NFK-P46) within SE1/4 Section 6 and N1/2 Section 7, Township 3 South, Range 35 West, Seward Meridian.
3. An unnamed pond (NFK-P21) within SW1/4 Section 8, Township 3 South, Range 35 West, Seward Meridian.
4. An unnamed pond (NFK-P33) within NE1/4SE1/4 Section 18 and NW1/4SW1/4 Section 17, Township 3 South, Range 35 West, Seward Meridian.
5. An unnamed pond (SFK-P08) within SE1/4NE1/4 Section 20, Township 3 South, Range 35 West, Seward Meridian.

### **Conditions of TWUA F2019-023**

1. This authorization does not authorize the authorization holder or contractor(s) to enter upon any lands until proper rights-of-way, easements, or permission documents from the appropriate landowner have been obtained.
2. Follow acceptable engineering standards in exercising the privilege granted herein.
3. Comply with all applicable laws, and any rules and/or regulations issued thereunder.
4. Except for claims or losses arising from negligence of the State, defend and indemnify the State, the State's agents, and the State's employees against and hold each of them harmless from any and all claims, demands, suits, loss, liability and expense, including attorney fees, for injury to or death of persons and damages to or loss of property arising out of or connected with the exercise of the privileges covered by this authorization.
5. Notify the Water Resources Section upon change of address.
6. The authorization holder is responsible for obtaining, maintaining, and complying with other permits/approvals (state, federal, or local) that may be required prior to beginning water withdrawal, diversion, impoundment and/or use, including but not limited to fish habitat permit(s) from the Alaska Department of Fish and Game (ADF&G), Habitat Division.
7. The authorization holder shall allow, at reasonable times, one or more authorized representatives of the Water Resources Section to inspect, on the same inspection trip or trips, any facilities, equipment, practices, or operations regulated or required under this authorization. Authorization holder shall provide and bear the cost of all transportation and associated expenses necessary to facilitate said inspection(s).
8. Failure to respond to a request for additional information during the term of the authorization may result in the termination of this authorization.
9. This authorization, or a copy thereof, shall be kept at the site of the authorized project described herein. The authorization holder is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project, and shall ensure that workers are familiar with the requirements and conditions of this authorization. For any activity, including but not limited to changing water intake locations, that significantly deviates from the approved project during its siting, construction, or operation, the authorization holder is required to contact the Water Resources Section and obtain written approval before beginning the activity.

10. The Water Resources Section may modify this authorization to include different limitations, expand monitoring requirements, evaluate impacts, or require restoration at the site.
11. Any false statements or representations, in any application, record, report, plan, or other document filed or required to be maintained under this authorization, may result in the termination of this authorization.
12. Pursuant to 11 AAC 93.220 (f), this authorization may be suspended or terminated by the Department of Natural Resources to protect the water rights of other persons or the public interest.
13. Except as otherwise specifically noted herein or by attachment hereto, only one authorized pump may be operated at a time from the same authorized source of water.
14. No damming or diversion of waters is permitted unless specifically authorized by the Alaska Department of Natural Resources and the Alaska Department of Fish and Game.
15. If cessation of water withdrawal from ponds or lakes is not sooner required by provisions of any applicable fish habitat permit issued by the Alaska Department of Fish and Game, Habitat Division, then authorization holder shall cease any further water withdrawal from an authorized pond or lake for the remainder of an authorized season or year when twenty-percent of the calculated pond or lake volume is withdrawn or the vertical water level drawdown in the pond or lake reaches one-foot, whichever limit occurs first. Pond or lake volumes shall be calculated by the authorization holder using one of the methods described on the attached Measuring Pond Area and Volume guidelines, which calculations and the measurements used to determine each calculation shall be submitted to the Alaska Department of Natural Resources, Water Resources Section prior to beginning water withdrawals from the authorized pond or lake from which water is to be withdrawn.
16. Adequate flow and water levels, as determined by the Alaska Department of Fish and Game, Habitat Division, must remain to support indigenous aquatic life and provide for the efficient passage and movement of fish if any are present. Except as otherwise specifically noted herein or by attachment hereto, issuance of this authorization does not give the authorization holder the right to block or dam a water course. Any water intake structures in fish bearing waters, including a screened enclosure, well-point, sump, or infiltration gallery, must be designed, operated, and maintained to prevent fish entrapment, entrainment, or injury at the maximum withdrawal rate, unless specifically exempted by the Alaska Department of Fish and Game, Habitat Division. Inspect the intake screen for damage (torn screen, crushed screen, screen separated from intake ends, etc.) after each use and prior to each deployment. Any damage must be repaired prior to use of the structure. The structure

must always conform to the original design specifications while in use. The suction hose at the water source take point must be clean and free from contamination.

17. Except as otherwise authorized or required herein, in-water activity to facilitate water withdrawal shall be limited to placement and removal of the intake structure only. No other in-water activities will occur to facilitate water withdrawal pursuant to this authorization. There shall be no wheeled, tracked, excavating, or other machinery or equipment (with the exception of the non-motorized screened intake box, stream flow measurement equipment, and necessary pond/lake area and volume measurement equipment) operated below the ordinary high water line to facilitate water withdrawal pursuant to this authorization. Except as otherwise authorized herein, water sources shall not be altered to facilitate water withdrawal or disturbed in any way. If banks, shores, or beds are inadvertently disturbed, excavated, compacted, or filled, they shall be immediately stabilized to prevent erosion and sedimentation of the water source. Any disturbed areas shall be recontoured and revegetated with native vegetation.
18. Any discharge shall comply with the Alaska Water Quality Standards (18 AAC 70). This may require the installation and maintenance of settling ponds or similar systems to reduce turbidity and settleable solids in the discharges. Water discharge (including runoff) shall not be discharged at a rate or location resulting in sedimentation, erosion, or other disruptions to the bed or banks of water bodies, causing water quality degradation.
19. Pumping operations shall be conducted in such a way as to prevent any petroleum products or hazardous substances from contaminating surface or ground water. Pumps shall not be fueled or serviced within 100 feet of a pond, lake, or stream unless the pumps are situated within a catch basin designed to contain any spills. Absorbent pads shall be readily available at the water withdrawal sites. Hazardous and non-hazardous spills must be reported to the Alaska Department of Environmental Conservation at 1-800-478-9300 per their Notification Requirements and to the Alaska Department of Natural Resources.
20. Drill holes shall not be drilled within 100 feet of a water body.
21. When conducting activities under this authorization, authorization holder shall adhere to the terms of the current State-approved Pebble Project Water Withdrawal Plan (see Revision 1 dated July 13, 2010 attached hereto) and any future amendments thereto, except as otherwise required by other conditions on this authorization.
22. The placement of exploration and pumping equipment shall not unnecessarily hinder public access, if any, to the above-described sources.
23. Per 11 AAC 05.260(e), an annual administrative service fee shall be assessed on this authorization.

This Temporary Water Use Authorization is issued pursuant to 11 AAC 93.220. No water right or priority is established by a temporary water use authorization issued pursuant to 11 AAC 93.220. Water so used is subject to appropriation by others.

Pursuant to 11 AAC 93.210 (b), authorized temporary water use is subject to amendment, modification, or revocation by the Department of Natural Resources if the Department of Natural Resources determines that an amendment, modification, or revocation is necessary to supply water to lawful appropriators of record or to protect the public interest.

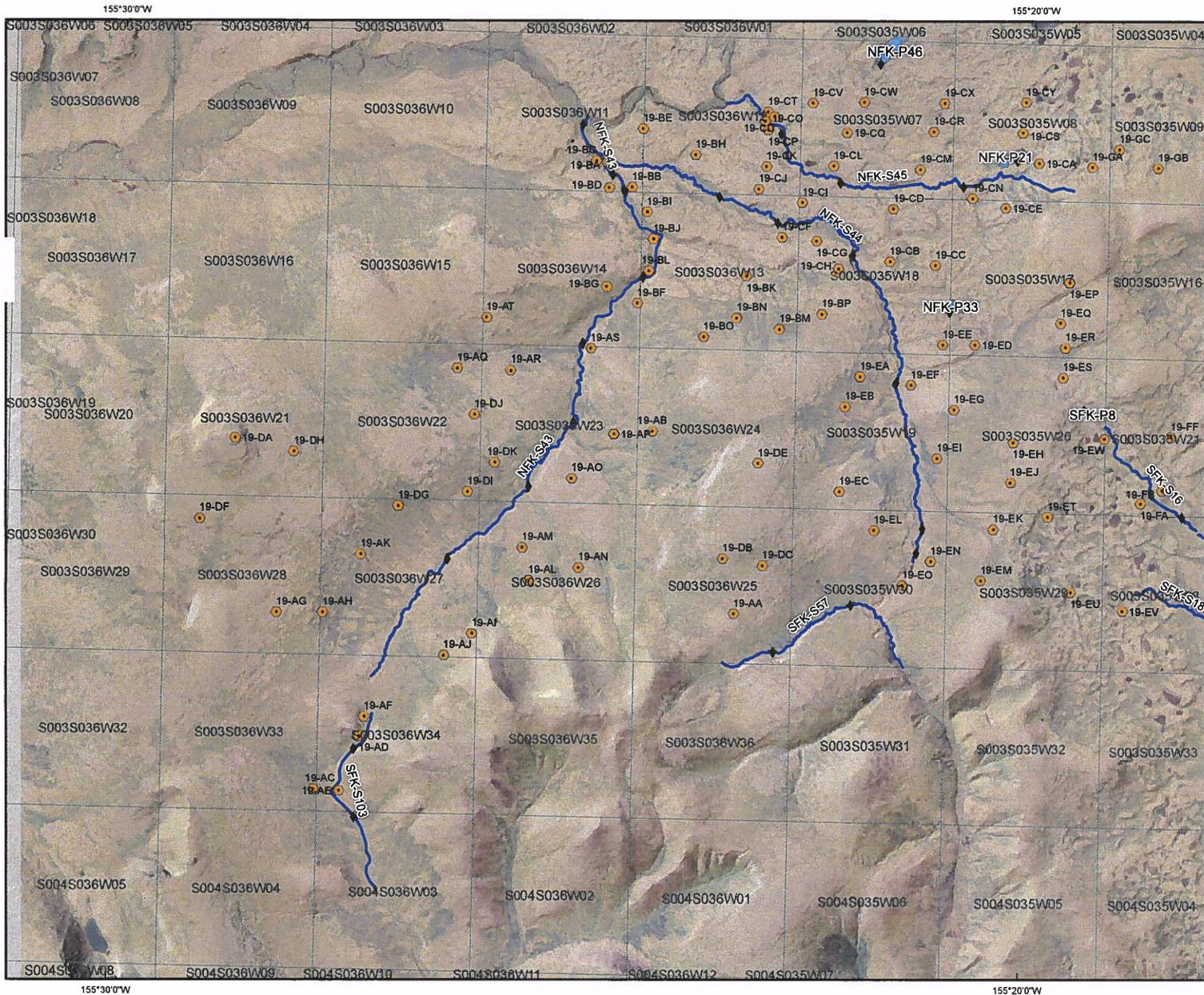
Any questions or concerns about this temporary water use authorization may be directed to Acting Water Resources Section Chief, Mike Walton at 907-269-8609 or by email at michael.walton@alaska.gov.

Attachments: Figure 11 Proposed Water Sources – West (dated 1/22/2019)  
Figure 12 Proposed Water Sources – East (dated 12/30/2018)

Approved:  \_\_\_\_\_

Mike Walton, Acting Water Resources Section Chief, DML&W, ADNDR

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of "issuance" of this decision, as defined in 11 AAC 02.040(c) and (d), and may be mailed or delivered to the Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska, 99501; faxed to 907-269-8918, or sent by electronic mail to [dnr.appeals@alaska.gov](mailto:dnr.appeals@alaska.gov). This decision takes effect immediately. If no appeal is filed by the appeal deadline, this decision becomes a final administrative order and decision of the department on the 31<sup>st</sup> calendar day after issuance. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources. Under 11 AAC 02.030, appeals and requests for reconsideration filed under 11 AAC 02 must be accompanied by the fee established in 11 AAC 05.160(d)(1)(F), which has been set at \$200 under the provisions of 11 AAC 05.160 (a) and (b).



-  Water Sources: Streams
-  Water Sources: Ponds
-  Preliminary Intakes
-  Proposed Drill Sites

**TWUA F2019-021 through F2019-023  
Water Source Maps Page 1**

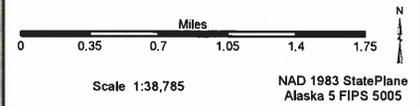


Figure:  
**11**

**Proposed Water Sources -  
West**

File: 11 Water_Sources_WEST	Date: 1/22/2019
Revision:	Author: TH/PLP

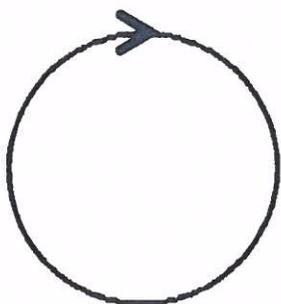
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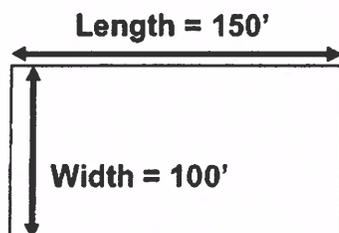
## Measuring Pond Area and Volume

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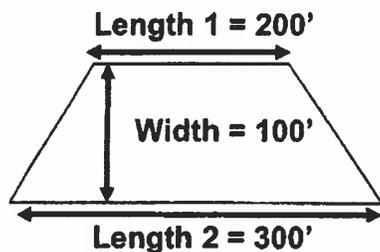
Visual estimation of pond area usually results in an overestimate of the true pond surface area. Pond area and water volume should be calculated based on some simple measurements. The effort necessary to estimate pond surface area is directly related to your pond's shape and uniformity. The simplest method—using basic equations for common shapes—can be applied if your pond closely resembles a circle, square, rectangle, or trapezoid in shape.



**Circular pond shape** can be estimated by measuring the distance around the pond shoreline in feet. Square the shoreline distance and divide by 547,390 to get the pond area in acres. For example, a pond that is 450 feet around the shoreline would have an area =  $(450 \text{ feet})^2 / 547,390$  or 0.37 acres.



**Rectangular or square shape** area is estimated by simply measuring the length and width of the pond sides in feet. Multiply the length times the width to get the square feet of surface area. This value can be converted to acres by dividing by 43,560  $\text{ft}^2/\text{acre}$ . So, a pond that measures 150 feet long and 100 feet wide would have an area = 150 feet X 100 feet = 15,000  $\text{ft}^2$  or 0.34 acres.

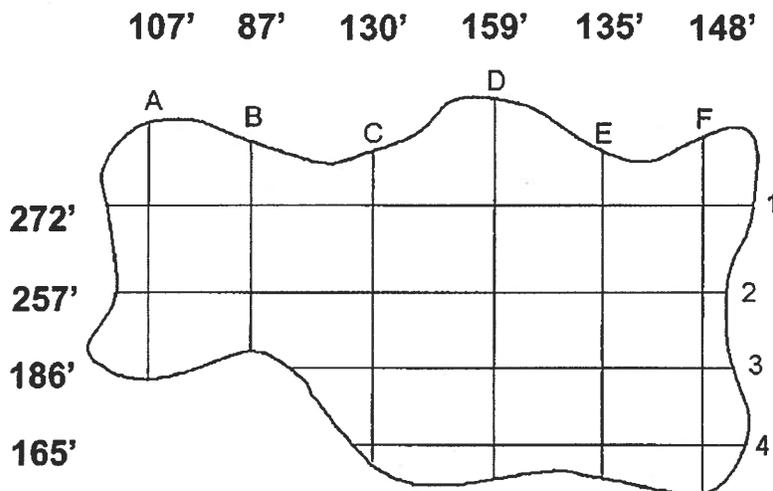


**Trapezoid**—Many ponds may be roughly rectangular in shape, but one side may be significantly shorter than the other. The area of this shape is best estimated using a formula for a trapezoid by taking the average length of the two unequal sides and multiplying by the width of the pond. For example, a pond that is 200 feet long on one side, 300 feet long on the opposite side, and 100 feet wide would have an area = 250 feet X 100 feet = 25,000  $\text{ft}^2$  or 0.57 acres.

Many ponds have an irregular shape where the surface area cannot be adequately estimated using the formulas for common geometric shapes. Three methods can be used in this case depending on the degree of accuracy you desire. The three methods are described in order from least to most accurate. You should strive to use the most accurate method that you can reasonably accomplish.

**(1) Average Length and Width Method:** Take numerous measurements to determine the average length and average width. Make certain you get both the longest and shortest distances in calculating the average length, and the widest and narrowest distances for determining the average width. The more measurements that you make, the more accurate your result will be. The area is then calculated by multiplying the average width times the average length. If you do your measurements in feet, your result will be in square feet. You can convert square feet into acres by dividing it by 43,560 ft<sup>2</sup> per acre. Depending on the number of width and length measurements made, the final area will probably be within about ±20 percent of the actual pond surface area.

In the example below, the area of an odd-shaped pond is measured by taking six widths (Lines A–F) and four lengths (Lines 1–4).



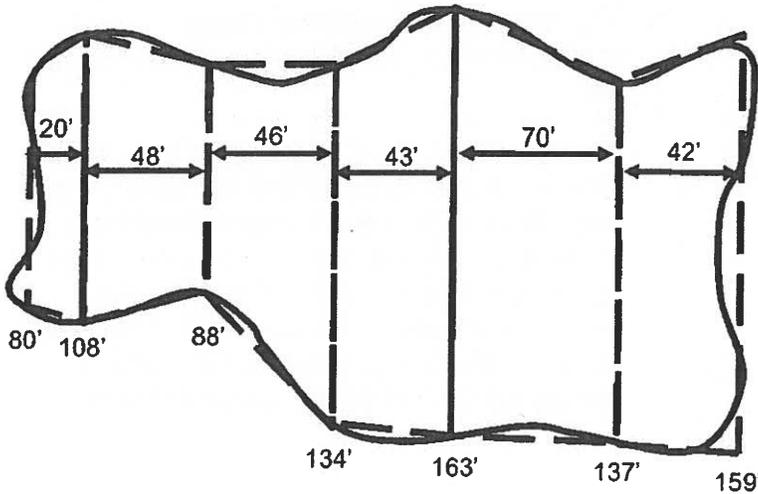
The average width is  $(107' + 87' + 130' + 159' + 135' + 148') / 6 = 128$  feet

The average length is  $(272' + 257' + 186' + 165') / 4 = 220$  feet

Therefore, the area of the pond can be estimated by multiplying the average width and length.

Surface area = 128 feet x 220 feet = 28,160 ft<sup>2</sup> or 0.65 acres

**(2) Multiple Trapezoids Method:** A more accurate method to determine the area of an odd-shaped pond is to divide the pond into multiple trapezoid shapes. A new trapezoid is defined anywhere the shoreline makes a rapid change in direction. The illustration on the opposite page shows the same pond from above divided into seven trapezoids (shown in dotted lines). Note that instead of horizontal transects, this method requires measurement of the distance between each vertical transect. This would be most easily done during winter when the pond is frozen and the transects could be easily laid out and measured. This method requires more measurement and effort, but the final area estimate will probably be within ±5 to 10 percent of the actual pond area.



The individual trapezoid areas can be calculated from left to right as:

$$\text{Area 1} = (80' + 108' / 2) \times 20' = 1,880 \text{ ft}^2$$

$$\text{Area 2} = (108' + 88' / 2) \times 48' = 4,704 \text{ ft}^2$$

$$\text{Area 3} = (88' + 134' / 2) \times 46' = 5,106 \text{ ft}^2$$

$$\text{Area 4} = (134' + 163' / 2) \times 43' = 6,386 \text{ ft}^2$$

$$\text{Area 5} = (163' + 137' / 2) \times 70' = 10,500 \text{ ft}^2$$

$$\text{Area 6} = (137' + 159' / 2) \times 42' = 6,216 \text{ ft}^2$$

Summing the trapezoid areas gives a total pond area of 34,792 ft<sup>2</sup> or about 0.80 acres.

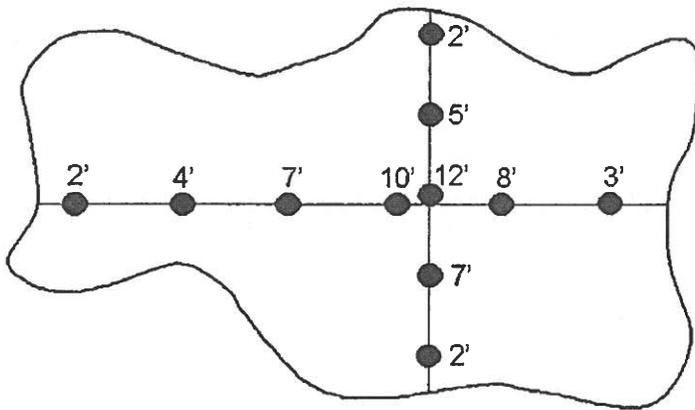
**(3) Handheld Global Positioning Systems (GPS):** Handheld GPS systems have become quite common over the past five years as they have become more affordable. They are now routinely used for outdoor recreation (hunting, hiking, camping, etc.) and navigation. GPS units allow you to determine your exact location on earth using multiple satellites in space. Various locations, or “waypoints,” can be stored in the GPS unit for use with mapping software that either accompanies the unit or can be purchased separately. The software can connect the waypoints and calculate the area inside the resulting shape.

A pond surface area could be estimated by walking the perimeter of the pond and stopping at various waypoint locations along the pond shoreline. If waypoints are stored at each location where the pond shape changes, the resulting area will be extremely accurate, probably within 1 percent of the actual pond area. Even if you do not own a GPS system, friends or family members that enjoy outdoor recreation may own a unit that could be used to estimate your pond surface area.

### Pond Depth and Volume Measurement

The volume of water in ponds is often expressed in units called “acre-feet.” An acre-foot represents one surface acre that is one foot deep. To calculate the acre-feet of water in a pond, you’ll need the surface area in acres as calculated above and an average depth of water in the pond. For a typical bowl-shaped pond the average depth can be estimated as 0.4 times the maximum depth. So, a pond with a maximum depth of 12 feet would have an average depth of about 4.8 feet.

A more accurate method for calculating average depth is to make many measurements and calculate an average. This is most often done by measuring the pond depth along two transects—one along the width and one along the length. Make sure to pick transects that represent the shallow and deep portions of the pond. Depths can be measured easily from a canoe or boat using a weight and a string marked in feet. The more depth measures that you make, the more accurate your final average will be. In the example shown on the next page, pond depths were taken at six locations across the pond length and five locations across the pond width. The average pond depth can be calculated as the average of all of these measurements.



The average of the eleven depth measurements made in this example is 5.64 feet.

The volume of water in the pond (in acre-feet) is calculated by simply multiplying the pond area (0.80 acres using the trapezoid method) by the average pond depth in feet (5.64 feet). Thus, this pond has about 4.5 acre-feet of water. One acre-foot of water is equal to 325,851 gallons, so this pond is storing about 1.47 million gallons of water.

An even better way to calculate an average pond depth is to divide the pond into numerous (at least four) sub-areas (much like we did in the trapezoid method). Take at least one depth within each of the sub-areas and use these to calculate the overall average pond depth. This method is especially good if the pond bottom is irregular rather than bowl shaped.

**A Final Word**

Using the methods described in this fact sheet will allow you to calculate the surface area and volume of water in your pond with reasonable accuracy.

# **Pebble Project Water Withdrawal Plan Revision 1**

July 13, 2010

## **Background**

The State of Alaska has the responsibility to ensure its lands and waters are used in a manner to provide the maximum benefit to Alaskans while protecting Alaska's lands and waters from abusive uses. The Department of Natural Resources (ADNR) has the responsibility under AS 46.15 to ensure water use, whether through providing water rights or Temporary Water Use Permits (TWUPs), is consistent with the common good of the people and other natural resources. For the Pebble Limited Partnership's (PLP) drilling program, which requires the use of water, PLP must apply for and receive permission from the ADNR Water Resources Section for TWUPs that identify specific sources of water that may be used, the amount of water that may be used each day, and the total amount of water that may be used each year.

In addition to receiving the necessary TWUPs, under AS 16.05 PLP must also receive Fish Habitat Permits from the Alaska Department of Fish and Game (ADFG) Habitat Division when fish may be present. These Fish Habitat Permits do not authorize water withdrawals. Rather, they stipulate conditions under which water may be withdrawn from a permitted water source (as identified in a TWUP) that may support fish populations. These conditions include screened water intakes of a specific mesh size to prevent removal of fish from the waterbody, and specific water velocities to prevent entrainment of fish against the water intake structure.

## **Purpose**

The purpose of this plan is to ensure all water sources used in PLP's field exploration program that require an authorization have been permitted by the ADNR Water Resources Section and the ADFG Habitat Division.

The plan consists of four parts – procedures for:

- I. Obtaining Temporary Water Use Permits and Fish Habitat Permits
- II. Taking Water
- III. Reporting
- IV. Coordination and Training of Field Staff for Adherence to TWUP and Fish Habitat Permit Stipulations.

In practice, this plan will be modified on a regular basis to address changing conditions and to improve efficiency as experience dictates.

## **I. Obtaining Temporary Water Use Permits and Fish Habitat Permits**

Under 11 AAC 93.220 PLP will submit to ADNR's Water Resources Section one or more completed application(s) for temporary use of water listing the previously drilled artesian holes and lakes, ponds, or stream segments from which it plans to take water.

And, under AS 16.05, PLP will submit to ADF&G's Habitat Division one or more completed application(s) for Fish Habitat Permits for protection of fish resources that may be present in the waters associated with the TWUPs applied for above.

In addition to the standard application form(s), PLP also will submit:

1. The following information for each prospective water source in tabular format similar to that shown below.

**Example Table. Requested Water Sources.**

Water Source		Township Range Section <sup>2</sup>	Drill Hole, Pond or Lake Coordinates <sup>3</sup>		Upstream Coordinates		Downstream Coordinates	
Type	Number		Latitude	Longitude	Latitude	Longitude	Latitude	Longitude
Drill hole	SFK-D6352 <sup>1</sup>	T38N,R34W, SE1/4 NW1/4 Sec.23	59.917 N	155.255 W	----	----	----	----
Lake	NFK-L6	T38N,R35W, NW1/4 NE1/4 Sec.34	59.899 N	155.267 W	----	----	----	----
Pond	SFK-P12	T38N,R35W, NE1/4 SE1/4 Sec.17	59.905 N	155.242 W	----	----	----	----
Stream	UTC-S10	T38N,R65W, NE1/4 NW1/4 Sec.6	----	----	59.920 N	155.255 W	59.879 N	155.227 W

<sup>1</sup> P – Pond D - Drill hole L – Lake S - Stream

<sup>2</sup> To ¼ ¼ section

<sup>3</sup> Decimal degrees using WGS 1984

2. An orthophoto map figure, with both township/range/section and latitude/longitude grids, showing the location of each already drilled artesian hole and lake, pond, or stream segment for which a TWUP is requested.

## II. Taking Water

This second part of the plan is based on the water sources themselves having been approved as described above in Part I, and the appropriate TWUPs and Fish Habitat Permits having been issued.

### Pre-Water Take Actions

1. Once planned drill hole locations are identified, the Site Data Manager or designee will determine on a GIS base whether a permitted water source is reasonably proximate and note the tentative GIS latitude/longitude map coordinates of that location.

2. The Site Field Operations Coordinator & Surveyor will check that the GIS map coordinates for a planned drill hole, and the planned water take location, are manageable and achievable in the field by going to each planned drill hole and associated water take location.
3. At the preferred water take location, the Site Field Operations Coordinator & Surveyor will:
  - a. Erect a clearly visible rebar/stake/pipe (ID Post), clearly labeled with the water take point number, such that the drill crew will know where the water intake structure is to be placed.
  - b. Record the latitude/longitude coordinates using a hand-held GPS unit.
4. The Site Field Operations Coordinator & Surveyor will report to the Manager of Technical Operations in Iliamna to confirm the drill hole and water take locations meet permit requirements.

#### **Water Take Actions**

1. A copy of the relevant TWUP and Fish Habitat Permit for each water take location will be kept in PLP's Iliamna office when conducting the permitted water take activity.
2. Water will be taken only from a source that is marked by rebar/stake/pipe, clearly labeled with the water take point number signifying the location is an approved water take source.
3. No activities will occur in the stream, pond, or lake except for placement, adjustment, inspection and removal of the hose and screened pump intake enclosure.
4. There shall be no wheeled, tracked, excavating or other machinery or equipment (excepting the non-motorized screened intake structure) operated below the ordinary high water line.
5. Waterbodies shall not be altered to facilitate water appropriation or disturbed in any way. If banks, shores, or beds are inadvertently disturbed, excavated, compacted, or filled, they shall be immediately stabilized to prevent erosion and sedimentation of the waterbody which could occur both during and after operations. Any disturbed areas shall be recountoured and revegetated.
6. Adequate flow must remain to support indigenous aquatic life and the water course must not be blocked to the passage of fish.
7. Gas fueled pumps and related equipment will not be fueled or serviced within 100 ft of a water body unless the pumps are situated within a catch basin designed to contain any spills.
8. The suction hose at the water extraction site must be clean and free from contamination at all times, and should be in water of sufficient depth so that stream sediments are not disturbed during the extraction process.

9. Each water take point in a water source containing fish at that location must be surrounded by a screened intake enclosure that meets the screen specifications contained in that source's Fish Habitat Permit.
10. Before and after each use, and prior to deployment:
  - a. The screened pump intake enclosure must be inspected for damage (torn, crushed, separated from intake ends, etc.).
  - b. Any damage to the screened pump intake enclosure must be repaired prior to use.
  - c. The screened pump intake enclosure must always conform, as a minimum, to the original design specifications while in use.
11. Unless the permit specifically states otherwise, water may be withdrawn at a rate of up to 25 gallons per minute (gpm).
12. The water will be used for exploration operations.
13. If any activity would significantly deviate from this Water Withdrawal Plan, the ADNR Water Resources and Mining Sections and ADFG Habitat Division must be notified and written approval received from the Water Section before beginning the activity.
14. Photo documentation of the installed water intake equipment will be made as follows:
  - a. Close up of the installed water intake equipment
  - b. Wider view of water intake equipment relative to the water source and surrounding area.
15. If during the drilling of a drill hole the original water source must be moved, PLP will provide notice, as described in Section III, for a changed, permitted water source before continuing to drill.

#### **Post-Water Take Actions**

1. Water intake equipment will be removed from the water source.
2. Photo documentation of the site after removal of the water intake equipment as follows:
  - a. Close up of the location of the removed water intake equipment
  - b. Wider view of water take location relative to the water source and surrounding area.

#### **III. Reporting**

With respect to the specific water take locations it proposes to use in support of its exploration drilling program, PLP will provide ADNR and ADFG with written and photographic information concerning the:

- Location of planned water take points
- Location of actual water take points
- Confirmation water take has been completed

At least 30 days before the drilling season commences, PLP will submit by email to the ADNR Water Resources and Mining Sections and ADFG Habitat Division information identifying the planned approximate drill hole locations and the associated permitted water source(s). Subject to the number of drill holes per Work Block contained in the Plan of Operations authorized under a Miscellaneous Land Use Permit from ADNR, if a planned drill hole location for which the pre-season notice was given is to be changed by 1200 feet or more or if a new drill hole location is planned that was not identified in the pre-season 30-day notice, then at least 5 business days before drilling at that location PLP must submit by email to the ADNR Water Resources and Mining Sections and ADFG Habitat Division notice of such change, which notice must include information identifying the approximate drill hole location and the associated permitted water source(s) as described in paragraphs 1 and 2, below.

Notice of any change to a drill hole location for which 30-day notice has been given as provided above, which change is greater than 600 feet and less than 1200 feet, or any change to the identified permitted water source(s) for any drill hole location, must be submitted by email to the ADNR Water Resources and Mining Sections and ADFG Habitat Division at least 1 business day prior to drilling and contain the information as described in paragraphs 1 and 2, below.

Beginning on the first of the month after the pre-season notice above is provided, and continuing on the first of each month thereafter for the duration of the drilling season, PLP will submit to the ADNR Water Resources and Mining Sections and ADFG Habitat Division reports containing the information required in paragraphs 1 and 2, below.

NOTE: The information provided in the example drill hole table and the example water take locations table may be combined into a single table. All tables will be dated with the date of submission.

## 1. Drill Hole Locations

- a. **Drill Hole Table** – The information in this table, on a monthly basis, will cumulatively display information about all completed, active and planned drill holes, respectively, during the course of the annual drilling program. Note that planned drill holes have a pre-drill number (EX...) until drilling begins, at which time they take the next chronological drill hole number (09...).

Information in the three rows in the drill hole table below represent, respectively, a:

- Completed drill hole
- Active drill hole
- Planned drill hole

**Example Table. Completed, Active and Planned Drill Holes**

Drill Hole			Date Drilling		Township Range Section <sup>2</sup>	Coordinates <sup>3</sup>	
Pre-Drill #	Number	Status <sup>1</sup>	Began	Ended		Latitude	Longitude
EX09-D	09487	C	6/4/09	6/23/09	T38N,R35W, NE1/4 SW1/4 Sec.17	59.879 N	155.227 W
EX09-E	09488	A	6/06/09	N/A <sup>4</sup>	T38N,R35W, NW1/4 SE1/4 Sec.34	59.899 N	155.267 W
EX09-F <sup>5</sup>	N/A	P	N/A	N/A	T38N,R34W, SW1/4 NE1/4 Sec.32	59.920 N	155.255 W

<sup>1</sup> C = Completed, A = Active, P = Planned

<sup>2</sup> To ¼ ¼ section

<sup>3</sup> Decimal degrees using WGS 1984

<sup>4</sup> Not applicable as of reporting date

<sup>5</sup> Planned locations for drill holes with a pre-drill number are based on GIS mapping only and have not been field located yet.

- b. **Drill Hole Orthophoto Map Figure** -- This map figure, on a monthly basis, will cumulatively display locations of all completed, active and planned drill holes during the course of the annual drilling program.

## 2. Water Take Points

- a. **Water Take Table** -- The information in this table, on a monthly basis, will cumulatively display information about all completed, active and planned water take points, respectively, during the course of the annual drilling program. Note that planned water take points have a pre-drill number (EX...-W [water]) until drilling begins, at which time they take the next chronological drill hole number (09...-W).

Information in the three rows in the water take location table below represent, respectively, a:

- Completed water take point
- Active water take point
- Planned water take point

- b. **Water Take Point Orthophoto Map Figure** -- This map figure, on a monthly basis, will cumulatively display locations of all completed, active and planned water take points, respectively, during the course of the annual drilling program.

- c. **Water Take Point Site Photos** -- These photos will document installation and removal of water intake equipment following:
  - i. Installation:
    - 1. Close up of the installed water intake equipment
    - 2. Wider view of water intake equipment relative to the water source and surrounding area
  - ii. Removal
    - 1. Close up of the location from which the water intake equipment was removed
    - 2. Wider view of water take location relative to the water source and surrounding area

**Example Table. Completed, Active and Planned Water Take Locations**

Water Take Point			Date Intake Equipment/Operation				TWUP #	Fish Habitat Permit Number	Water Source Number	Township Range Section <sup>2</sup>	Coordinates <sup>3</sup>	
Pre-Drill #	Number	Status <sup>1</sup>	Installed	Began	Ended	Removed					Latitude	Longitude
EX09-D-W	09487-W	C	6/3/09	6/4/09	6/23/09	6/24/09	A2010-123	FH-09-II-0106	SFK-D6352 <sup>4</sup>	T38N,R35W, NE1/4 SW1/4 Sec.17	59.879 N	155.227 W
EX09-E-W	09488-W	A	6/6/09	6/6/09	N/A <sup>5</sup>	N/A	A2010-125	FH-09-II-0107	NFK-L6	T38N,R35W, NW1/4 SE1/4 Sec.34	59.899 N	155.267 W
EX09-F-W <sup>6</sup>	N/A	P	N/A	N/A	N/A	N/A	A2010-125	FH-09-II-0108	UTC-S10	T38N,R34W, SW1/4 NE1/4 Sec.32	59.920 N	155.255 W

<sup>1</sup> C = Completed, A = Active, P = Planned

<sup>2</sup> To ¼ ¼ section

<sup>3</sup> Decimal degrees using WGS 1984

<sup>4</sup> P – Pond D - Drill hole L – Lake S - Stream

<sup>5</sup> Not applicable as of reporting date

<sup>6</sup> Planned locations for water take locations with a pre-drill number are based on GIS mapping only and have not been field located yet.

#### **IV. Coordination and Training of Field Staff for Adherence to TWUP and Fish Habitat Permit Stipulations**

Prior to the commencement of drilling operations, the Site Field Operations Coordinator & Surveyor will be informed by the Manager of Technical Operations of all stipulations and guidelines necessary to stay in compliance with the drilling, temporary water use permits, and Fish Habitat Permits required for drilling.

A training program will be developed and supervised by the Site Environmental Compliance Officer. The program will cover all stipulations found in both the TWUPs and Fish Habitat Permits, and procedures and timelines for application and submission of water use information as found in Plan Parts II and III above. The training will be provided at site to all field personnel involved in drilling activities in a formal training atmosphere prior to entering the field.

This training program will be developed as a PowerPoint presentation and will cover regulatory authorities of both ADNR and ADFG as they relate to water use, as well as the environmental rationale for each stipulation developed under these authorities. The training program will also cover the reporting requirements and timelines for activities conducted under these authorities, and identify those individuals responsible for reporting.