CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Stagnicola bonnevillensis* (Call, 1884) (Synonym: *Stagnicola utahensis* (Call, 1884))

COMMON NAME: Fat whorled pondsnail (Bonneville pondsnail, Utah pondsnail)

LEAD REGION: 6

INFORMATION CURRENT AS OF: January 30, 2003

STATUS/ACTION:
___ New candidate
_X_ Continuing candidate
_X_ Non-petitioned
___ Petitioned - Date petition received:_____
___ 90-day positive - FR date:_____
___ 12-month warranted but precluded - FR date:_____
___ Is the petition requesting a reclassification of a listed species?
___ Listing priority change
Former LP:___
New LP: ___
Latest date species first became a Candidate: 1994
___Candidate removal: Former LP:___
___A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
___F - Range is no longer a U.S. territory.
___M - Taxon mistakenly included in past notice of review.
___N - Taxon may not meet the Act=s definition of Aspecies.@
___X - Taxon is believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Snail - *Lymnaeidae*

HISTORICAL STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:
Box Elder County, Utah County, Utah.

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:
Box Elder County, Utah.

LEAD REGION CONTACT: Chuck Davis, 303-236-7400, extension 235.

LEAD FIELD OFFICE CONTACT: Larry England, 801-975-3330.
BIOLOGICAL INFORMATION: *Stagnicola bonnevillensis* is endemic to five spring fed pools

north of the Great Salt Lake in Box Elder County, Utah, that are separated by sparsely vegetated playa of the Great Salt Lake over a distance of about 4.4 km (2.75 miles). These pools occupy areas of between 0.1 hectare (.25 acre) and 0.4 hectare (1 acre), have diverse substrates (mud, gravel, and/or rocks) and are well-vegetated.

These springs (pools), named from west to east, are Shotgun Spring [Hovingh=s spring A1, located in: Sec.4,T.10N.,R.5W., immediately south of Utah State Route 83, 4.7 km (2.9 miles) west of its junction with State Route 102]; Pipe Spring [Hovingh's spring A, located in: Sec.4, T.10N., R.5W., immediately south of Utah State Route 83, 4.35 km (2.7 miles) west of its junction with State Route 102]; Fish Spring [Hovingh=s spring B, located in: Sec. 11, T.10N.,R.5W., immediately south of Utah State Route 83, 1.0 km (0.6 mile) west of its junction with State Route 102]; Horse Spring B and Horse Spring B South [Hovingh=s Spring C1, located in: Sec.11,T.10N., R.5W; the pools of this spring are connected by a culvert under Utah State Route 83, 0.55 km (0.35 mile) west of its junction with State Route 102]; and Horse Spring A and Horse Spring A South [Hovingh=s Spring C2, located in: Sec.12, T.10N.,R.5W.; the pools of this spring are connected by a culvert under Utah State Route 83, 0.3 km (0.2 mile) west of its junction with State Route 102].

The total number of individuals is unknown. Total occupied habitat is a little less than 1 hectare with densities of adult and sub-adult individuals varying greatly. A few very limited areas have high concentrations with about 100 individuals per square meter. More frequently, concentrations of individuals is 10 or less per square meter.

At the time of its discovery and scientific description in 1884, *Stagnicola bonnevillensis* (as *S. utahensis*) was common in Utah Lake. The species currently occupies less than 1 percent of its historical habitat. R.E. Call described *Stagnicola bonnevillensis* and *Stagnicola utahensis* in 1884. *Stagnicola utahensis* was described from living specimens in Utah Lake and fossil material from the shore lines of Bear Lake and Pleistocene Lake Bonneville. As recently as 1933, this species existed in Utah Lake and springs adjacent to that Lake. Human-caused modification of Utah Lake since 1933 was thought to have caused the extinction of *Stagnicola utahensis*. *Stagnicola bonnevillensis* was described from fossil material from the shore lines of Lake Bonneville and several springs in northwest Utah. *Stagnicola bonnevillensis* was thought to be extinct since the Pleistocene until it was rediscovered by Peter Hovingh in 1985 at its extant location described above. Arthur Clarke (1991) and Hovingh (1998) consider the above two species to be synonymous. *Stagnicola utahensis* is the lake and river form, occurring in bodies of water with wave action and strong currents, while *Stagnicola bonnevillensis* is a spring/pond form occurring in calmer bodies of water. The current remaining population of *Stagnicola bonnevillensis* exhibits both morphological forms with the *Stagnicola bonnevillensis* pond form being the most common. Call described both species in the same publication. *Stagnicola bonnevillensis* has page precedence over *Stagnicola utahensis* and is thus, according the rules of zoological nomenclature, the appropriate name for this species.

Summarize status/threats in terms of the five factors of Section 4 of the Endangered Species Act.

A. <u>The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range.</u>

Stagnicola bonnevillensis is vulnerable to any modification or loss of its aquatic habitat. In Utah=s arid climate, spring waters are commonly diverted for human uses. One species from the same region and similar habitat, *Stagnicola pilsbryi*, has become extinct presumably due to degradation of pond and spring habitat at Fish Springs in western Utah. Another species, *Valvata utahensis*, has been extirpated from similar habitat in Utah. In addition the lake form of *Stagnicola bonnevillensis*, *Stagnicola utahensis*, has been extirpated from Utah Lake. *Stagnicola bonnevillensis* is subject to the same threats which caused the extinction or extirpation of the above species.

The Aquatic habitat of the current extant population of *Stagnicola bonnevillensis* has been historically and recently impacted. The Gilbert shoreline of Pleistocene Lake Bonneville characterizes the geologic setting of the series of spring habitats that supports the remaining populations of *Stagnicola bonnevillensis*. This geologic feature provides a suitable foundation of coarse soils across the otherwise fine-soiled mud flat playa of the Bear River arm of the Great Salt Lake.

In the spring of 1869 the Union Pacific Railroad Company exploited the Gilbert shoreline as the route of the Transcontinental Railroad (Railroad). Construction of this railroad was the first major event of the industrial revolution in the interior of western North America. Over 5,000 men were involved in the construction of the Railroad and its bed. The Railroad passed over or directly adjacent to each of the springs now currently occupied by *Stagnicola bonnevillensis*. The Railroad was initially the only, and later one of the principal railroads, across North America. The segment of railroad track around the north end of the Great Salt Lake was replaced in 1904 by the Lucin cut-off across the Lake. The north lake segment continued as a spur until 1942 when the track was removed.

On July 1, 1862, Congress granted the Union Pacific Railroad and the Central Pacific Railroad Companies a 400 foot-wide strip (200 feet either side of the railroad center line across Federal Lands from Omaha, Nebraska, to Sacramento, California) for the construction of the Transcontinental Railroad. Around 1990, the Union Pacific Railroad Company deeded a portion of the 400 foot-wide railroad alignment north of the Great Salt Lake back to the United States government; from about 10 miles west of Corrine, Utah, to Lucin, Utah. This 400 foot-wide railroad alignment is now managed by the Bureau of Land Management (BLM) minus a portion within Golden Spike National Historical Site that is managed by the National Park Service.

The 400 foot-wide railroad alignment includes most of the habitat and population of *Stagnicola bonnevillensis*. All of Pipe Spring and Fish Spring and most of Horse Spring B South and Horse Spring A South are within this tract of land. Utah State Route 83 is immediately north of the Railroad alignment through the reach of occupied *Stagnicola bonnevillensis* springs. All of Horse Spring A and a portion of Horse Spring B, Horse Spring B South and Horse Spring A South are within the highway right-of-way. The land north of the Highway 83 right-of-way is owned by ATK Thiokol Propulsion of ATK, Inc. This land includes most of Horse Spring B.

The land south of the Railroad alignment is owned by the Connor Cattle Corporation. This land includes all of Shotgun Spring South.

Stagnicola bonnevillensis and its habitat survived the construction and operation of the Railroad. Sometime before the abandonment of the railway spur, extensive amounts of river cobble were placed along the railroad embankment in the north end of Pipe Spring. *Stagnicola bonnevillensis* adapted to this new substrate and re-colonized this portion of its habitat. State Route 83 was constructed along the railway and is now a two-lane, asphalt-surfaced highway. This highway passes over the Spring pools of Horse Spring A and B. Horse Spring A north of the highway does not harbor a population of *Stagnicola bonnevillensis*, while Horse Spring B north of the highway harbors a more vigorous population than Horse Spring B south of the highway.

Livestock grazing was initiated within the current *Stagnicola bonnevillensis* habitat by Mormon settlers in about 1850 and has continued to the present. Intensive, unregulated grazing has the potential to degrade the habitat of aquatic species, including *Stagnicola bonnevillensis*. The relatively high salinity of the *Stagnicola bonnevillensis* springs and the relative paucity of forage on the Great Salt Lake Playa may have somewhat protected these springs from excessive abuse from livestock. Similar springs elsewhere within the species historic range (i.e., Pelican Springs on the west shore of Utah Lake) have been over utilized and historic populations of *Stagnicola bonnevillensis* and other mollusks have been extirpated. The BLM has constructed grazing exclosure around Pipe and Fish Springs. The Highway 83 right-of-way fence protects portions of the Horse Spring complex. In 2002 ATK Alliant Techsystems, Inc. installed a protective fence around the north portion of Horse Spring B.

The BLM permits off-road vehicle (ORV) use along the Railroad alignment, but this use is restricted to non-wetland portions of the railway alignment. There is currently little ORV use on private portions of the species habitat. The Golden Spike Heritage Foundation has generated a proposal to reestablish a recreational/historical railway from Brigham City, Utah, to the Golden Spike Historical Site. This would traverse the *Stagnicola bonnevillensis* habitat.

The Chevron Oil Company constructed an eight inch pipeline from its refinery in North Salt Lake to the Pacific Northwest. This pipeline was constructed in about 1948 and is buried in the Railroad bed through the habitat of *Stagnicola bonnevillensis*. A second 8-inch pipeline was constructed in about 1952 along the same alignment. Refined petroleum products are carried in these pipelines; one line is currently dedicated to diesel fuel, and the other line transports various products, including gasoline, jet fuel, and diesel. In 2000 the diesel fuel line sprang a pinhole leak and contaminated several acres of wetlands approximately 2.55 km (1.6 miles) west of the *Stagnicola bonnevillensis*= Horse Spring habitat. Impacts to the snail were avoided because the leak occurred downstream of the Horse Spring complex. A second leak occurred late in 2002 in the multi product line carrying gasoline approximately 1 km (0.6 mile) west of the same Horse Spring habitat. This break was apparently a consequence of damage to the line caused by the unauthorized installation of a drainage pipe through the old railroad grade under the pipeline. Recently additional leaks have occurred have recently in this pipeline. The environmental

reliability of this pipeline is in question. Its effective life may be coming to an end. Future product leaks from the pipeline may pose a significant threat to the continued viability of *Stagnicola bonnevillensis*= population and its only occupied habitat.

Morton Thiokol (now a part of ATK Alliant Techsystems, Inc.), in the early 1960s, established a manufacturing facility for the construction of military and space exploration rockets in Blue Creek Valley approximately 4 kilometers (2.4 miles) northwest of the Shotgun Spring habitat of *Stagnicola bonnevillensis*. Until recently waste products from the manufacture of these rockets were dumped and burned at a place called the M-136 burn grounds. This disposal area is located near Blue Creek approximately 6.5 km (4 miles) north and upstream (and the hydrologic ground water gradient) of the occupied *Stagnicola bonnevillensis* habitat. Recent information form the Utah Department of Environmental Quality reports measurable amounts of trichloroethelene (TCE, a chlorninated hydrocarbon cleaning solvent) and perchlorate (a component of rocket fuel) in all *Stagnicola bonnevillensis* springs. Current levels (August 2001) of TCE range from 0.7 ug/l in Horse Spring B South to 5.5 ug/l in Horse Spring A. Current levels of perchlorate range from 6.2 ug/l in Fish Spring to 174 ug/l in Pipe Spring. Groundwater sampling indicates that the 10 ug/l isoline of the TCE plume is 0.5 km (0.3 miles) north of Shotgun and Pipe Springs. The 100 ug/l isoline of the TCE plume is 2.4 km (1.5 miles) northwest of Shotgun Spring. The 1,000 ug/l isoline of the TCE plume is 3.5 km (2.2 miles) northwest of Shotgun Spring. The acute toxicity of TCE and perchlorate to *Stagnicola bonnevillensis* is not known. But both substances are potentially lethal to most wildlife species. The current levels of TCE and perchlorate and the approaching ground water plume are of grave concern for the future of this species and the viability of its habitat.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes.

None.

C. Disease or Predation.

It is possible that the ponds may be improved for fishing and the game fish introduced would probably cause the eradication of this species. Waterfowl are also very effective snail predators. No species are known to be obligate predators, parasites or diseases of *Stagnicola bonnevillensis*.

D. The Inadequacy of Existing Regulatory Mechanisms.

Mollusks are now under the management of the Utah Division of Wildlife Resources. However, the State of Utah does not have an endangered species law comparable to the Federal statute. The State has the ability to enter into conservation measures to protect threatened mollusks.

E. Other Natural or Manmade Factors Affecting its Continued Existence.

The *Stagnicola bonnevillensis* population is extremely small and its restricted habitat is vulnerable to any stochastic event which may destroy the species habitat or population.

BRIEF SUMMARY OF REASONS FOR REMOVAL OR LISTING PRIORITY CHANGE: N/A.

FOR RECYCLED PETITIONS: N/A.

a. Is listing still warranted? Yes
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes
c. Is a proposal to list the species as threatened or endangered in preparation? No
d. If the answer to c. above is no, provide an explanation of why the action is still precluded.

This listing determination is currently precluded by the need to complete a final listing determination for the mountain plover, and critical habitat determinations for the northern Great Plains population of the piping plover, Topeka shiner, and Prebles= meadow jumping mouse.

LAND OWNERSHIP: Owners of the spring pool areas include ATK Alliant Techsystems Inc., Utah State highway right-of-way, Connor Cattle Company, and the BLM. Water rights ownership is unknown.

PRELISTING: Status surveys.

REFERENCES:

Bureau of Land Management. 1998. Box Elder Plan Amendment, Bear Rive Resource Area. Salt Lake City, Utah. 27pp.

Call, R.E. 1884. On the Quaternary and Recent Mollusks of the Great Basin, with descriptions of new forms. Bull. U.S. Geol. Sur. #11:367-420.

Chamberlin, R.V. 1933. Observations of *Stagnicola kingii* (Meek), living and extinct. Nautilus 46:97-100.

Clarke, A. 1991. Final Report: Status Survey of Selected Land and Freshwater Gastropods in Utah. U.S. Fish & Wildlife Service contract no. 14-16-0006-89-021 (Revised).

Currey, D.R., Jr, G. Atwood, and D.R. Mabey. 1983. Major levels of the Great Salt Lake and Lake Bonneville. Utah Geol. Min. Surv. Map 73.

Earthfax Engineering, Inc. 2000. Site Remediation Plan, Milepost 68 Pipeline Release Salt Lake to Spokane Product System Pipeline near Corinne, Box Elder County, Utah. Report prepared for Chevron Pipeline Company, North Salt Lake City, Utah.

Hovingh, P. 1986. Biogeographic aspects of leeches, mollusks, and amphibians in the Intermountain region. Great Basin Nature. 46: 736-744.

Hovingh, P. 1998. Biological Assessment of Amphibian, Leech, and Mollusk Distribution in Wetlands North of the Great Salt Lake with emphasis on Rare, Threatened, and Endangered Aquatic Fauna. Report for Golden Spike Heritage Foundation. Salt Lake City, Utah. 36pp + 4 figs.

Lowrance, E. 1934. On the early development of Stagnicola kingii (Meek), the Utah ribbed snail. Bull. Univ. Utah 24(5):1-21

Oliver, G.V., and W.R. Bosworth. 1999. Rare, Imperiled, and Recently Extinct or Extirpated Mollusks of Utah, A Literature Review. Publication 99-29, Utah Division of Wildlife Resources, Salt Lake City, Utah. 231pp.

Taylor, D.W. 1985. Evolution of freshwater drainages and mollusks in western North America. In Smiley, C.J., ed., Late Cenozoic history of the Pacific Northwest. San Francisco, Am. Assoc. Adv. Sci., Pacific Division. pp 256-21.

Taylor, D.W., and R.C. Bright. 1987. Drainage history of the Bonneville Basin. Utah Geol. Assoc, Publ. 16:239-256.

Utah Division of Environmental Quality. 2001. Thiokol Plant Area, TCE Plume Map & DSHW sample locations (2001). Salt Lake City, Utah. 1 map.

LISTING PRIORITY

THREAT			
MAGNITUDE	IMMEDIACY	TAXONOMY	PRIORITY
High	Imminent	Monotypic genus	1
		Species	2*
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

Magnitude: The species is highly restricted with chemical contamination to the ground water supporting the springs of the species only known habitat.

Imminence: The threats above are currently present and have the potential to be more acute in the future.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approved: Ralph O. Morgenweck April 1, 2003
Regional Director, Fish and Wildlife Service Date

Concur: _____ _____
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Director=s Remarks:

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Date of annual review: January 30, 2003

Conducted by: Larry England