

**UTAH BEAVER MANAGEMENT PLAN
2010 – 2020**



**Developed in consultation
with
BEAVER ADVISORY COMMITTEE**

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UTAH BEAVER MANAGEMENT PLAN

2010 - 2020

Plan Goal

Maintain healthy, functional beaver populations in ecological balance with available habitat, human needs, and associated species.

INTRODUCTION

The purpose of the Utah Beaver Management Plan is to provide direction for management of American beaver (*Castor canadensis*) in Utah and where appropriate expand the current distribution to historic range. This purpose is in accordance with the mission statement of the Utah Division of Wildlife Resources (UDWR). The mission of UDWR is:

To serve the people of Utah as trustee and guardian of the state's wildlife

The Beaver Management Plan will direct beaver management statewide for a period of ten years (2010-2020). During 2020, this document will be reviewed, management progress will be evaluated and an updated management plan will be written and presented to the Utah Wildlife Board for approval.

BACKGROUND

Natural History

Beaver are the largest member of the rodent order in North America, and belong to the family Castoridae. They are very adapted to aquatic environments, with webbed feet, a stout body and broad paddle like tail to aid in swimming and balancing when standing upright. On land beaver move with an awkward waddle but are capable of bolting short distances. Adult beaver weigh 16-31.5 kg (35-70 lbs) and are up to 120 cm (47 in) in length. (Barker et. al. 2003). Pelt coloration varies from reddish, chestnut, nearly black to a yellowish brown depending on the population.

Beaver reach sexual maturity between 1.5-3 years of age (Barker et. al. 2003). They are considered monogamous with a single pair and young forming a family group. Extended family members form a loose knit group referred to in the literature as a colony. A typical colony consists of an adult pair, young of the year or kits and yearlings from the previous year. Beaver breed in the fall and early winter and give birth to one litter

(typically 2-4 young) in the spring. The gestation period is approximately 100 days. Young stay with the adults through the first winter and as yearlings during the second winter. Dispersal usually occurs at 24 months of age but is variable depending on the amount of unoccupied habitat. Beavers are believed to exhibit density dependent population characteristics (Barker et. al. 2003). Home range can vary 8-18 ha (20-45 ac) with nonfamily groups tending to occupy larger territories than family groups (Wheatley 1997a, 1997b).

Beaver construct dams, ponds and canals to gain reliable access to food resources. This activity tends to alter the adjoining landscape. In addition, beaver construct lodges and bank dens for shelter and protection from predators. Within these newly created aquatic systems, beaver will establish winter food caches. This behavior usually occurs only in regions with persistent ice cover during a portion of the year. Beaver consume both herbaceous and woody plants with studies documenting 0.5-2.0 kg (1-4.5 lbs) of wet woody forage per day (Dyck et. al. 1993). Their preferred diet, when present, consists of herbaceous vegetation (forbs, grasses, roots and tubers), aspen, cottonwood and willow (Jenkins 1981). Other woody plants found in their diet but less desirable, like conifers, sage brush and tamarisk are used for dam construction and the capping of winter food caches.

Distribution and Abundance

Beaver are native to North America and found throughout most of Utah. Durrant (1952) described beaver inhabiting all regions of Utah, except the desert environments of the Great Basin. Early Utah explorers and fur trappers considered beaver abundant prior to 1825 (Rawley 1985). Aggressive trapping continued into the late 1800's until beaver were considered rare. Beaver harvest was closed by the state legislature in 1899.

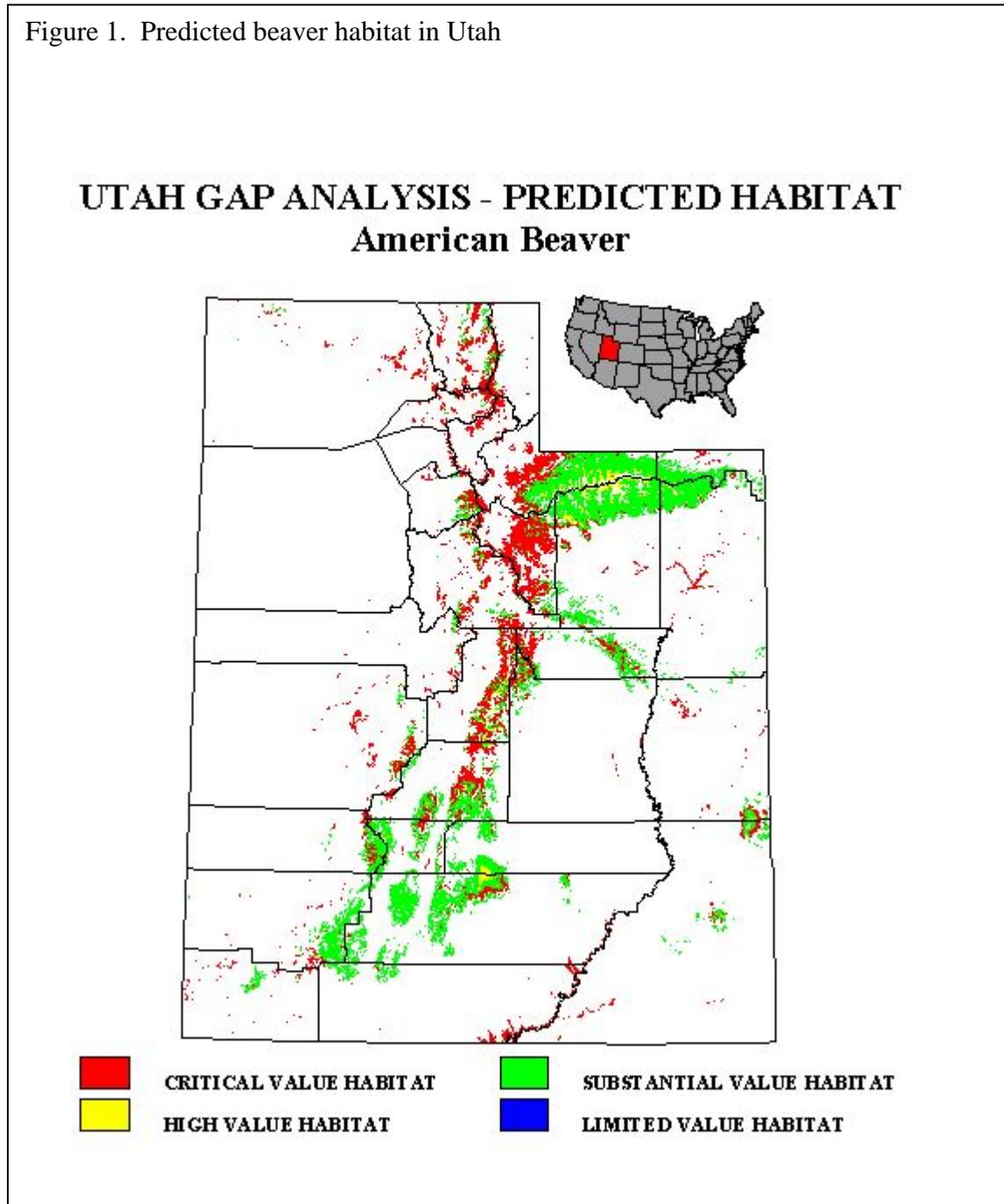
By 1912 beaver populations were increasing and nuisance activities were reported. Beginning in 1915, Utah citizens could live trap up to 10 beaver per year for propagation provided 25% of the progeny were released back into the wild. In 1937, thirty caretakers (trappers) live trapped and transplanted 84 beaver onto National Forest Lands. Statewide harvest resumed in 1957, with occasional site specific closures, likely due to an increase in beaver distribution and abundance.

The UDWR conducted a beaver distribution, habitat and population survey from 1971-1982. This survey estimated 4,021 miles (6,471 km) of suitable stream habitat with a carrying capacity of 25,492 beaver statewide (Blackwell and Pederson 1993). The population in 1981 was estimated at 29,445 beavers suggesting approximately 3,953 beavers in excess of estimated carrying capacity (Blackwell and Pederson 1993). The predicted beaver habitat in Utah was mapped as part of the 1995 Utah GAP Analysis (Figure 1). Current beaver distribution and abundance is not fully understood, however they are considered common and most of the suitable habitat believed to be occupied.

Legal Status

Beaver in Utah are classified as protected wildlife. The UDWR is responsible for their management. There is an open trapping season which generally runs from October through early April with unlimited take. Beaver causing damage may be taken or removed by the public during closed seasons provided a permit is obtained from UDWR. The UDWR also licenses nuisance wildlife control companies to remove beaver causing damage.

Figure 1. Predicted beaver habitat in Utah



Management Actions

The state legislature made it illegal to “kill” beaver in 1899. In 1915 the UDWR (formally referred to at the time as the Utah Fish and Game Department) was given authority to live trap and transplant nuisance beaver. Many of these animals were moved around the state and this effort continued at least through 1954. Live trapping efforts as far as number of individuals, source and translocation sites were not well documented.

Harvest by commissioned trappers began in 1922. From 1922 to 1953 duly commissioned trappers were allowed to harvest beaver with 50% of the pelt proceeds retained by the state. Pelt prices began to drop in 1953, resulting in an upward adjustment of the percentage paid to commissioned trappers. By 1957 the UDWR was given authority to establish an open beaver trapping season eliminating the need for most commissioned trappers other than UDWR employees. During open seasons there was no bag limit but trappers were required to submit their pelts to conservation officers for tagging. Officers tagged each pelt for a fee of \$1.00. This fee was reduced to \$.50 in 1968. The tagging requirement was discontinued in 1974. A statewide beaver trapping season from October to early April with unlimited take has been in place from 1957 to present. Site specific closures have been periodically used to reduce harvest.

Early beaver management consisted of assessing populations in select streams within defined beaver management units. An annual report has been published with beaver management recommendations and limited harvest statistics since 1953. The management recommendation section of the annual report was dropped in 1981. Sport harvest reporting began in 1958 with harvest statistics collected annually since that time (Figure 2). It was not until 1972 when a metric used to measure trapping effort was collected as part of the annual harvest survey. This metric is expressed as the number of trap set-days/beaver. Since 1983 trap set-days per beaver have ranged from 8 to 55 (Figure 3).

Figure 2. Licensed trappers afield and beaver harvest since 1958.

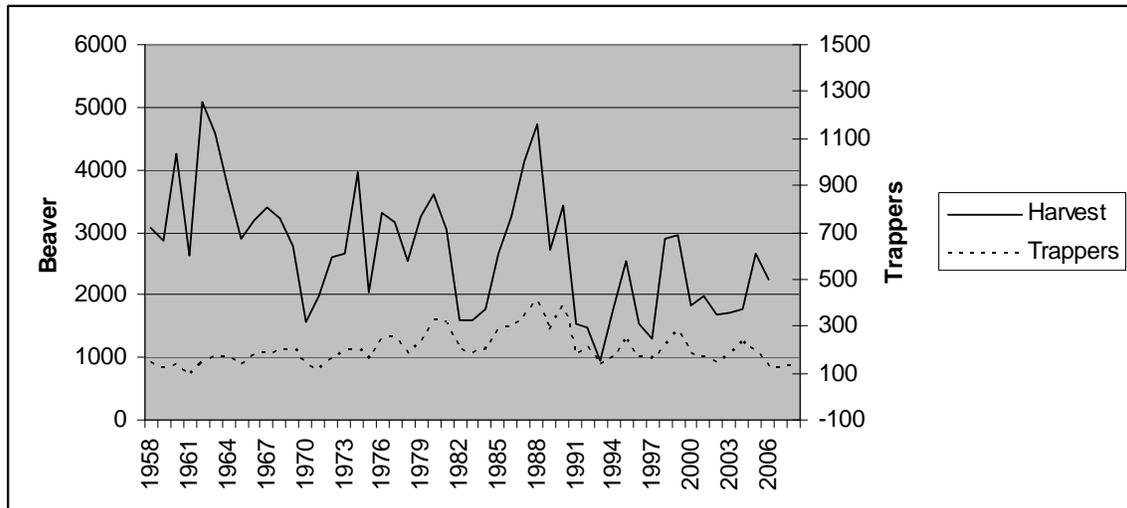
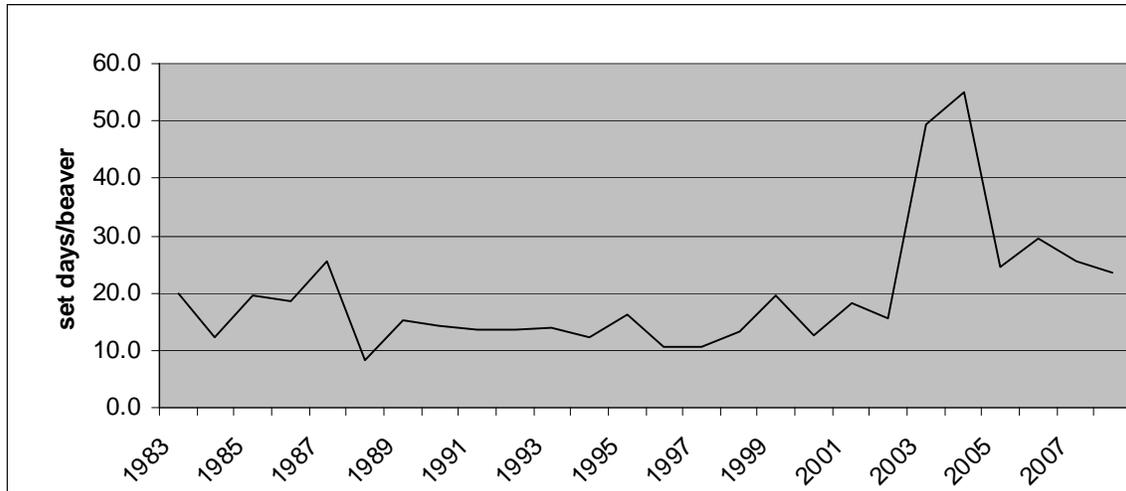
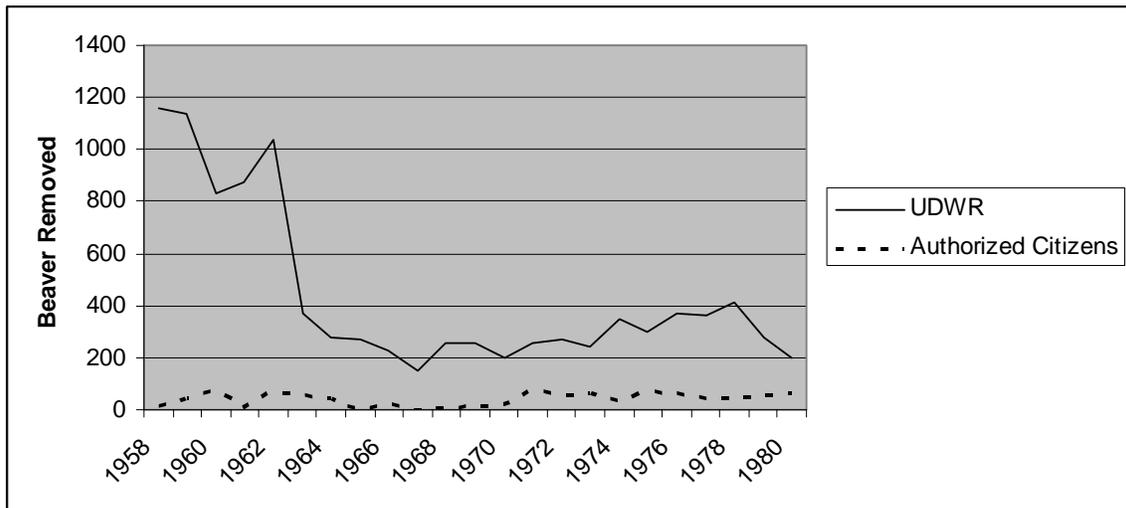


Figure 3. Trap set-days per beaver from 1983-2008



Nuisance beaver control activities were tracked from 1958 through 1980 and include UDWR and authorized citizen removals. It is unclear if this data were collected prior to 1958 or after 1980. The number of non-sport harvest removals from 1958-1980 can be found in Figure 4.

Figure 4. Non-sport harvest beaver removal from 1958-1980.



ASSESSMENT

Issues and Concerns

At the first meeting of the Beaver Advisory Committee the following list of issues and concerns were identified. Subsequent meetings focused on developing objectives, strategies and management systems to address the issues and concerns identified by the group.

Outreach / Education

- Education on
 - non-lethal control methods
 - the habitat values of beavers
 - accommodating beaver
 - working with private neighbors when a private/public reintroduction is desired
- Plan should balance needs of people, habitat and wildlife species
- Educate the public what UDWR's role or responsibility is in dealing with problem beaver (when we aggressively solve the problem, or when we leave it in the public's hands with the proper permit)

Population Management

- Maintain a basic picture of distribution/density of beaver in Utah
- Need to understand we will be working in human altered habitat which requires management
- Consider beaver colony distribution and abundance

Harvest Management

- Concerned about trapping closures
- Closures should have time frames for evaluation (# years closed until evaluation)
- Trapping limits after beaver have established in a stream
- Consider unique harvest regulations
- Don't eliminate fur harvest program
- Support public use of beaver as a furbearer
- Little need to protect translocated beaver in areas with poor vehicle access and/or during times with low demand for pelts, as is currently the case

Damage Management / Beaver Conflict Management

- Deal with problems in some areas
 - keeping water moving in small systems
 - wetland management concern
 - lethal vs nonlethal removal decision model
- Problem beaver management using trappers
- Process to streamline problem beaver management using trappers (COR's for trappers statewide)
- Retain ability to help cooperators in a timely fashion (beaver damage)
- Educate the public about non-lethal techniques
- Refer trappers to resolve problems
- Build statewide list of trappers willing to help solve the problem
- Beaver free areas
- Consider management system (decision matrix) from non-lethal to lethal control
- Use of explosives to breach dams with other agencies assisting. Improve communication within UDWR when beaver dams are removed
- Materials list/specifications for flow control devices (pond leveler, culvert protection)
- Video on construction of flow control devices
- Problems in managed wetlands, resolve with non-lethal methods
- Provide drawings of non-lethal management techniques
- Tree protection methods for new restoration sites
- Cooperate with private landowners and water right holders with both removal and introductions
- Procedures for handling nuisance beaver written into a policy similar to other species like cougar and bear
- Refine the nuisance beaver permit process
- Keep an updated list of local trappers in each region (perhaps on the \S drive)
- Educate the public what our role or responsibility is in dealing with problem beaver (when we aggressively solve the problem, or when we leave it in the public's hands with the proper permit)
- Review the UDWR's role for use of explosives in breaching dams (stream alteration permit process, etc.)
- Maintain a database of beaver problems with GPS locations (create a beaver nuisance form for each region to fill out on every call for better records of problem areas and history)
- Dealing with problem beavers in the following areas
 - Residential urban (tree cutting, flooding)
 - City nuisance beavers (culvert damming, flooding, etc.)
 - Landowners (damming irrigation canals)
 - UDOT (major roadway flooding)
 - Other (Railroads, businesses by rivers – tree cutting-aesthetics)
- Retain ability to cooperatively manage/address nuisance issues around campgrounds, roads, dams/spillways, diversions, trails

- Potential funding and information for non-lethal beaver management structures where appropriate.

Disease/Aquatic Invasive Species Management

- Disease transmission
- Consider invasive species introductions through transplants (mussels)

Research

- Ability to assist with scientific collection requests

Watershed Restoration

- Some areas suitable for establishment of beaver
 - need to create/establish standards and guidelines for potential release sites
 - need to individually analyze potential release sites due to existing riparian health mitigation
 - internal scoping (NEPA) process necessary before relocation could occur (BLM land)
- Transplants of native wildlife (beaver) are generally considered “State Actions” and as such, typically require no National Environmental Policy Act documentation unless federal funds are involved.
- Pro beaver transplant
- Support restoration of beaver and adequate protection where establishing
- List of
 - sites approved/available for reintroduction
 - source sites
- Encourage live-trapping of entire families
- List of people who know how to live trap
- Explore certification of non agency people to live trap and move beaver to approved sites
- Develop list of beaver re-introduction sites (private lands) and source populations
- Water right issues
- Go to areas with the least number of conflicts
- Cooperate with private landowners and water right holders with both removal and introductions
- Consider using beaver as a stream restoration tool
- Beaver are a good tool that could be used to restore degraded riparian communities that could benefit many other wildlife species

- Need to consider the site characteristics of the locations where beaver will be relocated/re-introduced
 - Enough vegetation to support a beaver population
 - Will they create more depredation problems in the new location? i.e. roads, private land, water rights, etc.
 - How will they affect the fish habitat/population and migration?
- Potential funding and information for non-lethal beaver management structures where appropriate
- Transplant “stock” should not be held to nuisance beaver only, as has been the case in the past...more efficiency in capture and movement as well as success in survival could be attained by using beaver from colonies in neighboring watersheds
- Little need to protect translocated beaver in areas with poor vehicle access and/or during times with low demand for pelts, as is currently the case
- Potential benefits of aspen/cottonwood restoration in improving beaver habitat

Objectives, Strategies and Management System

The Beaver Advisory Committee developed the plan goal, objectives, strategies and management system to address identified issues and concerns. Following are the objectives, strategies and management system developed by the advisory committee. The plan goal is found at the beginning of the document on page 4.

Outreach and Education

Objective 1:

Increase awareness of and appreciation for the role of beaver in Utah’s ecosystems in 10% of stakeholders (landowners, educators, recreationalists, sportsmen, water rights holders) by 2020.

Strategies:

1. Conduct a baseline survey of stakeholders to establish their current understanding of the role of beaver in Utah’s landscape.
2. Develop an educational brochure (Wildlife Notebook Series) highlighting life history, habitat requirements and the role of beaver in the ecosystem for distribution to stakeholders and the general public.
3. Develop “Living with Beaver” informational materials outlining the difference between nuisance and beneficial beavers and options for landowners, agencies and the general public for coexisting with beavers. These materials will highlight techniques, benefits and costs associated with non-lethal methods for beaver management all the way through lethal removal as a final option.

4. Establish at least one showcase beaver management area in each UDWR Region.
5. Evaluate program effectiveness at least once by 2020.

Objective 2:

Improve the understanding of all UDWR and other governmental agency employees involved in beaver management and assure consistent transmission of information and application of management actions through 2020.

Strategies:

1. Conduct a baseline survey of agency employees to establish their current understanding of beaver management options and the role of beaver in Utah's landscape.
2. Assess how the agencies currently handle beaver management challenges.
3. Establish guidelines to bring consistency and inform UDWR employees and assisting agencies (similar to cougar and bear guidelines) by outlining procedures for management of beaver in urban, rural and upper watershed settings.
4. Evaluate program effectiveness at least once by 2020.

Population Management

Objective 1:

Maintain reproducing beaver populations within their current distribution in appropriate habitat through 2020. (See Watershed Restoration Objective for population expansion)

Strategies:

1. Develop a statewide baseline beaver distribution map to document current status within two years after plan approval by working with UDWR regions, universities, governmental and non-governmental organizations.
2. Identify zones on the map to illustrate appropriate beaver management strategies for given geographic areas, i.e. existing populations (including source populations), unoccupied historical range and areas where the potential for conflict is high.
3. Actively pursue funding and partnerships to conduct ground and possibly aerial beaver population and habitat suitability surveys to obtain 1) detailed distribution information: and, when possible, density estimates.

4. Obtain methodologies and results from other agencies currently conducting beaver surveys. Consider the methodology developed by UDWR in the statewide 1971-1981 study to allow for comparison of current and historical population data.
5. Update the baseline map in the final two years (2018-2020) of the plan.

Harvest Management

Objective 1:

Maintain recreational opportunity for a minimum of 350 trappers and a sustainable harvest of 3,500 beavers annually through 2020. (See Watershed Restoration Objective for population expansion)

Management System:

Maintain baseline regulated statewide harvest management program of traditional seasons and unlimited take unless:

1) Average set-days/beaver over a three year period is greater than 34; then season length will first be shortened (open a week later and close a week earlier) and if additional protection is necessary, area closures will be expanded to bring set-days/beaver into historical range (11 to 34 set-days/beaver) over the following three year guidebook cycle.

(-OR-)

2) Average number of beavers trapped over a three year period exceeds 3,500 and average set-days/beaver goes above 18; then season length will first be shortened (open a week later and close a week earlier) and, if additional protection is necessary, area closures will be expanded to reduce harvest and maintain catch per unit effort below 18 set-days/beaver over the following three year guidebook cycle.

Strategies:

1. Continue post season furbearer surveys to estimate beaver harvest, number of trappers and catch per unit effort at the county level.
2. Evaluate the need for stream closures listed in the guidebook once every three years. Remove or add streams based on achieving desired results, harvest vulnerability and high level of conflict.
3. Determine the level of protection required for translocated or diminished beaver populations by considering harvest vulnerability. One of the following approaches will be selected.

- a. (High Harvest Vulnerability i.e. less than 0.5 mile from open roads/access points) – close specific watersheds for a given length of time. Generally the length of time should not exceed six years or two three-year guidebook cycles. Upon transition from the high harvest vulnerability, the population will be provided protection identified under the moderate harvest vulnerability approach.
 - b. (Moderate Harvest Vulnerability i.e. 0.5 to 1.0 mile from open roads/access points) – encourage light harvest by signing appropriate areas to obtain voluntary compliance. This management approach will be useful for streams that fall between the high and low harvest vulnerability.
 - c. (Low Harvest Vulnerability i.e. over 1.0 mile from open roads/access points) – access constraints or demand for pelts limit trapping interest. This management approach is self regulating (requires no action) and relies on the “law of diminishing returns”.
4. Upon completion of a statewide population survey (contingent upon available funding) identified in Population Objective section of the plan (O1 S3), the current beaver harvest management system will be adjusted accordingly.

Damage Management

Objective 1:

Increase consistency in the response options (lethal and non-lethal) currently in use and increase the frequency of use of non-traditional options (e.g. beaver deceivers, live-trapping) used by UDWR, governmental and non-governmental agencies and landowners for managing beaver causing property damage through 2020.

Strategies:

1. Assemble a list of available control/abatement options currently in use in Utah by UDWR, governmental and non-governmental agencies and landowners.
2. Identify and implement control/abatement options not currently in use in Utah.
3. Continue to issue Certificates of Registration (COR) to nuisance wildlife companies. Look for opportunities to relax control options available to companies (e.g. live trapping, snares and other methods).
4. Generate a list of individuals that have an interest in trapping beaver (including live-trapping) and use them as a resource to help resolve conflicts. Explore issuing CORs to live-trappers and letters of

authorization to lethal trappers on the list to address problems outside the trapping season.

5. Maintain a list of seasoned trappers by county of interest (recommended by UTA) to harvest beavers as an option to resolve issues in high conflict areas during the trapping season. This list will be retained, updated and distributed by UDWR.
6. Use the brochure proposed in the Outreach and Education section of this plan (O1 S3) to inform landowners of the options available to address present and prevent future damage caused by beaver.
7. As agency personnel work through options for addressing present and preventing future damage caused by beaver, use the guideline (tiered approach) proposed in the Outreach and Education section of this plan (O2 S3).
8. Develop a nuisance beaver form and central database to track damage complaints (inter- and intra-agency) for the purpose of defining high conflict areas, tracking costs and effectiveness of methods.
9. Formalize the UDWR explosives program to ensure personnel are receiving appropriate training in line with policy. Coordinate beaver dam removal efforts within and among agencies to insure non-target species are not affected.
10. Generate a material list/specifications for constructing beaver deceivers and other non-traditional methods/devices to be used in highly visible sites to showcase long-term solutions and non-lethal techniques – NRCS as a possible funding source (Conservation Innovation Grants).
11. Develop an MOU between UDWR and USDA Wildlife Services for nuisance beaver management and response.

Disease/Aquatic Invasive Species Management

Objective 1:

Minimize the possibility of spreading aquatic diseases (e.g., whirling disease) and aquatic invasive species (AIS) (e.g., Quagga and zebra mussels, New Zealand mud snails and clams) from known contaminated sources to clean watersheds as a result of moving beaver between drainages through 2020.

Strategies:

1. Develop a beaver transplant protocol (similar to the fish stocking protocol) for use in screening source populations for transfer to other waters. Beavers will not be translocated from known waters containing whirling disease or AIS to waters believed to be clean.

Objective 2:

Minimize the possibility of spreading aquatic diseases and AIS from known contaminated sources to clean watersheds as a result of lethal trapping used during control actions or recreational seasons through 2020.

Strategies:

1. Develop gear decontamination protocol.
2. Include verbiage requiring adherence to decontamination protocol in all COR issued to nuisance wildlife companies.
3. Provide decontamination information via web or brochure to recreational trappers during the purchase of their furbearer license to encourage voluntary compliance with decontamination protocol.

Research

Objective 1:

Fund at least one research project related to beaver management by 2020.

Strategies:

1. Evaluate proposals and provide support for beaver research.
2. Incorporate the collection of scientific information relative to beavers into the MOU with USDA Wildlife Services.

Watershed Restoration

Objective 1:

Work to improve riparian habitats, associated streams and wetlands in a minimum of 10 tributaries through translocating beaver into unoccupied suitable habitat on public and/or private land by 2020.

Strategies:

1. Utilize the beaver source and transplant priority table appended to this plan when considering future translocation operations (Appendix 1).
2. Conduct site specific evaluations prior to introducing beaver to include consideration for the presence of suitable habitat, low risk of creating damage conflicts and the possibility of establishing barriers that may impede fish migrations.

3. Coordinate at the UDWR regional level with land management agencies to determine the level and need for environmental compliance (NEPA).
4. UDWR regional personnel will coordinate with local governments, land management agencies, private landowners and any other affected parties that have an interest (positive or negative) in the establishment of beaver populations within the watershed.
5. Develop at the UDWR regional level Habitat Authorization, Watershed Initiative project proposals, and other possible sources to fund site-specific beaver translocations for the purpose of restoring important statewide aquatic environments.
6. When possible, live trap and translocate entire family groups.
7. Generate a list of trained UDWR personnel that have an interest in live trapping beaver and use them as a resource to establish new populations. Explore issuing CORs to non-UDWR personnel for the purpose of assisting with live-trapping and translocation efforts. A base requirement for a COR would be the applicant's ability to demonstrate proficiency in live trapping and translocation. Proficiency would be demonstrated by successful completion of a UDWR-approved training program.
8. Incorporate live-trapping options into the MOU with USDA Wildlife Services.
9. Encourage land management agencies and private property owners to manage riparian habitat (aspen, willow and cottonwood) to support translocated beaver populations.
10. Select a level of harvest protection for translocated beaver populations from the Harvest Management Objective section (O1 S3abc).
11. If translocated beaver become a nuisance they will be dealt with utilizing strategies identified in the Damage Management section

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Appendix 1.

Statewide Beaver Transplant List Prioritized at UDWR Regional Level (page 1 of 6)

UDWR REGION	REGIONAL PRIORITY	TRANSPLANT SITE NAME	COUNTY	STREAM/DRAINAGE	LAND MANAGEMENT AGENCY OR PRIVATE PROPERTY OWNER
Southern	1	Pine Creek	Beaver	Pine Cr, Beaver River	Fishlake National Forest
Southern	2	Duncan Creek	Beaver	T28SR5W	Fishlake National Forest
Southern	3	Hunt Creek	Beaver	T29SR4-5W	Fishlake National Forest
Southern	4	East Fork Boulder Creek	Garfield	Boulder Creek	USFS
Southern	5	East and West Hunt Creeks	Garfield	Sevier River	USFS – Dutton
Southern	6	Deer Creek	Garfield	Deer Creek	USFS – Dutton
Southern	7	Little Creek	Iron	Little Creek/Escalante Desert	Dixie National Forest/ T34SR7W
Southern	8	Deep Creek	Iron	Deep Creek/Virgin River	Dixie National Forest/T37SR9W
Southern	9	Upper Kanab Creek	Kane	Kanab Creek	USFS – Paunsaugunt
Southern	10	East Fork Sevier River	Garfield / Kane	Sevier River	USFS – Paunsaugunt
Southern	11	Ipson Creek	Garfield	Ipson/Panguitch/Sevier	Dixie National Forest/T35S, R7W, sec 18
Southern	12	Sandy Creek	Iron/Garfield	Sandy Creek/Sevier River	USFS / BLM – Panguitch Lake
Southern	13	Left & Right Fork of Sanford Creek	Garfield	Sanford Creek	USFS – Dutton
Southern	14	Cottonwood Creek	Garfield	Cottonwood Creek	USFS – Dutton
Southern	15	Robinson and Swapp Canyons	Kane	East Fork Sevier	USFS – Paunsaugunt
Southern	16	Bullrush Creek	Garfield		USFS – Dutton
Southern	17	Deep Creek	Garfield	Deep Creek	USFS – Dutton
Southern	18	Forest / Pine Creek	Garfield	Pine Creek	USFS – Dutton
Southern	19	Swains Creek	Kane	Swains Creek	USFS - Zion / Panguitch Lake
Southern	20	Bunker / Deer Creek	Iron/Garfield	Bunker Creek/Panguitch Creek/Sevier River	USFS - Panguitch Lake
Southern	21	Calf Creek	Garfield	Calf Creek/Escalante River	BLM/GSENM Kaiparowits

Appendix 1. (continued)

Statewide Beaver Transplant List Prioritized at UDWR Regional Level (page 2 of 6)

UDWR REGION	REGIONAL PRIORITY	TRANSPLANT SITE NAME	COUNTY	STREAM/DRAINAGE	LAND MANAGEMENT AGENCY OR PRIVATE PROPERTY OWNER
Southern	22	Mountain Springs Fork	Garfield	Deep Creek	USFS – Dutton
Southern	23	Smith Canyon	Garfield	Manning Creek	USFS – Dutton
Southern	24	Bear Creek	Iron	Bear Creek/Sevier River	Dixie National Forest/T32-33SR6-7W
Southern	25	Proctor Canyon	Garfield	Sevier River	USFS – Paunsaugunt
Southern	26	Thompson Creek	Kane	Johnson Wash	BLM – Paunsaugunt
Southern	27	Prospect Creek	Garfield	East Fork Sevier	USFS- T33SR2.5 W
Southern	28	Lost Creek		East Fork Sevier	USFS- T30SR3W
Southern	29	East fork of Kanab Creek	Kane	Kanab Creek	USFS- T38SR4.5W
Southern	30	Mill Creek	Kane	East Fork Creek	USFS- T39SR4.5W
Southern	31	Sieler Creek	Kane	East Fork Creek	USFS- T38SR4.5W
Southern	32	North Fork Corn Creek	Millard	Corn Creek	Fishlake National Forest
Southern	33	Chokecherry Creek	Millard	Chalk Creek	Fishlake National Forest
Southern	34	Corn Creek, headwaters	Millard	Corn Creek	Fishlake National Forest
Southern	35	Pioneer Creek	Millard	Pioneer Creek	Fishlake National Forest
Southern	36	Eagle Flat (Little Monroe Cr.)	Sevier	Monroe Creek	Fish Lake National Forest (T 26S, 2W)
Southern	37	Jump Creek	Sevier	Salina Creek trib.	Fish Lake National Forest (T20S & 21 S, 3E)
Southern	38	Pine Creek	Sevier	Salina Creek trib.	Fish Lake National Forest (T21S, 3E)
Southern	39	Shingle Creek	Sevier	Clear Creek trib.	Fish Lake National Forest (25S & 26S, 5W)
Southern	40	North Creek	Sevier	North Creek, by Sheep Valley Res.	Fish Lake National Forest (24S, 3E & 4E)
Southern	41	Skumpah Creek	Sevier	Salina Creek trib.	Fish Lake National Forest (21S, 4E)
Southern	42	Last Chance Creek (north and south)	Sevier	Last Chance Creek	Fish Lake National Forest (T25SR4E)
Southern	43	Willow Creek	Sevier	Willow Creek	Fish Lake National Forest (T20-21SR2-3W)
Southern	44	Manning Creek	Piute	Manning Creek	Fish Lake National Forest (T27S, 2 1/2W)

Appendix 1. (continued)

Statewide Beaver Transplant List Prioritized at UDWR Regional Level (page 3 of 6)

UDWR REGION	REGIONAL PRIORITY	TRANSPLANT SITE NAME	COUNTY	STREAM/DRAINAGE	LAND MANAGEMENT AGENCY OR PRIVATE PROPERTY OWNER
Southern	45	Shingle Creek	Piute	Clear Creek Trib.	Fish Lake National Forest (25S &26S, 5W)
Southern	46	Fish Creek, Headwaters	Piute	Clear Creek Trib.	Fish Lake National Forest (27S, 5W)
Southern	47	City Creek	Piute	City Creek	Fish Lake National Forest/UDWR (29S, 4W)
Southern	48	Box Creek	Piute	Box Creek	Fish Lake National Forest/T27SR2W
Southern	49	Center Creek	Iron	Center Creek/Bowery Creek/Escalante Desert	Dixie National Forest/T35SR8W
Southern	50	Three Mile Creek	Garfield	Three Mile Creek/Sevier River	Dixie National Forest/T34SR6W
Southern	51	Water Canyon	Washington	Water Canyon/Santa Clara	Dixie National Forest/T39SR15W
Southern	52	Dam Canyon	Washington	Dam Creek/North Ash Creek/Virgin River	Dixie National Forest/T38SR14W
Southern	53	Birch Creek	Piute	Birch Cr, Sevier River	Fishlake National Forest
Southern	54	Birch Creek	Beaver	Birch Cr, Beaver River	BLM, Fishlake National Forest
Southern	55	Deep Creek	Garfield	Deep Cr, E Fk Sevier	Dixie National Forest
Southern	56	Cottonwood Creek	Garfield	Cottonwood Cr, E Fk Sevier	Dixie National Forest
Southern	57	E Fk Sevier R & tribs above Tropic Res	Garfield/Kane	E Fk Sevier	Dixie National Forest
Southern	58	Baker Springs,	Wayne	Pine Cr, Fremont River	Fishlake National Forest
Southern	59	Elbow Ranch, Manning Creek	Piute	Manning Cr, Sevier River	UDWR, BLM
Southern	60	Iant Creek	Beaver	T28-29SR5W	Fishlake National Forest
Southern	61	Lousy Jim Creek	Beaver	T29SR5W	Fishlake National Forest
Southern	62	North Creek	Beaver	Beaver River	Fishlake National Forest
Southern	63	Wilson Creek	Beaver	T29SR5-6W	Fishlake National Forest
Southern	64	South Creek	Beaver	Beaver River	Fishlake National Forest
Southern	65	Bull Rush Creek	Garfield	T32SR4 1/2 W	Dixie National Forest
Southern	66	Chokecherry Creek	Garfield	T30.5SR5-6E	Dixie National Forest
Southern	67	Lost Creek	Garfield	T32SR4W	Dixie National Forest

Appendix 1. (continued)

Statewide Beaver Transplant List Prioritized at UDWR Regional Level (page 4 of 6)

UDWR REGION	REGIONAL PRIORITY	TRANSPLANT SITE NAME	COUNTY	STREAM/DRAINAGE	LAND MANAGEMENT AGENCY OR PRIVATE PROPERTY OWNER
Southern	68	Mountain Springs Fork	Garfield	T32SR3-4W	Dixie National Forest
Southern	69	Sevier River, East Fork @ Dave's Hollow	Garfield	T36SR3W	Dixie National Forest
Southern	70	Smith Canyon	Garfield	T32SR4W	Dixie National Forest
Southern	71	Sweetwater Creek	Garfield	T34SR1W	Dixie National Forest
Southern	72	Varney-Griffin Creek	Garfield	T33-35SR1-2E	Dixie National Forest
Southern	73	Sevier River, East Fork above Crawford Creek	Kane	T38-39SR4.5-5W	Dixie National Forest
Southern	74	Anderson Valley	Washington	North Ash Creek/Virgin River	Dixie National Forest/T38-39SR13-14W
Southern	75	Lost Creek	Washington	Lost Creek/Shoal Creek/Escalante Desert	Dixie National Forest/T38SR18W
Southern	76	Pine Creek	Washington	Pine Creek/Shoal Creek/Escalante Desert	Dixie National Forest/T37-38SR18-19W
Southern	77	Pine Park Spring	Washington	Beaver Dam Was/Virgin River	Dixie National Forest/T37SR19W
Southern	78	Rattlesnake Creek	Washington	Rattlesnake/Shoal Creek/Escalante Desert	Dixie National Forest/T38S18W
Southern	79	Chokecherry Creek	Wayne	T30SR5-6E	Dixie National Forest
Southern	80	Elk Horn Guard Station	Wayne	T27SR4E	Fishlake National Forest
Southern	81	Moseman Lake	Garfield		
Southern	82	Deer Creek Lake	Garfield		
Southern	83	Kings (Chris) Lake	Garfield		
Southern	84	Head of the East Fork of Boulder Creek	Garfield		
Southeastern	1	Muddy Creek and Tributaries	Sanpete/Emery	Muddy Creek	USFS/Private-Castlevally Outdoors

Appendix 1. (continued)

Statewide Beaver Transplant List Prioritized at UDWR Regional Level (page 5 of 6)

UDWR REGION	REGIONAL PRIORITY	TRANSPLANT SITE NAME	COUNTY	STREAM/DRAINAGE	LAND MANAGEMENT AGENCY OR PRIVATE PROPERTY OWNER
Southeastern	2	Stone Cabin/Dry Canyon	Carbon	Nine Mile Canyon	Private - Limpert/Pressett/BBC
Southeastern	3	North Cottonwood	San Juan	North Cottonwood Creek	USFS/BLM
Southeastern	4	South Cottonwood	San Juan	South Cottonwood Creek	USFS/BLM
Southeastern	5	Pondtown Creek	Carbon/Sanpete/Utah	Scotfield	USFS
Southeastern	6	Upper Fish Creek	Carbon/Sanpete/Utah	Scotfield	USFS
Southeastern	7	Lower Coyote	San Juan	Coyote Wash	BLM
Southeastern	8	Diamond Canyon	Grand	Diamond Canyon	BLM
Southeastern	9	Ford Creek	Carbon	Price River	Private-Faussett
Southeastern	10	Nash Wash	Grand	Nash Wash	BLM
Southeastern	11	Tavaputs Plateau	Carbon	Jack/Flat/Rock Creek Canyons	Private - Preston Nutter Ranch
Southeastern	12	Mcelmo Creek	San Juan		Navajo Tribal Lands
Southeastern	13	Ferron Creek and Tributaries	Sanpete/Emery	Ferron Creek	USFS
Southeastern	14	Cottonwood Canyon	Grand	Cottonwood Wash	BLM
Southeastern	15	Deadman Canyon	San Juan	Unnamed Drainage	USFS
Central	1	Six-Mile Canyon	Sanpete	Six-Mile Canyon	USFS
Central	2	Bennie Creek	Utah	Bennie Creek	USFS
Central	3	Nebo Creek	Utah	Nebo Creek	USFS
Central	4	Chicken Creek	Juab	Chicken Creek	USFS
Central	5	Salt Creek	Juab	Salt Creek	USFS
Central	6	Manti Canyon	Sanpete	Manti Canyon	USFS
Central	7	Ephraim Canyon	Sanpete	Ephraim Canyon	USFS
Central	8	Twelve-Mile Canyon	Sanpete	Twelve-Mile Canyon	USFS
Northern	1	Blacksmith Fork and Tributaries	Cache	Curtis Creek and Rock Creek	UDWR/USFS/*Private
Northern	2	Logan Ranger District	Cache/Rich	All Rivers and Streams	USFS
Northern	3	Chalk Creek	Summit	Chalk Creek and Tributaries	*Private

* With landowner approval, 1st transplant to areas with suitable habitat void of beavers, 2nd supplement areas of good habitat with low numbers of beaver.

Appendix 1. (continued)

Statewide Beaver Transplant List Prioritized at UDWR Regional Level (page 6 of 6)

UDWR REGION	REGIONAL PRIORITY	TRANSPLANT SITE NAME	COUNTY	STREAM/DRAINAGE	LAND MANAGEMENT AGENCY OR PRIVATE PROPERTY OWNER
Northern	4	East Canyon Creek	Morgan	East Canyon Creek and Tributaries	*Private
Northern	5	North Slope Uinitas	Summit	Bear River	USFS
Northern	6	North Slope Uinitas	Summit	Blacks Fork River	USFS
Northern	7	North Slope Uinitas	Summit	Smiths Fork River	USFS
Northern	8	North Slope Uinitas	Summit	Henry's Fork River	USFS
Northern	9	North Slope Uinitas	Summit	Beaver Creeks	USFS
Northern	10	North Slope Uinitas	Summit	Burnt Fork River	USFS
Northern	11	Basin Creek	Box Elder	Basin Creek	*Private
Northern	12	Cottonwood Creek	Morgan	Cottonwood Creek and Tributaries	*Private
Northern	13	Weber River Tributaries	Morgan/Summit	Weber River Tributaries	*Private

*With landowner approval, 1st transplant to areas with suitable habitat void of beavers, 2nd supplement areas of good habitat with low numbers of beaver.

Appendix II
Protocol for Live Trapping and Transplanting Beaver
(Approved August 25, 2010)

1. Live Trapping Protocol

a. Training

- i. All Utah Division of Wildlife Resources (UDWR) employees initially involved in translocating beaver will attend a class to learn live trapping techniques. Trained UDWR employees can in turn train other UDWR employees, Wildlife Service employees or volunteers to perform or assist with live trapping operations. Cooperators other than Wildlife Service employees working independent of UDWR must obtain a Certificate of Registration (COR) and be trained before live trapping and translocating beaver. In this case, conditions, expectations and project coordination will be clearly defined in the COR during regional review and acceptance.

b. Equipment

- i. Live traps such as the Hancock and Bailey brands will be used for live trapping beaver. New live traps should be soaked in water for 24 hours prior to use to remove oils and human scent. Other trap styles or snares will be considered on a case by case basis.
- ii. Cable to secure the live trap to a solid object should be 1/8 inch in diameter, vinyl coated and cut into 10 ft. lengths.
- iii. A stake to secure the cable can be made from rebar. A 2 1/2 ft. length of 3/4 inch diameter rebar is recommended.
- iv. A nut wrench and two cable clamps will be needed make two loops in the cable. One loop is attached to the trap and the other loop is placed over a stake or solid object.

c. Trapping Period

- i. Beaver should only be live trapped and translocated outside of the reproduction season and before winter food caches are established. The live trapping period generally runs from June 1 through September 1.

d. Site Considerations

- i. When evaluating a site for live trapping look for the presence of beaver sign. An active dam, lodge or slides are all good indicators of an established population. A stream or pond bank near an active slide is a good location to set the live trap. Before selecting the trap site consider the possibility of catching non-target species or drawing public attention to the trap.

e. Trap Placement

- i. The live trap should be set in a minimum of 3 inches of water and adjacent to the bank of a stream or pond, tree trunk or large rock. In water depths less than 3 inches, the ground needs to be excavated to the 3 inch depth. The cable should be oriented in a straight line away from the trap. Do not set the cable at an angle to the trap as this may allow the trap to slide into the water column. The rebar stake should be firmly placed in the ground 5 to 6 feet away from the trap. Adjust the cable clamps and slide the cable to pull the trap tight against the bank or other object so the pan is about 2 inches below the water surface. It is important that the cable is stretched tight between the trap and stake as to not allow the trap to slide into the water column. This is extremely important for deep water sets. When the cable is attached to the tip of the stake, “choke” the cable clamp tight to the stake by forming a small loop so the cable cannot slide down the stake.
- ii. Use bait consisting of fresh green small diameter limbs (preferably willow) weaved into the exposed panel of the trap with cut ends facing toward the pan and the tips radiating outward in the shape of a fan. Lure should be placed on one of the end cuts about 2 inches above the pan.

f. Trap Check

- i. Live traps should be set late in the afternoon or early evening and removed the following morning. Do not leave live traps set throughout the day. This invites capture of non-target species.

g. Animal Transfer

- i. Transfer the animal from the live trap by pointing the trap toward the transport cage then slowly opening the trap. In most cases the beaver will walk directly from the trap into the transport cage. If this doesn't work then a catch pole may need to be used.

h. Transport Procedure

- i. Once the animal is transferred to the transport cage it can be moved to a holding facility or transported to the release site. During transport it is important to keep the animal cool. An easy way to do this is to secure a couple of bags of ice to the top of the transport cage and then puncture a few small holes in the base of the ice bags, allowing the water to slowly drip out of the bag.

2. Transplant Protocol

a. Habitat Assessment

- i. A habitat assessment of the proposed transplant site will be conducted before beaver are translocated. A gross habitat suitability ranking will be established for each site based on the following four categories. Beaver will only be transplanted into sites with a gross suitability ranking of fair to excellent, with preference given to excellent and good.

1. Excellent

- a. Valley grade – 0 - 6 %
- b. Valley width – wider than channel, over 150 feet
- c. Vegetation type – dense, mixed height structure of aspen, cottonwood or willow within 100 feet of the water body and little evidence of browsing observed.

2. Good

- a. Valley grade – 7 - 12 %
- b. Valley width – wider than channel, improves as channel width increases
- c. Vegetation type – scattered, bifurcated (mostly tall and short) height structure of aspen, cottonwood or willow within 100 feet of the water body and only moderate evidence of browsing observed.

3. Fair

- a. Valley grade – 13 - 15 %
- b. Valley width – wider than channel but mainly narrow

- c. Vegetation type – Completely old or young height structure of aspen, cottonwood or willow within 100 feet of the water body and evidence of severe browsing observed.

4. Unsuitable

- a. Valley grade – > 15 %
- b. Valley width – seldom wider than channel
- c. Vegetation type – aspen, cottonwood or willow not present within 100 feet of the water body.

b. Aquatic Invasive Species (AIS) Concerns

- i. The transfer of AIS (whirling disease, New Zealand mud snails and Driesenid mussels) as a result of transplanting beaver is a concern. To minimize the transfer of the above noted AIS, beaver from waterways containing whirling disease, New Zealand mud snails or Driesenid mussels will only be translocated to other approved waterways containing the same AIS (contaminated to contaminated). Beaver from waterways not infected with whirling disease, New Zealand mud snails or Driesenid mussels may be translocated to all approved transplant sites identified in the plan (clean to all). Regional wildlife managers will coordinate with regional aquatics managers to indentify the status of waterways supporting or receiving beaver before transplant operations begin.
- ii. In waterways that have not been tested for AIS (whirling disease, New Zealand mud snails and Driesenid mussels) beaver will be quarantined in a holding facility for 72 hours prior to translocation. The facility may either be slightly elevated, containing a wire mess bottom to allow for the passage of feces or portable and placed on a hard surface. Beaver will periodically be rinsed with clean fresh water during the quarantine period. Beaver quarantined for the 72 hour period may be translocated to all approved sites identified in the plan (unknown/quarantined to all).
- iii. Personnel and volunteers involved in live-trapping and translocation efforts will follow the gear decontamination protocol (Appendix A).
- iv. Beaver will not be translocated within a four mile radius of a fish hatchery.

c. Source Population Considerations

- i. Beaver will only be translocated within the same 2 digit Hydrologic Unit Code (HUC) level to account for unique characteristics (Appendix B).
- ii. Nuisance beaver within the 3 digit HUC level will be targeted for translocation to approved sites. When possible the entire family will be translocated.

d. Nuisance Considerations

- i. The possibility of beaver becoming a nuisance at the proposed transplant site should be evaluated. Beaver will not be translocated to areas where nuisance concerns are present unless all cooperating parties agree to accept the risk and manage around the possibility of future nuisance.

APPENDIX II A.

Decontamination Protocol

To Control Spread of Aquatic Invasive Species in Utah

For research institutions or others seeking a Certificate of Registration to collect, import or transport aquatic wildlife in Utah

(http://wildlife.utah.gov/mussels/PDF/COR_decon_protocol.pdf)

The following actions are necessary to control the spread of Aquatic Invasive Species (AIS) in Utah. There are many AIS in Utah, spanning fungus to algae to plants to animals (www.wildlife.utah.gov/mussels). When recreation or work will occur within or at fish hatchery areas, or within riparian, wetland, spring, lake or river areas all equipment must be decontaminated.

Equipment to be decontaminated includes, but is not limited to footwear & gloves; angling or sampling equipment, including nets, live cages, holding boxes, coolers, and scales; boats, trailers and vehicles; or any other equipment having contact with the water, “green strip,” or aquatic animals. When possible, stage recreation or work operations sufficiently away from the water body or “green strip” to minimize unnecessary contact by equipment with potentially AIS affected areas, avoiding inadvertent contamination of equipment. New Zealand mudsnail have been found in the “green strip” more than 40 feet from the water’s edge.

1. Decontamination should first occur before arrival at a recreation or project site, so AIS are not transferred from the last visited area. Preferably, decontamination will have occurred onsite at the last area. **DO NOT ARRIVE OR MOVE ABOUT IN UTAH WITH DIRTY OR WET EQUIPMENT!**

2. Decontamination should again occur before leaving a recreation or project site, so AIS are not transferred to the next site.

Note: Decontaminations must be done on a site-by-site basis not drainage-by-drainage, since many AIS are found within one stream segment or body of water, but may not yet occur either upstream or downstream or even in another lake arm at a recreation or project site.

Decontaminations are for the sole purpose of killing AIS to avoid inadvertent transfer from one locale to another. Desiccation, either by drying or high temperature wash, is very effective at killing AIS. And, in limited situations some chemicals are helpful. Accepted methods for Utah follow:

Self-Decontamination (all three steps—clean, drain & dry--are required for decontamination of boats in Utah—Rule R657-60)

1. CLEAN (remove) off all attached mud, debris, plants or animals from the aforementioned equipment. Scrub with a stiff-bristled brush, then visually inspect, since AIS (seeds, spores, plant shards or the animal itself) frequently collect in seams, crevices

or cracks on equipment, including tires, or between the laces and tongue of wading boots (felt-soled wading boots are disallowed in Utah). Follow the cleaning & inspection with a tap water rinse, where possible, or rinse with clear raw water. Additionally, some chemical treatments can aid in the cleaning step for footwear and small angling or sampling equipment. No chemical process is yet approved for decontamination of boats in Utah.

(A) Footwear and small angling or sampling equipment (not boats or vehicles that have been in contact with the water) can be sprayed with Clorox Formula 409 to kill New Zealand mudsnail and whirling disease spores. Wetted contact time should be at least 30 minutes, then allow the gear to dry in the sun prior to reuse.

Note: The correct Clorox Formula 409 product will list dimethyl benzyl ammonium chloride as 0.3%.

(B) Copper sulfate solutions having a concentration of 252 mg/l of copper are known to kill New Zealand mudsnails. Wetted contact time using copper sulfate should be more than 5 minutes, then allow the gear to dry in the sun prior to reuse.

(C) If decontaminating large pieces of equipment (not boats or vehicles that have been in contact with the water or “green zone”), use Hyamine or Sparquat, which can be purchased in bulk. Quat 128 mixed as 6.4oz/gallon of water is reported to kill chytrid fungus, whirling disease spores and New Zealand mudsnail.

2. DRAIN all raw water from the aforementioned equipment to prepare it for drying. Make sure any raw water circulation systems or containers (coolers and sample containers) are drained, including cooling systems, livewells, ballasts, bilge, and motors (let the lower unit down, so water drains, then run the engine out of the water for 2-3 minutes to raise the temperature to 140 degree F, etc.

3. DRY the aforementioned equipment to kill AIS. Temperature and humidity affect drying time, so in Utah dry for 7 days in summer (June, July & August); 18 days in Spring (March, April & May) and Fall (September, October & November); or 30 days in Winter (December, January & February). Due to extended freezing temperatures in Winter, properly winterized equipment can be exposed for 72 consecutive hours of subfreezing temperature to kill AIS.

Professional Decontamination (an alternative decontamination of boats in Utah—Rule R657-60), which will also kill all AIS.

Use a professional to apply scalding water (140 degree F) to wash boats or any other equipment exposed to raw water, and to flush raw water circulation systems.

APPENDIX II B.

Beaver Translocation Zones

