



2022 Site Report for Eastern Box Turtles Herring River Restoration Project

Click here to access **Conclusions**: "If initial discharges of brackish water begin during the hibernation or para-hibernation season, when animals are torpid or poorly reactive, significant mortality of known and unknown animals is likely to occur."

Oxbow Associates, Inc.
P.O. Box 971
Acton, MA 01720-0971

P 978-929-9058
www.oxbowassociates.com

December 26, 2022

Introduction and Methods

On June 24, 28-29, September 29, October 12, and November 23 Oxbow Associates, Inc. (OA, R. Strohsahl, K. Cormier, D. Kemmett) conducted telemetry surveys to radiolocate eastern box turtles equipped with two-stage transmitters at several sites in the Herring River area of Wellfleet. June surveys were aimed at recovering summer locations for known turtles as well as surveying for up to two additional naïve animals to affix with transmitters in advance of the project work.

In recent years field activity in the Herring River area has primarily taken the form of fall surveys. In late fall, box turtles are typically senescent for the winter, or at least near their hibernation sites. Surveys in late September, October and November aimed to identify these sites. Continuing to identify these locations is important to understand habitat use and timing relative to the proposed future tidal inundation areas and work associated with the Herring River Restoration Project. In September 2022 several two-staged transmitters were due to be replaced prior to battery expiration. Additional surveys for naïve turtles were also conducted at this time.

OA staff carried out the telemetry tracking efforts using existing trails and meandering off-trail through various vegetative cover. OA focused on habitat features where turtles had been previously located and/or hibernated in prior years (2016, 2018, 2019, 2020 and 2021). During the telemetry surveys, OA also searched for naïve individuals under branches, shrubs, and cover objects and searched for small patches of disturbed soil where hibernating turtles may have been burrowing. OA made concerted searches in this manner in November 2022 near the known hibernacula of previously tracked individuals that had lost radio signal in the prior months and years of the project.

OA photographed and measured (body mass, morphometrics) each turtle once located and collected surface temperature within six inches of the individual at each location. OA used a GPS receiver (Trimble model GEOHX) to map turtle overwintering locations.

Results

OA field located 13 of the 13 previously telemetered animals during June surveys. However, three turtles were not detected in late September during the first 2022 fall “round up” (see Table 1). It is likely that these transmitters expired earlier than expected. Two individuals (TCC F1241 and TCC F1405) are missing from the Bound Brook area and a single individual (TCC M1205) is missing from Merrick Island (Table 1). Efforts made to relocate these individuals in October and November near known hibernacula were unsuccessful. Table 1 and the attached figures include all individuals that are no longer part of the study, as explained in previous reports.

OA captured three naïve turtles during the 2022 active season. Two of these (TCC F1434 and TCC F1346) are located on Chequesset Neck and one (TCC M1450) is in the Bound Brook area (Table 1). Both animals at Chequesset Neck were captured in June; the Bound Brook male was found in September. None of these individuals hibernated within the tidal influence area (Figures 1 and 3).

Figures 1 - 4 depict each turtle’s estimated overwintering location for December 2016, December 2018, November 2019, October/November 2020, November 2021, and October/November 2022. The comprehensive view inset on each map represents the entire Box Turtle Survey Area with the nominal zones of initial surveys conducted for eastern box turtles. Figures 1 – 4 include inset boxes showing in thick, red rectangles the approximate limits of the area shown in the larger figure. Also shown are current prospective areas anticipated to experience tidal inundation following the reduction of tidal restriction at the Chequesset Neck Road causeway.

The attached figures depict hibernation locations and turtle movements from 2016 through 2022 for 21 individuals. There are 53 documented hibernation locations. According to these trends, ten known individuals are likely to experience tidal flooding of hibernation localities in the future. Eight of the individuals identified on the attached figures hibernated during two or more seasons within areas anticipated to be flooded. Two individuals used sites located within future tidal influence in one year, and within tidally unaffected areas in other year(s). In total, six of 13 currently telemetered animals have hibernated in areas of future tidal influence. Five of these turtles overwintered in a future tidal influence area in 2022.

Approximately half of the animals with known overwintering locations have shown partial or exclusive preference for areas anticipated to experience salination and flooding in the future. It is important to monitor these individuals, and a larger sample of turtles associated with future tidal zones, both to provide an opportunity to monitor and potentially displace these animals, if necessary, as well as to determine to some extent their response to the flood regime.

Conclusions

If initial discharges of brackish water begin during the hibernation or para-hibernation season, when animals are torpid or poorly reactive, significant mortality of known and unknown animals is likely to occur. Conversely, the response of animals displaced by flooding during their active season, or those that may return to now tidally influenced areas after summering on higher ground, is not entirely predictable.

Ectothermic animals have limited ability to respond to anthropogenic changes in their environment during hibernation and the “shoulder” periods in fall and spring (Cook, 2004; Sosa and Perry, 2015). In that regard, enhanced monitoring, documentation, and potentially displacement of individuals is warranted. Further, displacement or translocation of animals, even within suitable habitat can have mixed results regarding survivorship and animal health (Cook, 2004; Sosa and Perry, 2015). Five of the 13 box turtles surveyed in fall 2022 have hibernation sites within the potential future flood zones of the Herring River Restoration Project. In total, since 2016, 10 of the 22 animals have hibernated within potential future flood zones of the Herring River Restoration Project.

Table 1 provides the current (2022) year’s hibernation results. The “Notes” column also identifies those animals with one or more observed instances of hibernating within future tidal areas. These data are not quantitative in that they represent differing periods of monitoring for different animals with some animals monitored sporadically since 2016 and others with shorter histories.

Table 1: 2022 Turtle Capture Data

Species	OA Turtle #	Sex	Weight (g)	Temp @ Animal (Celcius)	Date First Capture	Note
HR Lowland North "Merrick Island Area"						
Tcc	1205	M	855	7.2	5/13/2016	Missing 2022- Hibernated 4x in tidal influence area
Tcc	1130	F	N/A	N/A	5/13/2016	Missing 2020 - Hibernated 2x in tidal influence area
Tcc	1141	M	625	9	5/13/2016	Hibernated 6x in tidal influence area
HR lowland South "Chequessett Area"						
Tcc	1306	J	N/A	N/A	8/10/2018	Missing 2019 - Hibernated 2x in tidal influence area
Tcc	1305	F	N/A	N/A	8/10/2018	Missing 2019 - No hibernation in tidal influence area
Tcc	1410	F	825	9.5	5/13/2016	Hibernated 1x in tidal influence area
Tcc	1160	M	705	11	5/20/2016	Hibernated 6x in tidal influence area
Tcc	562	F	N/A	N/A	6/8/2016	Missing 2020 - Hibernated 3x in tidal influence zone
Tcc	1150	F	490	9	10/11/2016	Hibernated 1x in tidal influence area
Tcc	1276	M	680	8	6/19/2017	Hibernated 4x in tidal influence zone
TCC	1434	F	818	20	6/29/2022	No hibernation in tidal influence area
TCC	1346	M	625	20	6/29/2022	No hibernation in tidal influence area
Tcc	1246	M	580	7	6/19/2017	No hibernation in tidal influence area
Pamet Woods						
Tcc	1406	F	661	6	6/3/2016	No hibernation in tidal influence area
Tcc	1390	M	635	6	6/7/2016	No hibernation in tidal influence area
Tcc	1460	M	N/A	N/A	6/7/2016	Missing 2020 - No hibernation in tidal influence area
Bound Brook						
Tcc	1320	M	682	9.3	7/7/2016	No hibernation in tidal influence area
Tcc	1211	F	601	8.3	8/18/2016	Hibernated 2x in tidal influence area
Tcc	1241	F	650	11	12/14/2018	Missing 2022-No hibernation in tidal influence area
Tcc	1405	F	585	11	10/20/2020	Missing 2022- No hibernation in tidal influence area
Tcc	1450	M	580	18	9/29/2022	No hibernation in tidal influence area

References

- Brooks, R. J., G. P. Brown and D. A. Galbraith. 1991. Effects of a Sudden Increase in Natural Mortality of Adults on a Population of the Common Snapping Turtle (*Chelydra serpentina*). *Canadian Journal of Zoology* 69(5): 1314-1320.
- Congdon, J. D., A. E. Dunham, R. C. van Loben Sels. 1993. Delayed Sexual Maturity and Demographics of Blanding's Turtles (*Emydoidea blandingii*): Implications for Conservation and Management of Long-lived Organisms. *Conservation Biology*, (7) 4, 826-833.
- Cook, R. P. 2004. Dispersal, Home Range Establishment, Survival, and Reproduction of Translocated Eastern Box Turtles, *Terrapene c. carolina*. *Applied Herpetology* 1:197-228.
- Erb, L. 2011. Eastern Box Turtle Conservation Plan for Massachusetts. Massachusetts Division of Fisheries and Wildlife. 68 pp plus App.
- Enneson, J. J. and J. D. Litzgus. 2008. Using Long-term Data and a Stage-classified Matrix to Assess Conservation Strategies for an Endangered Turtle (*Clemmys guttata*). *Biological Conservation*, 141:6, 1560-1568.
- Rossell, C. R., I. M. Rossell, M.M.Orraca, A. and J.W. Petranka. 2002. Epizootic disease and high mortality in a population of Eastern box turtles. *Herpetological Review* 33: 99-101.
- Sosa, A.J. and G. Perry. 2015. Site Fidelity, Movement and Visibility Following Translocation of Ornate Box Turtles (*Terrapene ornata ornata*) from a Wildlife Rehabilitation Center in the High Plains of Texas. *Herpetological Conservation and Biology* 10 (1): 255-262.

Attachments

Figures 1 through 4, 2022 Eastern Box Turtle Locations

**Turtle Protection Plan
Herring River Restoration Project
Wellfleet, MA**

January 3, 2023

Prepared for:

**MA Natural Heritage & Endangered Species Program
NHESP File #04-15126**

On behalf of:

**Friends of Herring River
P.O. Box 565
Wellfleet, MA 02667**

Oxbow Associates, Inc. (OA) has prepared the following State-listed Turtle Protection Plan (TPP) to avoid incidental mortality (prohibited “take”; 321 CMR 10.02) under the MA Endangered Species Act (MESA) to regulated species at the subject site. Species of interest include eastern box turtle (*Terrapene carolina*), and diamondback terrapin (*Malaclemys terrapin*). The terms of this TPP are intended to comply with conditions related to turtle protection as outlined in the written determination issued by the Massachusetts Department of Fish and Game (DFG) dated March 28, 2021 for the Herring River Restoration Project, Phase 1. This TPP is in support of the proposed work associated with the restoration project proposed by the Town of Wellfleet and Cape Cod National Seashore; specifically for the construction of the infrastructure elements by the Town of Wellfleet (Applicant). The Project in its entirety will re-establish tidal flow to the Herring River estuary incrementally, using a carefully calibrated adaptive management approach that will balance ecological goals with water level control measures to allow the highest tide range practicable while protecting potentially vulnerable structures on public and private properties, including roads and homes.

Tidal flow will be restored and regulated through the replacement of a portion of the existing earthen dike and tidal control structure at Chequessett Neck Road with a new bridge and sluice gate system; construction or alteration of other tidal control structures at the entrances to the Mill Creek and Upper Pole Dike Creek sub-basins; removal of a portion of High Toss Road where it crosses the marsh between the Lower Herring River and Mid-Herring River sub-basins; vegetation management in work areas; and measures to prevent water intrusion impacts to structures on public and private properties.

In accordance with the DFG written determination, areas where this protection plan will be applied include Chequessett Neck Road Bridge and Water Access Facilities, Culvert Replacements, Staging Areas (Town Pit, Duck Harbor Road, Wellfleet Transfer Station), and Elevation of Low-Lying Roads (work beyond 4 feet of roads and parking areas),

which are in mapped habitat. To avoid a potential Take, the Applicant has also voluntarily proposed to include the following areas outside of mapped habitat: Chequessett Yacht and Country Club, staging areas (Griffin Island Road), elevation of low-lying roads (work within 4ft of roads and parking areas), 695 Bound Brook Island Road mitigation, and Way #672 embankment.

This TPP is focused on infrastructure components identified above only (excluding protection efforts associated with the conversion of freshwater wetlands to brackish tidelands) and is comparable to similar measures required by Natural Heritage and Endangered Species Program (NHESP) for analogous projects in the Commonwealth.

Final design, funding and permits are in place to begin construction of the Chequessett Neck Road Bridge and Water Access Facilities (see Figure 1A, 1B, 1C), the largest Phase 1 project element. The Town of Wellfleet has engaged MIG Corporation (Contractor) and is ready to begin construction activity. Accordingly, authorization of turtle protection measures for all areas related to the construction of this project element are requested at this time, including the Duck Harbor Road staging area (Figure 2), and Griffin Island Road staging area (Figure 3), and use of the Town-owned borrow area on Pole Dike Road, as described below.

All other of the above listed project elements are still in final stages of engineering design. Turtle protection measures for these project elements will comply with measures outlined in this TPP. The delineation of turtle protection measures (e.g., exclusion fencing) for construction in these work areas will be provided to NHESP upon completion of final design and prior to the start of any work in these areas.

The Turtle Biologist will obtain Scientific Collecting Permits (SCP) from Massachusetts Division of Fisheries and Wildlife (MDFW) prior to implementation of this plan. As necessary, the Turtle Biologist will also obtain a Scientific Research Permit from the National Park Service for any turtles found on land the Cape Cod National Seashore.

A brief summary memorandum will be provided to NHESP within 10 days of completion of surveys in each work area. This will include reporting of species observed, date, time, conditions, personnel, hours-on-site, and results/disposition of animals. The memo report will include the NHESP tracking number and contact information for the individual filing the report. The Turtle Biologist will prepare and submit Rare Animal Observation forms to the Heritage Hub web portal, as needed.

Rare Species Habitat

Eastern Box Turtle (*Terrapene carolina*)

Box turtles are terrestrial and inhabit uplands and terrestrial wetlands around the Herring River. The forested uplands and wetland complexes provide several habitat functions for the eastern box turtle. The forest floors are covered with leaf litter and duff which offer opportunities for thermoregulation, breeding, and feeding. This leaf litter and duff, as well

as tree stump holes and burrows scattered throughout the upland and wetland forests provide suitable conditions for hibernation during the inactive season. Any patches of open canopy habitat with exposed, sandy soil may serve as valuable nesting habitat. In some locations within the work area, nesting habitat is restricted to narrow strips along roadsides.

OA has conducted several dedicated surveys and annual radio-telemetry locations of box turtles since 2016. Turtles encountered have been fitted with two-stage micro-transmitters to allow both evaluation of habitat utilization and ultimately to assure mortality avoidance during construction. OA has also determined locations of important hibernation sites for many individual turtles. In 2023, it is proposed that the survey effort be focused on the area of construction activity at the Chequessett Neck Road Bridge to maximize the percentage of extant animals that can be accounted for on demand precedent to, and during construction.

Diamondback Terrapin (*Malaclemys terrapin*)

Terrapins are normally restricted to marshes and bays associated with Wellfleet Bay and the Herring River. Individuals have been observed on both sides of Chequessett Neck Road Dike. Like box turtles, diamondback terrapins use patches of open canopy habitat with exposed, sandy soil for nesting habitat, above the high tide line. In some locations within the work area, nesting habitat occurs along roadsides.

Rare Species Mortality Avoidance Measures

Contractor Education

Contractor Education (CE) is intended to introduce the state-listed species occurring around the work area to contractors (laborers, drivers, equipment operators, and site-supervisors), to prepare trainees for the possibility of encountering a state-listed species at, or in the work site, to explain the regulatory compliance issues, and to set expectations for contractor responsibilities, considerations and actions that will be required in case of an encounter. CE sessions will be tailored to specific species occurring at a particular work area assigned to the contractor(s) and will vary among different work sites. CE are mandatory and will be administered by an NHESP approved biologist prior to the beginning of the work at the site. CE will cover a short introduction to identification, key aspects of biology, relevant disturbance minimization and avoidance techniques, and confidentiality of rare species location data.

Seasonal Restrictions

During preparatory work for the reflooding of Herring River basin, seasonal restrictions will minimize the risk of "take" to many species by attempting to schedule work outside of the active season of reptiles in Massachusetts. The project team will utilize seasonal restriction whenever possible, to minimize risk to all rare species within the limits of the project. Seasonal restriction to avoid injury to active reptiles will limit the work to November - March.

More specific seasonal restrictions for Eastern Box Turtles and Diamondback Terrapins will focus on areas that may provide nesting habitat areas or known hibernacula areas.

Reptile Exclusion Fencing

In undisturbed terrestrial areas (4 feet outside of road aprons or within undisturbed land containing vegetation) when work is proposed during the active season of eastern box turtle or diamondback terrapin, but only in locations where NHESP data indicate a high likelihood of animal encounters, the limits of work will be sequestered with silt fence barriers, then searched and cleared of turtles prior to the beginning of the work. The barrier shall be a standard; 36-inch silt fence trenched-in the ground approximately 6 inches, staked approximately every 8 feet, and will be installed around the LOW.



PVC Culvert "Gate"



Wooden "Gate"

within areas specified by the NHESP. Installation of the barrier using a Ditch-Witch and chain saws will allow the barrier to be installed with very low probability of injuring or killing individual animals. Any other methods using larger machinery must be approved by the NHESP. Moveable gates made with corrugated PVC 18-inch or larger, half culverts, or wooden gates may be required at the construction access locations (See Photos).

Prior to the fence installation, the Contractor will consult with the Turtle Biologist to review the fencing perimeter and installation method. Once installed, the Turtle Biologist will inspect and confirm the barrier is installed properly (trenched-in, secure and taut, hay bales, if needed for erosion control, must be on the work side of fence, etc.). Temporary gates (e.g., PVC Half-Culverts or equivalent) where needed will be fitted to each construction access point and closed at the end of each workday. Fencing can be installed at any point on a case-by-case basis. Any turtles found during the fence installation shall be reported to the Turtle Biologist, who will provide instructions on where to relocate the turtle outside the barrier. The relocation process will consider predictable risk from construction or traffic and suitable habitat. Every effort will be made to release animals as close as possible to the location where the animal was found.

Where work is proposed within, or immediately adjacent to open water (*i.e.*, Chequessett Neck Dike, Herring River, and at low-laying road culverts), CE will encompass

information related to seasonal use of the area by Diamondback Terrapins. The Contractor will be required to conduct searches prior to daily work (e.g., parking areas, stockpiling areas, and trenches or pits). Furthermore, any piles of excavated sand or loam could be attractive to turtles for nesting, thus stockpiling of such material should be minimized between May 15 - July 10. If such piles cannot be avoided during that time, said piles shall be stored within a turtle barrier, inspected, and approved, by the Turtle Biologist

Areas of Exclusion Fencing

Duck Harbor Road – 3 Acres +/- and Staging Areas (Figures 1A, B, C, 2)

The Contractor is proposing to use approximately 18,180 sf south of Duck Harbor Road as the primary staging area for construction activity related to the Chequessett Neck Road Bridge and Water Access Facilities (Figure 2). The site would be accessed via a 3,590 square foot earthen ramp from Duck Harbor Road. An adjacent potential expanded staging area of 6,960 square feet to be used if needed is also shown on the Figure 2. The vertices of the primary staging area (points A-E on Figure 2) are referenced by photo labels/descriptions in a Google Earth KMZ file found at <https://fando.filegenius.com/downloadPublic/28cbogc9x6hhuu29>. The photos provide a description of the types of terrain and vegetation, which includes some grass cover with areas of brush and small-medium size trees. Turtles have been observed on this site, but not for hibernating. However, hibernating locations are in the vicinity. A Turtle Biologist will search the site prior to the start of any clearing to ensure that all turtles are outside the proposed work area.

The area will have a turtle barrier installed. The Contractor plans to use a ditch-witch and hand tools only to install the fencing, and will use either a wooden or PVC gate at the entrance to the staging area on Duck Harbor Road, and at a personnel entrance on the perimeter closes to the river. Vegetation will be cut flush to the ground and the Contractor proposes to relocate up to 1,850 cubic yards of material from the Town Pit borrow site on Pole Dike Road (see below) for placement as base material at the Duck Harbor Road staging area.

Once the staging area is prepared, the Contractor also proposes to receive approximately 3,300 cubic yards of material at the staging area for use as base material for temporary bypass bridge approaches. The timing of delivery of material will be outside of the May 15-July 10 window and will avoid the need for stockpiling. This material will be removed and relocated by the Contractor when the temporary bypass is disassembled upon completion of the permanent bridge.

The Contractor also proposes to excavate 4,610 cubic yards of soil in two phases for construction of the southern and norther bridge piers and abutments. This excavated embankment material could be used for roadway subbase material for the access road to the Mill Creek Water Control Structure. This material may need to be temporarily

stockpiled within the Duck Harbor Road staging area prior to transport to Cape Cod National Seashore property.

The Contractor also proposes to excavate a total of 13,750 cubic yards at 2-3 points during construction. Approximately half of the the sediment will be excavated in February-March when upstream stone armor is installed. This may be stored temporarily at the staging area before being transported offsite. The remaining downstream portion would be excavated in 2024 and handled in a similar manner.

Other materials to be periodically stockpiled or staged at the Duck Harbor Road site include crushed stone, stone armor, and other construction equipment and structures.

Upon completion of construction, the Duck Harbor Road staging area, with the exception of a 6-space ADA-compliant permeable parking area will be restored as turtle habitat functions.

Griffins Island Rd Staging Area – 17,680 Square Feet (Figure 3)

This staging area will contain space for contractor parking and office trailers, and not for storage of soil or stone materials. This area is surrounded by existing pavement and is unlikely to provide suitable habitat for turtles. Based on existing conditions and proposed use, there is no fencing proposed for this area. The applicant will consult with the Turtle Biologist prior to storage activity at this site.

Town Pit – 3.5 Acres +/- (Figure to be submitted to NHESP for approval prior to work in this area)

The Town Pit is a previously developed site currently used by the Town of Wellfleet as storage for vehicles, stockpiles, and other material used throughout the year for various purposes in Town. The Town Pit will have some existing fill removed and leveled for more efficient use as temporary stockpiles of sand/fill during the construction project.

The Contractor proposes to relocate up to 1,850 cubic yards of material from the Town Pit borrow site on Pole Dike Road for placement as base material at the Duck Harbor Road staging area (Figure 2). The material will be returned to the Town Pit borrow site at the end of construction. The timing of delivery of material will be outside of the May 15-July 10 window and will avoid the need for stockpiling. The Contractor also proposes to relocate stone riprap from the existing dike/culvert structure and relocate it to the Town Pit for storage during construction before it is re-installed, in addition to storage of imported stone armor. The use of the Town Pit for these borrow and storage activities is consistent with current use by the Town. Therefore, no protection measures are proposed at the Town Pit site for this activity.

Should work occur during the active season at this location, exclusion fencing will be installed prior to the active season starting, thus will not require search effort due to its current disturbed condition (e.g., no forest for overwintering). The perimeter of fencing will be submitted to NHESP prior to the start of work on the site. Once fencing is installed, the Contractor will consult with the Turtle Biologist prior to work beginning on site.

Wellfleet Transfer Station – 3 Acres +/- (Figure to be submitted to NHESP for approval prior to work in this area)

The Transfer Station is a previously developed site used by the Town as a recycling area. A portion of the Transfer Station property may be used as a backup location for temporary stockpiles of sand/fill during the construction of future low road and low property mitigation work, but not for the Chequessett Neck Road Bridge and Water Access Facilities. Should future work be proposed to occur during the active season at this location, exclusion fencing will be installed prior to the active season starting, thus will not require search effort due to its current disturbed condition (e.g., no forest for overwintering). If a determination is made to use this site, perimeter of fencing will be submitted to NHESP prior to the start of work on the site. Once fencing is installed, the Contractor will consult with the Turtle Biologist prior to work beginning on site.

Chequessett Yacht & Country Club (CYCC) - 10 Acres +/- (Figure to be submitted to NHESP for approval prior to work in this area)

The CYCC will undergo a regrading project to elevate low-lying golf course holes that could be flooded during tidal restoration. The site will also provide a source of material for elevation of offsite low-lying roads. CYCC is outside of mapped habitat. The delineation of perimeter of fencing will be submitted to NHESP prior to the start of work on the site. Before the fencing is installed, the Contractor will consult with the Turtle Biologist prior to work beginning on site.

Maintenance of Turtle Barrier Fence and Gates

Once installed, and after inspection and approval by the Turtle Biologist, the fence will be inspected daily by the contractor for the duration of the project, and the construction access point (e.g., wooden barriers/half culverts) must be closed at the end of each workday. If any damage occurs to the turtle barrier, it must be repaired immediately, and the Turtle Biologist notified. The contractor is advised to keep a barrier check log to be presented at an inspector's request.

Clearing Surveys Immediately Prior to Initiating Vegetation Clearing Work

Upon NHESP's approval for work without a barrier, or alternatively confirmation that the barrier is installed correctly, and all construction access roads are equipped with moveable turtle barriers (gates), visual surveys shall be conducted by qualified Turtle Biologist. The Limit of Work enclosed by the fence will be surveyed prior to any disturbance of vegetation or earthwork. The Turtle Biologist will prescribe 4 hours per acre of search effort for forested areas or areas with dense shrubs. These surveys shall occur during the active season and under appropriate weather conditions for reptile surveys, in advance of the start of work within.

Annual Compliance Report

By January 31st of each year of construction activity, the Applicant shall submit an annual report to the Division summarizing TPP implementation actions completed during the prior calendar year (for SCP renewal), including representative photographs, and actions proposed to occur during the following calendar year. In addition, within three (3) months of the completion of all work the Applicant shall submit a detailed written report documenting completion of all work and compliance with the TPP. During active work, the Turtle Biologist will inspect the site(s) periodically and provide inspection reports to NHESP. These reports will include details of work status, need for corrective actions, and any observations of rare turtles.

Construction oversight and radiotelemetry

If work is proposed within areas near eastern box turtles affixed with transmitters, or in areas where exclusion fencing is not installed and required, during the active season, construction oversight by a qualified Turtle Biologist will be necessary to ensure mortality avoidance of targeted state-listed species. After exclusion fenced areas have been searched during the active season, there is no need for additional search effort for any inactive season work. Fencing will be reinspected at the end of the inactive season (March) if work continues into the following active season.

Escorting of construction vehicles may be necessary to minimize the risk of mortality to eastern box turtles within the relevant areas known to be occupied by this species when work occurs during the active season in areas known to be used by turtles and exclusion fencing is not used.

In addition to visual inspections and coordination with the Contractor, the Turtle Biologist will use radio-telemetry in areas where eastern box turtles have been documented and studied previously to monitor movements and report their locations of individual turtles to the contractor (if nearby). It is important that construction oversight occurs prior to, and in the initial stages of improving and creating construction access. The Turtle Biologist will recommend avoidance methods from the approved TPP, as needed. Depending on the construction schedule, construction oversight will vary from daily monitoring in certain seasons and areas to periodic inspections (e.g., every 2 weeks) with daily or weekly correspondence with the Contractor.