

Chapter 2 Description of Alternatives

The purpose of this chapter is to present the alternative formulation and evaluation process and to describe and compare two “Action” alternatives and one “No Action” alternative with respect to the applicant’s Proposed Action.

2.1 Formulation and Evaluation of Alternatives

The Service and Cooperating Agencies considered a range of options and alternatives during development of this EIS (See **Section 2.3**). Alternative development focused primarily on identifying actions that would achieve the proposed action’s purpose and need, with an emphasis on those that could be practicably implemented. In developing alternatives, the Service and Cooperating Agencies also considered, among other factors, the scope of potential impacts to HCP Species and compliance with ESA; public input/scoping comments; and the impacts on NiSource’s safety and delivery obligations. The process by which alternatives were considered is presented below, along with a full description of the alternatives carried forward for further analysis.

2.1.1 Purpose & Need and Compliance with NEPA

As described in Chapter 1, issuance of an ITP is a federal action requiring compliance with NEPA. NEPA implementing regulations require lead agencies to develop and assess a range of alternatives that meet the Purpose of and Need for the Proposed Action. In this case the Purpose of the Proposed Action is to comply with the ESA by providing protection and conservation of certain listed species while enabling NiSource to conduct legally authorized activities associated with (1) general O&M; (2) safety-related repairs, replacements, and maintenance; and (3) construction and expansion (includes abandonment and replacement). The Need for the Proposed Action is based on the fact that take of a listed species that is incidental to otherwise lawful activities can be authorized under Section 10 of the ESA with preparation of an HCP and issuance of an ITP.

In addition, there are several overarching goals that are closely linked to the Purpose of and Need for the Proposed Action as detailed in **Section 1.4**. These include:

- Streamline and expedite ESA consultation and NEPA compliance for cooperating agencies;

- Foster Efficient Use of Time and Money;
- Enhance the Conservation and Recovery of HCP Species; and
- Develop and Coordinate Mitigation Opportunities

In developing alternatives, the FWS and Cooperating Agencies were cognizant of NiSource's desire to streamline its ESA obligations. Though a laudable goal, however, this facet of the applicant's proposed action did not constrain our consideration of feasible alternatives.

NEPA regulations as well as DOI policy and regulations state that the alternatives section is the heart of the EIS, and that the alternatives selected for detailed analysis should be reasonable and implementable, should be given equal treatment, and should provide clear choices for the decision-makers and the public.

These regulations also require lead agencies to:

- Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated;
- Devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits;
- Include reasonable alternatives not within the jurisdiction of the lead agency;
- Include the alternative of no action;
- Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference; and
- Include appropriate mitigation measures not already included in the proposed action or alternatives.

2.1.2 Impacts on HCP Species and Compliance with ESA

In addition to NEPA requirements, ESA requirements were also considered in the formulation of alternatives. The issuance criteria for Section 10 permits described in Chapter 1 provided guidance for developing alternatives.

A foremost purpose of this EIS and the HCP is to address the potential impacts of issuance of the ITP on Federally listed species. Potential impacts on species included in the MSHCP were a primary consideration in the development of alternatives.

Of particular importance when assessing alternatives are certain of the Service's ITP issuance criteria, which require that (1) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; (2) adequate funding and procedures to deal with unforeseen circumstances will be provided; and (3) the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild. (16 USC 668; 50 CFR 17.22). The third factor is essentially the determination of "jeopardy," as that term is defined in the Service's ESA Section 7 regulations (50 CFR Part 402.02). These regulations define the term "jeopardize the continued existence of" as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." Therefore, alternatives that meet these ITP criteria are given preference over those that do not. In other words, with the exception of the no action alternative, we focused on those alternatives that would allow FWS to issue a permit consistent with its own permit criteria.

2.1.3 Public Input

Public input was solicited through public notice and scoping meetings as further detailed in Chapter 1 and in the Scoping Report (**Appendix A**). A range of input and alternatives were identified by landowners, resource agencies, and other stakeholders during the public scoping period. Alternatives or mitigation suggestions that were deemed to be within the scope of this analysis are categorized as follows:

- Alternatives to the proposed **permit duration**
- Alternatives to the proposed **HCP Species**
- Alternatives to the proposed **covered lands (NCL)**

- Alternatives to the proposed **covered activities**
- Alternatives to the proposed **implementation strategies**

2.1.4 Impacts on NiSource's Transmission/Storage & Safety Obligations

As described in Chapter 1, NiSource's primary INGT operations fall under the purview of FERC and the NGA, as well as USDOT and the PSA.

NiSource transports/stores natural gas for its customer/market(s) under a federal mandate issued by FERC. That mandate comes in the form of a Certificate of Public Convenience and Necessity (Certificate). A Certificate affords NiSource certain rights, which among other things, allows them to site, construct, and operate its facilities. With those same rights however come various legally binding obligations, including the obligation to provide the certificated level of natural gas transmission and or storage capacity to the specified customer/market(s). Also, once the facilities are placed in service, NiSource's operations must comply with safety requirements subject to the PSA.

Any alternative that does not allow NiSource to meet its transmission/storage obligations in a safe manner would have a negative impact on the customer/market(s) that rely on NiSource's services, and would subject NiSource to potential legal liability. Therefore, alternatives that did not conflict with NiSource's federally mandated transmission/storage and safety obligations were given consideration over those that did.

2.1.5 Extent and Feasibility of AMMs and USFWS Guidance

ESA permit issuance criteria require that the applicant (NiSource), through development of an HCP, will, to the maximum extent practicable, minimize and mitigate the impacts of taking an HCP Species. Issuance criteria require the Service to examine and predict the efficacy of the applicants' proposed minimization and mitigation measures. It is important to understand that in doing so, the Service is focused solely on measures to be undertaken to reduce the likelihood and extent of the impact of take resulting from the project as proposed, as well as appropriate compensatory measures. The Service interprets this section to mean that the impacts of the proposed project including the HCP that weren't *eliminated* as a result of informal negotiation process, must be minimized to the maximum extent practicable, and then those remaining impacts that can't be further minimized, must be mitigated to the maximum extent practicable.

These standards are based in a *biological determination* of the impacts of the project as proposed, what would further minimize those impacts, and then what would biologically mitigate, or compensate for those remaining impacts. Alternatives that achieved compliance with those factors were given preference over those that did not.

2.2 Alternatives Considered But Eliminated From Consideration

Alternative topics that were assessed and dismissed from further consideration are discussed below.

2.2.1 Alternatives with Varying Processes or Scope

It should be noted that for the purpose of NEPA, the Service and Cooperating Agencies dismissed three alternatives that would have altered the process or scope of requested coverage. These include the breadth of the species to be included (i.e., HCP species), the breadth of the covered lands transmission corridor and the inclusion of storage fields (i.e., storage field counties). We acknowledge that these alternatives are viable and the Service retains authority to condition a permit to limit or expand the scope of species, breadth of covered lands, or inclusion of certain activities. However, evaluating these permutations in this NEPA document would not produce a meaningful comparison of environmental consequences. That is because of the unique nature of the proposal, which hybridizes an ESA Section 10 permitting process with Section 7 consultation processes and a NEPA process, providing review of all impacts regardless how the project is arranged or sequenced. Thus, these alternatives are essentially procedural in application. Under any of the above cited alternatives, all consequences will ultimately be similar.

The list of species incorporated into NiSource's HCP is at the ultimate discretion of NiSource. However, the Service can only issue an ITP for those species under its jurisdiction. Receipt of an ITP would not release NiSource from any obligations related to state-specific species regulations or requirements. Also, NiSource's activities that have the potential to impact federally listed species not covered by or included in the HCP and ITP will still be subject to Sections 7 and 9 of the ESA, consistent with the procedures outlined in Chapter 1.

2.2.2 Covered Activities Alternative

Public input was received regarding the proposed extent of Covered Activities. Specifically, one comment suggested that other than small-scale maintenance activities, those activities that

would include “new construction, expansion, or major maintenance” should be excluded from the ITP. The comment further suggested that these excluded activities undergo a more “traditional review”. The Service assumes that a reference to “traditional review” refers to compliance under Section 7 of the ESA.

As described in Chapter 1, Section 10 of the ESA allows for issuance of an ITP when an appropriate HCP has been developed. Limiting the range of activities would conflict with the action’s intended purpose of enabling NiSource to conduct activities associated with (1) general O&M; (2) safety-related repairs, replacements, and maintenance; and (3) construction and expansion (includes abandonment and replacement). It also would act to limit the proposed broader conservation of listed species.

If it is determined that the HCP is insufficient to address the effects of the proposed Covered Activities associated with the HCP Species, an ITP will not be issued. Similarly if Covered Activities are not able to meet issuance criteria, they would not be included in an ITP or further restrictions will be mandated by the ITP. However, in terms of a reduced action alternative, limiting the range of activities will not meet the applicant’s purpose and need for an HCP. For this reason, the negotiations on development of the HCP concluded that the applicant’s request would be fully considered in terms of the Covered Activities.

2.2.3 Implementation Strategies Alternative

Varied comments were received which addressed specific implementation protocols. Most of those comments related to construction procedures, or more specifically – best management practices (BMPs). Some of these comments addressed BMPs for non-listed/non-covered species (e.g. trout). Those comments were dismissed to the extent that effects on non-covered species do not affect HCP Species. However, the BMPs suggested for Non-HCP Listed Species may still be relevant for the HCP Species, and were therefore still considered. For example, BMPs which benefit trout may have a similar positive impact on other aquatic species (e.g., mussels, other listed fish).

There were other comments received that were determined to restrict flexibility and were unsubstantiated in practice, and thus were dismissed. For example, one commenter suggested that the Service require NiSource to use Horizontal Directional Drilling (HDD) methods at all major stream and/or river crossings to avoid or minimize impacts to aquatic species. While the

Service recognizes the HDD technology as an important option to avoid impacts to aquatic species, it is also true that the HDD methodology is not appropriate or feasible in every situation. Both geologic and geographic constraints can prevent successful completion of an HDD, and may actually result in negative environmental consequences in the event of an uncontrolled migration of drilling mud to the surface. Given the scope of activities proposed for coverage under the ITP, the Service believes that flexibility to implement the most environmentally sound practice for the circumstances at hand is appropriate. The Service concurs with the Applicant that utilizing a range of methodologies may be more appropriate given the numerous circumstances expected to occur over a 14 state operating territory. The Service asserts that an appropriate HCP will adequately address minimization and mitigation, while also allowing for a level of flexibility so that NiSource may utilize the most environmentally appropriate methodology for specific site conditions as well as allow for flexibility to integrate new technologies as they are developed.

2.2.4 Reduced Take Alternative

An alternative was suggested that would result in the permit allowing a reduced level of take of endangered species over that in the Proposed Action (See also **Section 2.2.6**). NiSource, in collaboration with the Service, developed the HCP and the estimated levels of take under a reasonable worst case scenario, and subsequently applied for the ITP. NiSource is required, by ESA issuance criteria, to avoid, minimize, and mitigate to the maximum extent practicable. The process of negotiating AMMs has resulted in an HCP that identifies ways that activities will be managed to minimize take. This negotiation has also taken the “maximum extent practicable” standard into account.

2.2.5 All AMMs Mandatory Alternative

Instead of allowing for the non-mandatory AMM implementation as is currently proposed for some species with the Proposed Action, this alternative would require that all available AMMs be mandatory and implemented all of the time, perhaps resulting in a reduced level of take for some species. During initial analysis as to the merits of this alternative, discussions were held with NiSource as to the feasibility of implementing all AMMs as mandatory during pipeline operation and construction. NiSource has indicated (See HCP Chapter 5) that during the development of the HCP, a suite of potential AMMs was identified that cannot be reasonably implemented in every instance, but, when feasible, might provide some additional conservation

benefit. These were then identified as non-mandatory AMMs for purposes of the HCP and were not included in the calculation of take under their “reasonable worst case scenario”. The reasons cited by NiSource why these AMMs cannot be used for all proposed projects include: location, technical or engineering feasibility, potential adverse impacts to other trust resources, project timelines, customer needs, and/or effectiveness. To this end, the Service felt that requiring implementation of non-mandatory AMMs for all projects all of the time would not be reasonable, and this alternative was dismissed from further analysis.

2.2.6 Alternative Approach to Mitigation

An alternative was discussed that would require a different approach to mitigation, whether in the form of other means to accomplish mitigation, alternative locations, amounts, quality, purposes, etc. While the team felt that it was prudent to consider alternative forms of mitigation than that proposed by NiSource, the fundamental question arose as to whether NiSource’s approach is reasonable and adequate, and would meet the requirement that mitigation must fully compensate for the impact of take. NiSource’s proposed mitigation relies on situation-specific factors with the intent that the ultimate mitigation result will be determined based on species and site-specific conditions relative to future project planning and implementation. Due to the scope and timeframe associated with the HCP, we believe that NiSource’s approach to mitigation, including the funding commitments and third-party oversight, is both reasonable and adequate for the purposes of the HCP. This alternative was, therefore, dismissed from further analysis.

2.3 Alternatives Carried Forward for Detailed Analysis

- **Alternative 1: No Action Alternative (Status Quo)**
- **Alternative 2: Issuance of a 50-year ITP and Approval of the NiSource Habitat Conservation Plan (Proposed Action)**
- **Alternative 3: Issuance of a 10-year ITP and Approval of the NiSource Habitat Conservation Plan (Reduced Permit Duration Alternative)**

2.3.1 Alternative 1 – No Action Alternative

NEPA requires that an EIS alternatives analysis include consideration of a No Action Alternative. Under the No Action Alternative, issuance of an ITP and approval of the NiSource HCP would not occur.

NiSource compliance with the ESA would continue “status quo” through informal and formal Section 7 ESA consultations with the FERC and the USFWS on a project-by-project basis (FERC is the lead agency which regulates NiSource activities). NiSource activities with a federal nexus (e.g., FERC authorizations, USACE authorizations, USFS and NPS permitting) would continue to require individual Section 7 ESA consultations to comply with the ESA. Project goals relative to streamlining ESA compliance, enhancing conservation and recovery of affected species, coordinating mitigation projects, and fostering efficient use of time and money, would not be met (see Chapter 1) unless NiSource and the federal action agencies pursued a programmatic Section 7 consultation..

NiSource would continue to be subject to full liability under Section 9 of the ESA as any future take would only be authorized through formal project-by-project ESA consultation with the Federal action agency (primarily FERC) and the Service. The project-by-project approach of the No Action Alternative could also result in variable application or even no application of avoidance, minimization, and mitigation measures (as contained in the HCP) and adversely affect or at least hamper NiSource’s ability to schedule operation, maintenance and minor construction in the most efficient manner. In addition, the requirement to mitigate for the impacts of the take would not be in place for a traditional Section 7 consultation. This would likely save money for the company, but would not provide the additional benefit to the species.

2.3.2 Alternative 2 – Issuance of a 50-year ITP and Approval of the NiSource HCP (Proposed Action)

NiSource contacted the Service in late 2005 to discuss options for improving the current ESA consultation process with respect to its INGT activities. NiSource has sought to address the full range of its ongoing activities holistically as well as identify and manage species and their habitat impacts system-wide.

The Service agreed that a multi-species habitat conservation plan developed under Section 10(a)(1)(B) of the ESA could provide a new and innovative opportunity to address and

contribute to the conservation and recovery needs of listed species and habitats. Accordingly, NiSource coordinated with the Service to develop an HCP that covers a wide array of natural gas pipeline activities over a broad geographic region. The goal of the HCP is to develop a mechanism that:

- Identifies conservation measures and BMPs to avoid and minimize impacts on species identified in NiSource's MSHCP;
- Identifies mitigation needs commensurate with the impact of the taking; and
- Implements conservation actions in a manner that allows benefits to accrue across species ranges and across covered lands for 50 years, thus maximizing the compensatory effect.

NiSource's HCP outreach effort began in late 2006 and has included involvement from federal, state, and private organizations. NiSource specifically involved a range of federal agencies early in the process. Beyond the Service, outreach targeted the USACE, FERC, NPS, and the Forest Service, all of which have since signed on as formal cooperators in the NEPA process. Briefings also occurred with the PHMSA and Tennessee Valley Authority (TVA). In addition to federal agencies, NiSource's HCP outreach efforts extended to state agencies in each of the 14 states covered by the project area. Outreach included in-person meetings to brief staff on the project, and to provide documents that addressed the specifics of the HCP itself.

NiSource also contacted a number of Non-Governmental Organizations (NGOs), including The Conservation Fund (TCF), The Nature Conservancy (TNC), the Environmental Defense Fund (EDF), and Defenders of Wildlife (DOW), and formed a NiSource advisory team to advise and review aspects of HCP development. Advisory team members included members from both the private sector and state government. Finally, NiSource secured species-specific specialists to obtain information on the Covered Species and to provide detailed recommendations.

Alternative 2 involves issuance of an ITP for a 50-year term, including approval of the NiSource HCP, associated IA, and acceptance by the Cooperating Agencies and the Service that ITP issuance and HCP compliance fulfill their obligations under Section 7 of the ESA. At this time NiSource is requesting incidental take coverage for 10 of the 43 species analyzed in the HCP (see **Table 2.3-1**) for NiSource's activities across their operating territory. No take of the

remaining 33 species is anticipated. There will either be no effect or the impacts will not rise to the level of take, in large part due to NiSource's commitment in the HCP to implement Avoidance and Minimization Measures (AMMs) for these species. Impacts to the 43 species analyzed in the HCP, along with other listed, proposed or candidate species within the covered lands, will be analyzed in this NEPA document as well as in the Service's Biological Opinion under Section 7 of the ESA. This alternative would authorize implementation of NiSource's HCP as written, including adaptive management, changed circumstances and incorporation of new information over time.

Permit Duration

NiSource has developed an HCP to provide compliance with the ESA for 50 years, and hence seeks an ITP for the duration of 50 years. The rationale for the 50-year permit duration was based in part on the normal operating life of a pipeline, which is approximately 50 years.

Covered Lands

The proposed area to be covered by the ITP and associated HCP would include a one-mile wide corridor centered upon a majority of NiSource's existing INGT system in 14 states (Louisiana, Mississippi, Tennessee, Kentucky, Virginia, West Virginia, North Carolina, Indiana, Ohio, Pennsylvania, New York, New Jersey, Delaware and Maryland) for approximately 15,650 miles (**Figures 1.1-1 – 1.1-4**). In addition to the designated one-mile corridor, the ITP and associated HCP would also entirely cover 12 counties in Ohio, Pennsylvania, Maryland, and West Virginia collectively, where NiSource operates some of its underground natural gas storage fields. Specifically this includes Hocking, Fairfield, Ashland, Knox, and Richland counties in Ohio; Bedford County, Pennsylvania; Allegany County, Maryland; and Kanawha, Jackson, Preston, Marshall, and Wetzel counties in West Virginia. The original (October 2007) Scoping material did not include discussion of including these 12 counties as part of the NCL (see below). In total, the ITP and HCP would cover an area of approximately 9.8 million acres. NiSource anticipates it will disturb much less than the 9.8 million acres within the covered lands footprint over the permit term. Of the total anticipated disturbance within the covered lands area, approximately 95 percent of the disturbance would occur on existing rights-of-way (most of this is vegetation maintenance). The remaining 5 percent represents disturbance for operations and maintenance activities or construction of expansion projects; over the life of the permit this acreage impact would be approximately 42,200 acres within the covered lands area (844 acres annually). Only NiSource activities specific to onshore facilities will be addressed in

this EIS. The vast majority of the NCL footprint was drawn at or near the high-tide line along coastal reaches. The HCP reports that the only exceptions below the high-tide line include a few inland reaches of the James River in Virginia and some waters in Louisiana.

The final NCL footprint described above has changed somewhat since the initiation of the HCP in 2007. As of Scoping in October 2007, NiSource considered an NCL footprint that included the Granite State Gas Transmission Corporation, a subsidiary of NiSource at the time. As such, a one-mile corridor in three additional states (17 total) including Maine, New Hampshire, and Massachusetts was included as part of the NCL footprint during Scoping. Following formal Scoping, but prior to submittal of the HCP, NiSource sold the Granite State Gas Transmission Corporation. Given this, NiSource no longer has an interest in the INGT system in those three states and the NCL footprint was changed to include only those 14 remaining states as discussed above.

In addition, after formal Scoping closed, NiSource decided to include twelve entire counties in Ohio, Pennsylvania, Maryland, and West Virginia as part of its NCL footprint rather than rely solely on the 1-mile corridors within these counties. NiSource decided upon this change to account for future storage field expansion, however, due to the highly-sensitive (U.S. Department of Homeland Security) and proprietary nature of storage field locations and boundaries, NiSource refuses to provide the Service with exact locations of its intended storage field expansion. To maintain flexibility in locating future facilities, and to account for the sensitive nature of potential natural gas facility locations, NiSource elected to conservatively include entire counties as part of the NCL footprint. In the HCP document, NiSource has made it very clear that it would not conduct unlimited construction or other surface disturbance within those counties or the corridor. Specifically NiSource will not utilize, clear, or disturb the entire one-mile-wide corridor or storage field counties, or even a significant portion of such corridor or counties. The one-mile corridor and county boundaries for select storage fields were chosen to provide needed flexibility for both the realignment of existing facilities to accommodate future forced relocations (typically resulting from public road construction/maintenance projects) and the minimization of environmental impacts while aligning future replacement and expansion projects. Actual surface disturbance associated with the covered activities will be far less than the covered lands in their entirety. Further, NiSource has agreed to restrict or completely avoid activities in certain portions of the one-mile wide corridor where such activities would

significantly impact two sensitive species, the cheat mountain salamander (*Plethodon nettingi*) and the Louisiana black bear (*Ursus americanus luteolus*) (NiSource HCP, Ch. 2.3).

HCP Species

The ITP would authorize take of nine federally-listed and one proposed species (see **Table 2.3-1**) during the course of NiSource's otherwise lawful INGT activities. In addition, the HCP analyzes impacts to 33 other species. Of these, no impacts are anticipated for 24 species, and as a result of NiSource implementing AMMs, impacts to the remaining 9 species are not expected to rise to the level of take.

Table 2.3-1: Species Evaluated in NiSource HCP

Species Common/Scientific Name	Federal Status	Preliminary Determination
Mammals		
Gray bat <i>Myotis grisescens</i>	Endangered	Avoid take through AMMs/BMPs
Indiana bat <i>Myotis sodalis</i>	Endangered	Take Species
Louisiana black bear <i>Ursus americanus luteolus</i>	Threatened	Avoid take through AMMs/BMPs
Virginia big-eared bat <i>Plecotus townsendii</i>	Endangered	Avoid take through AMMs/BMPs
Delmarva fox squirrel <i>Sciurus niger cinereus</i>	Endangered	No take anticipated
West Indian manatee <i>Trichechus manatus</i>	Endangered	No take anticipated
Birds		
Interior least tern <i>Sterna antillarum</i>	Endangered	Avoid take through AMMs/BMPs
Reptiles		
Bog turtle <i>Glyptemys muhlenbergii</i>	Threatened	Take Species
Lake Erie water snake <i>Nerodia sipedon insularum</i>	Threatened	No take anticipated
Amphibians		
Cheat mountain salamander <i>Plethodon nettingi</i>	Threatened	Avoid take through AMMs/BMPs
Shenandoah salamander <i>Plethodon Shenandoah</i>	Threatened	No take anticipated
Fish		
Maryland darter <i>Etheostoma sellare</i>	Endangered	No take anticipated
Blackside dace <i>Phoxinus cumberlandensis</i>	Threatened	No take anticipated
Cumberland darter <i>Etheostoma susanae</i>	Candidate	No take anticipated

Species Common/Scientific Name	Federal Status	Preliminary Determination
Gulf sturgeon <i>Acipenser oxyrinchus desotoi</i>	Threatened	No take anticipated
Scioto madtom <i>Noturus trautmani</i>	Endangered	No take anticipated
Slackwater darter <i>Etheostoma boschungii</i>	Threatened	No take anticipated
Crustaceans		
Madison cave isopod <i>Antrolana lira</i>	Threatened	Take Species
Nashville crayfish <i>Orconectes shoupi</i>	Endangered	Take Species
Mollusks		
Birdwing pearlymussel <i>Lemiox rimosus</i>	Endangered	Avoid take through AMMs/BMPs
Clubshell <i>Pleurobema clava</i>	Endangered	Take Species
Cracking pearlymussel <i>Hemistena lata</i>	Endangered	Avoid take through AMMs/BMPs
Cumberland bean pearlymussel <i>Villosa trabalis</i>	Endangered (XN)	No take anticipated
Cumberland monkeyface pearlymussel <i>Quadrula rafinesque</i>	Endangered	Avoid take through AMMs/BMPs
Dromedary pearlymussel <i>Dromus dromas</i>	Endangered (XN)	No take anticipated
Fanshell <i>Cyprogenia stegaria</i>	Endangered	Take Species
James spiny mussel <i>Pleurobema collina</i>	Endangered	Take Species
Louisiana pearlshell <i>Margaritifera hembeli</i>	Endangered	No take anticipated
Northern riffleshell <i>Epioblasma torulosa rangiana</i>	Endangered	Take Species
Oyster mussel <i>Epioblasma capsaeformis</i>	Endangered	Avoid take through AMMs/BMPs
Pale liliput pearlymussel <i>Toxolasma cylindrellus</i>	Threatened	No take anticipated
Purple cat's paw pearlymussel <i>Epioblasma obliquata</i>	Endangered	No take anticipated
Sheepnose <i>Plethobasus cyphus</i>	Proposed	Take Species ** if listed
Tan riffleshell <i>Epioblasma florentina walkeri</i>	Endangered	No take anticipated
White cat's paw pearlymussel <i>Epioblasma obliquata perobliqua</i>	Endangered	No take anticipated
White wartyback pearlymussel <i>Plethobasus cicatriocosus</i>	Endangered	No take anticipated
Insects		
American burying beetle <i>Nicophorus americanus</i>	Endangered	Take Species
Karner blue butterfly <i>Lycaeides melissa samuelis</i>	Endangered	No take anticipated

Species Common/Scientific Name	Federal Status	Preliminary Determination
Mitchell's satyr butterfly <i>Neonympha mitchellii mitchellii</i>	Endangered	No take anticipated
Puritan tiger beetle <i>Cicindela puritana</i>	Threatened	No take anticipated
Plants		
Braun's rock cress <i>Arabis perstellata</i>	Endangered	No take anticipated
Mead's milkweed <i>Asclepias meadii</i>	Threatened	No take anticipated
Pitcher's thistle <i>Cirsium pitcheri</i>	Threatened	No take anticipated
(XN) = Experimental, nonessential ** Sheepnose will be added to the ITP upon listing. Source: NiSource 2010a; Chapter 4		

41 of the HCP Species that NiSource has proposed for inclusion in the HCP are species that are currently listed as federal T&E species, are under the jurisdiction of the Service, and have some likelihood of occurring within the lands covered by the HCP. The HCP also addresses one proposed and one candidate species (**Table 2.3-1**) for which incidental take authorization or concurrence with effect determinations cannot be directly provided because these species are not federally listed. NiSource determined that it is appropriate to include these species in the HCP given the real potential associated with their future listing status. In the event that the species are listed in the future, the ITP (and HCP if necessary) will be amended to provide take coverage in light of their inclusion in the approved HCP.

The 43 species analyzed in the HCP differs from the original list of 76 HCP Species that was identified during the October to December 2007 Scoping Period. NiSource provides its rationale for this reduction in Chapter 4 of its HCP. NiSource would still be required to evaluate potential impacts to non-HCP species and consult under the ESA, as necessary, when they are encountered. These "non-HCP" federally-listed species (Non-HCP Species) -- an additional 46 based on current listing status located within the NCL -- are evaluated in this EIS as well as in the associated BA/BO.

Covered Activities

An ITP would be issued to NiSource for its INGT activities specific to (1) general Operation and Maintenance (O&M) activities that do not require excavation or significant earth disturbance; (2) safety-related repairs, replacements, and maintenance; and (3) construction and expansion. For the purpose of this Section, both Items 2 and 3 will be combined into one discussion topic, "Construction", as the underlying construction activities for these two items are identical.

Operation and Maintenance Activities

General O&M includes a variety of activities that NiSource field personnel conduct on a day-to-day basis in order to keep the system operating efficiently and safely. These activities include the physical operation and the required maintenance, monitoring, and inspection of the facilities. Natural gas flows through the NiSource system from producers to market areas and/or storage on a continual basis. Once facilities are safely installed and commissioned, O&M activities are routinely performed to keep NiSource's transportation and storage services operating safely and at optimal levels. O&M activities also include vegetation management along NiSource ROWs and facility sites. Vegetation management includes mowing, tree-clearing and side trimming, and limited use of herbicides. For a complete description of NiSource O&M Activities see **Appendix B**.

New Construction Activities

Construction activities include construction on natural gas facilities such as pipelines, storage wells, compressor stations, access roads, and related ancillary facilities. Construction may take place in order to fabricate new, replace or upgrade existing, abandon existing, and/or internally inspect existing facilities. Construction includes activities such as mechanical land clearing and grading, installation of erosion and sediment control devices, trenching, well drilling, hydrostatic testing, and ROW stabilization and restoration. For a complete description of NiSource Construction Activities see **Appendix B**.

NiSource Conservation Strategy/Program

NiSource has stated that the goals of its Conservation Strategy of the HCP are threefold (NiSource 2010a; Chapter 5, page 1):

- Protect HCP species and their habitats through the implementation of an environmental compliance program that meets or exceeds federal, state, and local regulations and requirements;
- Enhance the conservation of HCP species through the application of rigorous planning, adaptive management, and sound scientific principles; and
- Maximize conservation benefits to HCP species and the ecosystems that support them.

These strategies will be implemented through a mix of existing environmental practices, as well as new measures that have been developed in conjunction with the Service in preparation of the HCP. The conservation strategy for each species was informed by Biological Goals and Objectives, and developed by NiSource and the Service pursuant to the Service's Five Point Policy (65 FR 35242, June 1, 2000).

NiSource Environmental Practices

Presently, NiSource follows standard practices to help avoid and minimize environmental impacts. NiSource states that its pre-construction planning and project implementation must comply with the following:

NiSource has in place three Environmental Construction Standards (ECS) documents for Columbia Gas, Columbia Gulf, and for projects within the State of Virginia, respectively (Appendix B of the NiSource HCP). These collective ECS provide company-wide minimum requirements for construction, operation, and maintenance activities, particularly in environmentally sensitive-areas. NiSource states (NiSource 2010b) that these ECS were specifically developed to comply with FERC Plans and Procedures. Specifically, the ECS provide standards for O&M and construction activities including, but not limited to, right-of-way width; clearing; grading; access roads; residential areas; trenching; backfilling; final grading, restoration, and stabilization; noise impact mitigation; hydrostatic testing; stream crossings; wetland crossings; spill prevention, containment, and control; maintenance; environmental inspections; environmental training; contractor's environmental compliance specialist; environmental construction management; and emergency construction.

In addition, NiSource's Environmental, Health, and Safety Department, Natural Resources Permitting Group utilize an internally produced Environmental Awareness Handbook to train NiSource personnel. The goals of this training and associated documentation are to provide guidance that will help ensure adherence to NiSource's ECS and its overarching environmental compliance program, as well as pertinent environmental regulations and permits. NiSource will conduct compliance training specific to implementation of the HCP with training materials subject to approval by the USFWS.

Avoidance and Minimization Measures

NiSource explicitly states in the HCP that it will avoid and minimize adverse effects of Covered Activities on HCP Species. This is in addition to NiSource's existing ECS, its environmental

compliance program, and existing pre-construction planning and project implementation specifications. After minimizing the take to the maximum extent practicable, NiSource will then mitigate the impact of the taking.

Because NiSource's future activities are uncertain both in terms of where within the NCL they may occur and when, it is not feasible to predict specific temporal and spatial impacts over the life of the requested permit. As such, the HCP analyzed anticipated impacts to species using reasonable worst-case scenarios.

NiSource contends that this approach has resulted in a greater requested take authorization than what will actually occur when Covered Activities are initiated. NiSource anticipates that it will be able to avoid and minimize most impacts so that take can be avoided in many cases and mitigation requirements will be minimal or non-existent.

Chapter 6 and Appendix F of the HCP (also **Appendix E** of the EIS) provide a detailed discussion of proposed species-specific AMMs for HCP Species. Most of the AMMs are required to be implemented 100-percent of the time, though several are considered and labeled "non-mandatory" when NiSource determined it was impractical to implement in all cases. According to the HCP, NiSource's non-mandatory AMMs not associated with water body crossings will be applied on a case-by-case basis based on a review of location, feasibility, effectiveness, impacts to other resources, and timing considerations.

Beyond NiSource's existing "Natural Gas Pipeline & Storage Permitting Processes" outlined in Appendix K of the HCP, NiSource has established the following specifications for AMMs (other than waterbody crossings) when implementing its HCP (NiSource 2010a; Section 5.2.1):

- In accordance with its current practice and corporate policy, NiSource will use a Project Environmental Information Form (PEIF) and Environmental Management & Construction Plan (EM&CP) – EZ form to gather data related to the potential project impacts.
- NiSource will follow all mandatory AMMs including potentially modifying the project activity and/or relocating the project footprint to avoid effects on listed species. NiSource will implement non-mandatory avoidance measures wherever practical. All relocations made to specifically avoid impacts on a HCP Species will be documented and reported.

- NiSource will evaluate each covered activity's potential to impact HCP Species and prepare a clearance package, through the development of an EM&CP with appropriate AMMs as identified in Chapter 6 and Appendix F of the HCP to minimize the impacts on these species. Mandatory AMMs will be identified and included in the EM&CP. Non-mandatory AMMs will be selected and incorporated into the project where feasible, consistent with Section 5.2.1 of the HCP.
- The clearance package will contain reply forms that will be used to evaluate and track the implementation of AMMs and actual impacts to HCP Species for a particular project. The information gathered during the pre-construction planning and project implementation phases will be used to determine actual project impacts on HCP Species and help determine any required mitigation.

Given the potential impacts to a number of HCP Species due to crossing water bodies, Section 5.2.1.1 of the HCP provides specific details regarding the process to be utilized when determining appropriate water body crossing techniques. NiSource utilizes five basic methods for waterbody crossings including two open-cut methods (dry-ditch and wet ditch), horizontal bore, HDD, and spanning. Depending upon the species present, a crossing method may be considered as a mandatory AMM or as a decision to be made on a site-specific basis. For those cases where it is situational-dependent, NiSource will complete a site-specific review of each individual crossing based on an engineering evaluation, an environmental assessment, an economic evaluation, and any regulatory drivers in place to determine which type of crossing will be selected.

Details regarding the suite of species-specific AMMs are provided in the species analyses included in **Appendix E**. While the details and specifics vary among species, AMMs can by and large be grouped into the following general categories and subcategories as shown in **Table 2.3-2**. Not every measure listed is appropriate for every species. And the extent to which a particular measure will be employed will vary among species (e.g. time-of-year-restrictions). Again, Chapter 6 of the HCP elaborates the AMMs for each species. In general, AMMs are related to: habitat and occupation surveys; measures to avoid and/or minimize impacts to species; preparation of an EM&CP; stream bed construction methods; stream bank conservation methods; timing restrictions on activities; specifications for pipeline abandonment; methods for dealing with possible contaminants; methods for withdrawal and discharge of water;

travel and access road procedures; methods to deal with possible exotic species; vegetation management; routing criteria; and methods to minimize soil and geology impacts.

Table 2.3-2: Avoidance & Minimization Measures (AMMs) – HCP Species

Habitat and Occupation Surveys
Determine habitat suitability for the species, or assume potential presence
Survey to determine presence/absence within identified suitable habitat
Measures to Avoid and Minimize Impacts to Species
Bait the species away from the project area
Trap and relocate species away from the project area
Species education for operators, employees, and contractors
Avoid activities involving long-term noise disturbance >75db within specified distance
Strict control of "bear attractants" such as use of "bear-proof" waste disposal containers
Designated critical habitat within ROW maintained to NGTS ECS env. sensitive area standards
Remove buildings during winter months, or after a survey year round
Prepare an Environmental Management & Construction Plan
Prepare an Environmental Management & Construction Plan
Stream Bed Construction Methods
Consider HDD or other trenchless methods for install or replacement across habitat
Install pipelines to a minimum depth at least 10 feet past the high water line in riparian areas
Do not install In-Channel repairs within occupied habitat
Work from a lay barge or temporary work bridge rather than operate heavy equipment in-stream
Remove equipment bridges as soon as practicable
Inspect for and correct bank destabilization associated with the pipeline within occupied habitat
Ensure that work within streams does not result in impacts to adjacent habitats or karst features
Avoid channelizing streams
Cross perennial streams only during specified periods

Stream Bank Conservation
Do not construct culverts or stone access roads across water body/riparian occupied habitat
Use sufficient fluming to minimize flow disruption in stream habitat
Ensure that upland work does not result in impacts to adjacent water habitats
Timing Restrictions
Comply with timing restrictions to minimize impact
Avoid construction activities after sunset in occupied habitat
Pipeline Abandonment
Pipeline abandonment specifications
Contaminants
Site staging areas location restrictions
Ensure that all imported fill material is free from contaminants
Use enhanced and redundant spill control for storage well activities in occupied habitat
Avoid use of fertilizers within a specified distance of occupied habitat
Avoid use of herbicides within a specified distance of occupied habitat
Follow standard policies and procedures for herbicide use in proximity to occupied habitat
Refuel equipment, check for leaks each day, and control contaminants as per the ECS
Use tanks rather than waste pits to store waste fluids
Withdrawal and Discharge of Water
Avoid discharging hydrostatic test water from new pipe directly into occupied habitat
Avoid drawing hydrostatic test water directly from occupied habitat
Discharge hydrostatic test water down gradient or >300 feet upland from occupied habitat
Use best available water withdrawal/discharge impact avoidance techniques (e.g., settling basins, sediment fencing)
Avoid discharging hydrostatic testing water from existing pipe directly into occupied habitat
Travel and Access Roads
Avoid driving across identified habitat
Route new access roads a specified distance from occupied habitats
With landowner consent, block access roads and ROWs leading to occupied habitat
Exotic Species
Thoroughly clean all equipment prior to use to avoid inadvertent introduction of exotics
Vegetation Management
Avoid stepping on hummocks and tussocks
Avoid pulling woody vegetation out by the roots in identified habitat
Comply with restrictions on mowing
Avoid dragging vegetation through occupied habitat
Avoid burning brush piles within a specified distance of occupied habitat
Re-vegetate disturbed habitat in accordance with the ECS
Leave piles of woody debris along edge of ROW if clearing vegetation
Avoid additional clearing of trees
No woody vegetation or spoil disposal within occupied habitat
Retain snags, dead/dying trees, and trees with exfoliating bark
Maintain a diversity of open, herbaceous habitat
Routing Criteria and Construction
Avoid constructing bell holes and trenches in habitat areas
Route new projects to avoid occupied or potential habitats
Soil and Geology Impacts

Employ silt fences around construction/soil disturbance areas within occupied habitat
Blasting within a specified area of occupied habitat must ensure karst integrity is maintained.
No HDD within the potential habitat zone
Clearly mark karst feature buffers until ground disturbing activities are completed
Use an inverted filter to bridge karst when filling new sinkholes
Trenches to be backfilled using native material
Minimize alteration of existing grade and hydrology of existing surface karst features

Incidental Take Requested

NiSource is requesting incidental take for 10 species. Detailed take calculations for each of the take species is provided in Section 6.2 of the HCP under “Calculation of Incidental Take” for each species.

Due to the nature of NiSource’s HCP, in terms of scope of covered lands and permit duration, NiSource has not been able to predict with any certainty where or when a given covered activity would occur. Thus, the calculation of take was imprecise; however, the species analyses include modeling and associated assumptions to develop a reasonable worst-case scenario for each species. The modeling was developed with the Service, and the assumptions explained. We acknowledge the uncertainty inherent in the modeling, which could produce under- or over-estimates. To the extent possible, NiSource has included monitoring and adaptive management to test hypotheses used and verify the model inputs. The level and type of take requested (individuals or habitat) as part of the Proposed Action is summarized in **Table 2.3-3**.

Table 2.3-3: Summary of Incidental Take Requested Over the 50-Year Permit Duration

Species	Summary of Take Requested
Indiana bat	Incidental take is requested for a low, but immeasurable percentage of the 2,637 total Indiana bat individuals estimated to be present within no more than 69,151 acres of summer and/or spring staging/fall swarming habitat loss
Bog turtle	Incidental take is requested for impacts to turtles and habitat at 25 sites
Madison Cave Isopod	Incidental take is requested for 2,764.5 surface acres and associated subsurface area of effect on Madison Cave Isopod habitat
Clubshell Mussel	Incidental take is requested for up to 166 acres of clubshell habitat
Northern Riffleshell Mussel	Incidental take is requested for up to 165.3 acres of Northern Riffleshell habitat
Fanshell Mussel	Incidental take is requested for up to 283.2 acres of Fanshell habitat
James Spiny mussel	Incidental take is requested for up to 12.8 acres of James Spiny mussel habitat
Sheepnose Mussel	Incidental take is requested for up to 250.4 acres of Sheepnose habitat
Nashville crayfish	Incidental take is requested for up to 4.0 acres of Nashville crayfish habitat
American burying beetle	Incidental take is requested for 4 American burying beetle individuals

Compensatory Mitigation

Mitigation is required only when take is unavoidable. Species-specific mitigation measures, including the type and quantity of mitigation and criteria for suitability, eligibility, success and completion of mitigation are detailed in **Appendix E**. As described in Chapter 6 of the HCP, mitigation will occur throughout the duration of the permit. Because the location of certain of NiSource's activities is presently unknown, specific mitigation projects must be deferred to the future. But when selected, they must be consistent with the mitigation criteria identified for each species.

In addition to mitigation that will occur throughout the duration of the permit, NiSource has committed to mitigate for all anticipated impacts resulting from O&M within the first seven years of HCP implementation. The species will benefit from the mitigating measures prior to the on-going maintenance that may ultimately impact their habitat.

NiSource, in coordination with the Service has outlined the following general criteria or methodology that must be utilized to compensate for take (NiSource 2010a; Chapter 5, page 11-12).

- Mitigation must be completed within states crossed by the NCL area.
- NiSource must provide specific funding assurances to guarantee implementation of mitigation activities and the HCP overall (HCP Chapter 8).
- Mitigation has to compensate for the impact of the take. Selection of future mitigation projects must satisfy the mitigation criteria in Chapter 6 of the HCP.
- Selection of future mitigation projects may also be informed by such guidance as TCF's Strategic Conservation Planning Tool, recovery plans, state requirements or other information so long as all species specific requirements outlined in the HCP (Chapter 6) have been met.
- The mitigation must be initiated within two years after take, unless the Service agrees that a longer initiation period is advantageous in garnering the conservation benefit for the species.

- NiSource will ensure that any mitigation that occurs on lands owned by a third party will be consistent and compatible with those land use rights left to the existing landowner.
- It is likely that multiple activities will occur in the same location over the life of the HCP and ITP. However, compensatory mitigation will only be required for the first time a covered activity involving take is conducted in a specific geographic location. For example, once compensatory mitigation is provided for Nashville crayfish, take in a specific stream crossing location, additional mitigation will not be required for covered activities within the same area previously affected and compensated for.
- NiSource will maintain and annually provide to the Service a report describing the amount of mitigation performed, by species, along with any “credits” remaining. The report will contain details regarding mitigation projects that compensate for take for more than one species at the same time.
- NiSource has proposed a mitigation approach relative to the O&M activities that involves completing all mitigation for O&M within the first seven years of implementing the HCP.

The following table (**Table 2.3-4**) summarizes NiSource’s planned compensatory mitigation associated with the requested level of take for each of the 10 listed species described earlier.

Table 2.3-4: Summary of Mitigation Over the 50-Year Permit Duration

Species	Summary of Mitigation Proposed
Indiana bat	<p>Total Maximum Mitigation Spring Staging/Fall Swarming = 2 hibernacula projects = 252 Acres Summer habitat (suitable) = 1,708 Acres Storage Field Impacts = 9,000 Acres Sum = 10,960 Acres over 50 years = 219 acres/year</p>

Species	Summary of Mitigation Proposed
Bog turtle	<p><u>Construction (Ground-Disturbance) Activities and Non-ground-Disturbing O&M at 20 Sites</u> For each site impacted by looping (estimate of 10), new construction (estimate of five) and/or conventional replacement methods (open trench) (estimate of five) (and all non-ground-disturbing O&M impacts), NiSource can either protect and restore a bog turtle site or protect an existing site with optimal bog turtle habitat.</p> <p><u>Non-ground-Disturbing O&M Activities at Five Additional Sites</u> The mitigation for take associated with O&M activities at sites that also involve ground-disturbing activities is addressed above. Mitigation for take associated with O&M activities at sites that do not involve ground-disturbing activities is either: (1) habitat restoration/enhancement and long-term management agreement (life of the permit) within wetland that crosses ROW, or (2) off-site protection and restoration (same mitigation as described above).</p>
Madison Cave Isopod	<p>NiSource is anticipating take of individuals of two populations (Lime Kiln Cave and one unknown population). As mitigation for this, NiSource shall protect two key parcels (containing surface karst features) and restore surface karst features (if needed). Key parcels are defined as a parcel of land with either an important natural feature (cave or spring) and its immediate recharge area, or an average of five surface karst features and a 300-foot buffer around each feature.</p>
Clubshell Mussel	<p>Riparian and/or streambed restoration, enhancement, and protection in occupied and unoccupied (for possible relocation) habitat (750 ac maximum).</p>
Northern Riffleshell Mussel	<p>Riparian and/or streambed restoration, enhancement, and protection in occupied and unoccupied (for possible relocation) habitat (884 ac maximum). Propagate, augment, expand, re-introduce into suitable habitat.</p>
Fanshell Mussel	<p>Riparian and/or streambed restoration, enhancement, and protection in occupied and unoccupied (for possible relocation) habitat (956 ac maximum).</p>
James Spiny mussel	<p>Riparian and/or streambed restoration, enhancement, and protection in occupied and unoccupied (for possible relocation) habitat (77 ac maximum).</p>
Sheepnose Mussel	<p>Riparian and/or streambed restoration, enhancement, and protection in occupied and unoccupied (for possible relocation) habitat (973 ac maximum).</p>
Nashville crayfish	<p>Restore and/or protect riparian habitat (0.4 ac for aggregate take, 4 ac for new construction take)</p>
American burying beetle	<p>One-time payment to fund propagation, monitoring, and survey programs.</p>

NiSource has established two methods for implementing actual mitigation under these guidelines. The first would be NiSource-initiated mitigation efforts, and the second would be the funding of mitigation proposals by NiSource with the assistance of a NiSource-chaired technical advisory committee (Mitigation Panel).

NiSource Initiated Mitigation

NiSource has the option of initiating mitigation efforts before, during, or up to two years after undertaking Covered Activities for which there will be take; thus allowing for flexibility to pursue mitigation opportunities as they arise. For instance, if a parcel of land with significant habitat for a Take Species becomes available for purchase or for a conservation easement, NiSource may acquire a conservation easement on the property to compensate for past and/or future impacts to such species.

Before pursuing any specific mitigation efforts, NiSource would consult with the Service to determine how much compensation credit the particular mitigation project would provide. If the mitigation project would more than compensate for impacts to a given Take Species, NiSource would both compensate for the impacts and receive a mitigation “credit” toward future impacts to that species. If the mitigation effort does not fully compensate for previous impacts to a given Take Species, NiSource would either pursue additional mitigation efforts or would utilize the NiSource Mitigation Fund.

NiSource Mitigation Fund

In addition to the NiSource-initiated mitigation approach, NiSource will establish a trust fund (MSHCP Fund) that will be administered by the NFWF. Monies will be disbursed at NiSource’s request, following vetting with the Service to ensure consistency with the mitigation requirements of Chapter 6 of the HCP. NFWF is a private, nonprofit, tax-exempt organization chartered by Congress in 1984 that sustains, restores, and enhances the Nation’s fish, wildlife, plants, and habitats through leadership conservation investments with public and private partners.

The MSHCP Fund will contain of two separate but related sub-accounts. The first, referred to as the “Reserve Account,” will consist of an initial payment of \$100,000. The Reserve Fund will be maintained at this amount to finance any unfunded obligations for mitigation, monitoring, adaptive management, or changed circumstances. The initial \$100,000 will provide a pool for NiSource to draw upon if an unexpected situation develops or an underestimate becomes evident. However, it is possible that the \$100,000 will never be used during the life of the permit. Additionally, every five years, NiSource will deposit a sum of money into the Fund to account for inflation, as reflected by the consumer price index. The goal shall be to maintain a balance of

\$100,000 in 2010 dollars. Chapter 8 of the HCP identifies the process for drawing upon the Reserve Account.

The second sub-account, referred to as the "Mitigation Account," is intended to fund mitigation to compensate for the impact of the take species. Deposits into the Mitigation Account will vary from year to year, depending on anticipated take and the level of compensation that is required by Chapter 6 of the HCP. Chapter 8 of the HCP identifies the various timeframes for deposits, depending on the type of covered activity being undertaken. It also obligates NiSource to make necessary and regular adjustments to ensure the Mitigation Account is fully funded.

The MSHCP Fund will be managed as a general account for all species and funds may be used as necessary for mitigation for any species as needed. NiSource will ensure, however, that there is adequate funding to compensate for all take of each species; mitigation must be completed within the established timeframes for each species. This information will be provided in the annual mitigation report described in Section 5.3.1 of the HCP.

If NiSource chooses not to directly undertake mitigation efforts, mitigation will be carried out with monies from the Mitigation Account of the MSHCP Fund. NiSource shall select the future mitigation projects from proposals solicited from third parties. Proposals will be solicited on a rolling basis throughout the permit duration, consistent with NiSource's annual mitigation debt, if any. After evaluating proposals, NiSource will submit final written recommendations, including its reasoning and all supporting information to the Service, which will ultimately determine whether the proposed mitigation package is acceptable.

NiSource will convene a Mitigation Panel (Panel), which it will chair, to assist it in evaluating third-party mitigation proposals. The charter for the Panel describing its structure, membership, conflict of interest provisions, purpose, record-keeping and reporting is included in Appendix N of the HCP.

NiSource or the Panel may solicit proposals from various NGOs, states within the MSHCP area, tribes, federal agencies, academics, and others for projects to be funded by the Mitigation Fund. The proposals must conform to the mitigation requirements identified in Chapter 6 for the particular take species at issue. These proposals must also relate to the take species impacted by the MSHCP covered activities and must be conservation and science based.

Monitoring and Reporting

An HCP, per ESA Section 10 regulations, is required to monitor, report, and assess any HCP Species impacts due to take from implementation of Covered Activities. Moreover, the Service's 5-point policy outlines criteria that an HCP must follow. Namely, an HCP must evaluate compliance, determine if the biological goals and objectives outlined in the HCP are met, and provide information that will serve as a feedback loop for adaptive management.

NiSource states that its monitoring and reporting methods will document implementation of AMMs and mitigation measures, take of HCP Species, compliance with requirements of AMMs and mitigation, effectiveness of the conservation program, and implementation and effectiveness of adaptive management measures.

Adaptive management is defined by the Service in its June, 2000 addendum to its HCP Handbook (65 FR 35252) as "a method for examining alternative strategies for meeting measurable biological goals and objectives, and then if necessary, adjusting future conservation management actions according to what is learned." In particular, an adaptive management program should identify uncertainties with conservation strategies and the questions that need to be addressed to resolve any uncertainties; should develop alternatives to those strategies and cases in which to implement those strategies; should develop and integrate a monitoring program aimed at providing information required to effectively evaluate conservation strategies; and should incorporate feedback loops that would link conservation strategy implementation and monitoring with ultimate decision-making.

Compliance Monitoring

NiSource will establish an HCP implementation team made up of members of NiSource's Natural Resource Permitting group and Corporate Environmental Services department. From this group, NiSource will designate an HCP coordinator who will be responsible for ensuring NiSource's overall compliance with the terms of the HCP, ITP, and IA. The manager of the Natural Resources Permitting group has ultimate responsibility for implementation. As individual projects arise, either NiSource personnel or their qualified consultants will be charged with monitoring the progress of specific Covered Activities and associated implementation of AMMs.

Methods for documenting the success of the AMM applications for routine projects include visual field survey of the affected area, review of completed restoration or revegetation growth in

accordance with FERC Plans and Procedures (FERC 2003a and 2003b) (See **Appendix C**) for erosion control, revegetation, and river/stream crossings, or a biological survey. Species-specific specialists will be retained as needed based on Service and NiSource review to conduct pre-activity surveys as required for larger projects. This information, which will be maintained in a Geographic Information Systems (GIS) database, will be utilized to track species and habitat information during compliance monitoring.

NiSource proposes to utilize the Service's Information, Planning, and Consultation System (IPaC), once available and operational, to support overall implementation of its HCP. Namely the Service envisions that the IPaC system will identify the most current biological information regarding species within and adjacent to NiSource's NCL footprint, and then provide specific approved BMPs/AMMs that will be required for a particular activity in a particular area. Under this scenario, NiSource could specify a specific project location and covered activity it wishes to pursue with the IPaC system, and in return IPaC will deliver specific information on required AMMs that apply to the project. The Service also envisions that the IPaC system would be designed to close the loop by providing tools that track proper monitoring and reporting to ensure the HCP is implemented appropriately.

If the IPaC is not ready at the time of HCP implementation, NiSource will, in the interim, utilize an internal system called ProjStat to inform and populate the required annual report (discussed below). ProjStat will maintain a running tally of species impacts and compensation over the life of the permit, information (overall and by activity type) on the number and percentage of covered activities for which AMMs were implemented (or not implemented in the case of non-mandatory AMMs), where HCP Species were identified and what AMMs were implemented at each worksite. This monitoring information will document that NiSource, in practice, is clearly meeting or exceeding the requirements outlined in the HCP. In addition, NiSource will develop and implement internal quality assurance/quality control measures to review the accuracy of the monitoring data provided.

Effects and Effectiveness Monitoring

In addition to compliance monitoring, NiSource will document and examine the on-the-ground effects of those activities which require compensation. In particular, impacts from the previous year that result in either temporary or permanent habitat loss will be reported, along with any direct take of species, to calculate compensation for that year's activities.

Effectiveness monitoring will be undertaken by those who have successfully received funding for mitigation proposals by the Mitigation Fund or by the entity responsible for directly implementing a mitigation effort initiated by NiSource. Monitoring protocols as provided in Appendix L of the HCP will be followed and updated as required for the duration of the permit. NiSource maintains all responsibility for effectiveness monitoring and will report monitoring results to the Service. If monitoring reveals that any particular mitigation measures are not successful, additional measures, per the adaptive management strategy and changed circumstances strategy, will be implemented.

NiSource will also be responsible for evaluating the effectiveness of certain AMMs directly. Most AMMs are based on, or are the same as techniques NiSource has employed for many years. As such, the effectiveness of most AMMs is well established and will only need compliance monitoring. However, for those AMMs where there is some uncertainty associated with their effectiveness, or there is a risk to the species if the AMM is unsuccessful, the HCP (Chapter 7) outlines an adaptive management strategy that links effectiveness monitoring to adaptive management.

NiSource states in its HCP that its responsibilities for integrating the monitoring and adaptive management include: (1) gathering monitoring data on the effectiveness of AMMs and mitigation and maintaining a database; (2) assessing results of AMM and mitigation monitoring to determine effects on the HCP Species; (3) if effects are not what was anticipated, implementing, in coordination with the Service, the necessary changes to the conservation program to ensure minimization and mitigation consistent with what was required and anticipated; and (4) monitoring and evaluating the implementation and effectiveness of adaptive management strategies (NiSource 2010a; Chapter 7, Page 6).

Annual Reporting and Meetings

NiSource proposes to submit an annual report that documents results of both its compliance and effectiveness monitoring. The report will include any mitigation or AMM effectiveness monitoring results conducted by entities responsible for implementing mitigation proposals as well as NiSource initiated efforts. The report will include, but is not limited to:

- Information and specifics regarding that past year's Covered Activities;
- Areas of disturbance;

- Take calculations for each species;
- Surveys conducted;
- AMMs that were implemented and rationale for those that were not;
- Assessment of AMM implementation success;
- Take calculations and compensatory mitigation calculations;
- Discussion of compliance with the previous year's compensation requirements;
- Summary of biological goal and objective status;
- Summary of those mitigation proposals that were approved; and
- An accounting of any credits NiSource had accrued from previous mitigation efforts.

With the annual reports as a guide, NiSource plans to hold meetings to review annual report(s) and address overall issues with HCP implementation, including potentials for streamlining, effectiveness of AMMs, consistency with effectiveness goals, and other issues as they arise. Meetings would include both key NiSource and Service staff (and other stakeholders as needed) and are proposed to occur on an as needed basis during year one, annually until the fifth year of implementation, and then at least every five years thereafter, unless the parties agree to meet on a more frequent basis. These meetings will provide a structured process for which to review AMMs, discuss adaptive management strategies, and, as needed, modify conservation strategies for individual species in order to reach desired goals and outcomes for that species. In order to capture all relevant discussion regarding HCP implementation, NiSource will produce a summary report, which requires concurrence by the Service, of all issues addressed and specific conclusions or agreements made at the meeting. This summary report will provide another feedback mechanism for use and reference at the next scheduled meeting.

As a courtesy, NiSource also plans to submit a prior notification report to the Service annually to provide information on planned projects, both O&M and new construction, for the upcoming year. NiSource will make particular note of any Covered Activities that are anticipated to be

conducted within a designated sensitive area, with details regarding the planned covered activity and location.

Adaptive Management

While the goal of the HCP is to achieve the biological goals and objectives for species as outlined in Chapter 6 of the HCP, there is always some uncertainty regarding whether certain strategies will achieve intended results. As such, the proposed adaptive management program aims to examine the effectiveness of certain mitigation strategies and AMMs employed in the implementation of the HCP. The adaptive management program review will be based primarily on results of monitoring and new information that becomes available regarding species, management techniques, and habitat conditions during the life of the permit. Using this review as a basis, the goal of adaptive management is then to identify any changes or responses needed in order to respond to unexpected results or less than anticipated success.

NiSource discusses the need to both identify and employ species-specific testable hypotheses as a cornerstone of adaptive management. The goal is to identify whether the monitoring completed on various species-specific AMMs and mitigation procedures actually demonstrates that the response of the HCP Species or its habitat is in line with expectations and model predictions or whether there are unanticipated results. If the results are outside the desired or anticipated window, then NiSource and the Service will examine other means by which to achieve the desired outcome. As strategies are employed to address shortcomings in effectiveness, the specific AMM, mitigation, or other conservation measure that is the focus of the adaptive management strategy will become part of the adaptive management program, and subject to effectiveness monitoring as well.

In order to develop bounds for what is acceptable for various AMMs, NiSource has established species-specific thresholds based on biologically relevant elements of the HCP that would trigger adaptive management. In particular, the HCP outlines a range of species-specific adaptive management strategies that would be employed based on outcomes related to areas of uncertainty with species-specific AMMs (NiSource 2010a; Chapter 7).

For example, NiSource states in its HCP that there is uncertainty associated with the mortality estimate for moving Nashville crayfish outside of a stream crossing construction area. The hypothesis that has been developed relative to this topic is as follows: *“Nashville crayfish relocated outside of the construction area will not have more than 50 percent mortality within*

one month after relocation.” Adaptive management will be employed to evaluate and address the accuracy of the estimated 50 percent survival rate of individuals relocated to the first three relocation areas outside of the construction area. NiSource must mark, recapture, or otherwise determine the fate of relocated crayfish at three time periods (one week, one month, and six months) after relocation as compared to a group of animals in similar habitat that have not been relocated. NiSource must also mark and recapture (or otherwise document impacts) a sample of the Nashville crayfish already inhabiting the relocation site to ensure efforts are not merely replacing one group with another. These studies will be performed for the first three relocation activities that NiSource conducts. The results will be used to appropriately adjust any compensatory mitigation requirements.

If it is discovered that the survival rate at any point prior to six months after relocation is below 50-percent, or if loss of Nashville crayfish previously inhabiting the relocation site is greater than 10-percent of reference site during the same period, then alternative adaptive management measures will be evaluated and implemented as necessary. Alternatives to evaluate if survival trigger is exceeded include the following:

- Relocate Nashville crayfish to suitable habitat in an unoccupied section of the project stream if available;
- Relocate Nashville crayfish to another Service approved stream having suitable habitat and within the range of the Nashville crayfish; and
- Relocate Nashville crayfish to artificial ponds with suitable habitat (or other Service approved temporary habitat) as a temporary measure until more data are available to support successful relocation into stream habitat within the species’ range (NiSource 2010a; Chapter 7, Page 10-11).

For a complete list of species-specific adaptive management strategies refer to Chapter 7 of the HCP.

No Surprises Rule

By definition, adaptive management anticipates that there will be changes over time which will require modification to how the conservation program is implemented in order to continue to meet biological goals and objectives. The entire HCP, including

the adaptive management strategy, is also subject to the federal “No Surprises Rule”, 63 FR 8859 (Feb. 23, 1998) (codified at 50 CFR §§ 17.3, 17.22(b), 17.32(b)). The “No Surprises Rule” provides assurances to Section 10 permit holders that, as long as the permittee is properly implementing the HCP, the IA, and the ITP, no additional commitment of land, water, or financial compensation will be required with respect to covered species (i.e., “take species”), and no restrictions on the use of land, water, or other natural resources will be imposed beyond those specified in the HCP without the consent of the permittee. The “No Surprises” Rule has two major components: changed circumstances and unforeseen circumstances.

In response to this rule, NiSource has prepared its HCP to respond to a variety of circumstances and is requesting regulatory assurances for all HCP Species (see HCP Chapter 10). Changed circumstances reasonably anticipated and planned for in the HCP include; (1) Climate Change; (2) Droughts; (3) Floods; (4) Fires; (5) Tornados; (6) Disease; (7) Invasive Species; 8) Species Range Expansion/Contraction; and 9) Species Listing/Delisting.

Changed circumstances are defined in the “No Surprises” Rule as “changes in circumstances affecting a species or geographic area covered by [an HCP] that can reasonably be anticipated by [plan] developers and the Service and that can be planned for (e.g., the listing of new species, or a fire or other natural catastrophic event in areas prone to such events).” (50 C.F.R. § 17.3). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances, and such measures were provided for in the HCP, the permittee will be required to implement such measures. (50 C.F.R. §§ 17.22(b)(5)(i), 17.32(b)(5)(i)). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances, and such measures were not provided for in the HCP, the Service will not require any additional measures beyond those provided for in the HCP, without the consent of the permittee, provided the HCP is being properly implemented. (50 C.F.R. §§ 17.22(b)(5)(ii), 17.32(b)(5)(ii)).

Unforeseen circumstances are defined as changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the Service at the time of the negotiation and development of the plan and that result in a substantial and adverse change in the status of the covered species. (50 C.F.R. § 17.3).

The Service bears the burden of demonstrating that unforeseen circumstances exist using the best available scientific and commercial data available while considering certain factors. (50 C.F.R. §§ 17.22(b)(5)(iii)(C) and 17.32(b)(5)(iii)(C)). In deciding whether unforeseen circumstances exist, the Service shall consider, but not be limited to, the following factors (50 C.F.R. §§ 17.22(b)(5)(iii)(C) and 17.32(b)(5)(iii)(C)):

1. The size of the current range of the affected species;
2. The percentage of the range adversely affected by the covered activities;
3. The percentage of the range that has been conserved by the MSHCP;
4. The ecological significance of that portion of the range affected by the MSHCP;
5. The level of knowledge about the affected species and the degree of specificity of the conservation program for that species under the MSHCP; and
6. Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the species in the wild.

In negotiating unforeseen circumstances, the Service will not require the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water or other natural resources beyond the level otherwise agreed upon for the species covered by the HCP without the consent of the permittee (50 C.F.R. §§ 17.22(b)(5)(iii)(A)). If additional conservation and mitigation measures are deemed necessary to respond to unforeseen circumstances, the Service may require additional measures of the permittee where the HCP is being properly implemented only if such measures are limited to modifications within conserved habitat areas, if any, or to the HCP's operating conservation program for the affected species, and maintain the original terms of the plan to the maximum extent possible. (50 C.F.R. §§ 17.22(b)(5)(iii)(B) and 17.32(b)(5)(iii)(B)). Additional conservation and mitigation measures will not involve the commitment of additional land, water or financial compensation or additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the conservation plan without the consent of the permittee.

Notwithstanding these assurances, nothing in the “No Surprises” Rule “will be construed to limit or constrain the [Service], any Federal agency, or a private entity, from taking additional actions, at its own expense, to protect or conserve a species included in a conservation plan.” (50 C.F.R. §§ 17.22(b)(6) and 17.32(b)(6)).

Amendment Process

The HCP includes an amendment process that is consistent with the Service’s permitting regulations and HCP handbook. The HCP (Chapter 9) describes three types of circumstances, including those in response to adaptive management or changed circumstances, that may require an amendment to the HCP, ITP or IA over time: administrative, minor, and major.

Permittee

NiSource is seeking an ITP for Covered Activities initiated by NiSource and its designated agents which include Columbia Gas Transmission, LLC, Columbia Gulf Transmission Company, Crossroads Pipeline Company, Central Kentucky Transmission Company, and NiSource Gas Transmission and Storage Company (referred collectively as “NiSource” throughout this EIS), as well as any master limited partnerships established by NiSource. The ITP, if granted, will not provide any ESA coverage for other individuals or entities, including landowners of the NCL. In addition, an ITP may be transferred in accordance with the Service’s regulations, currently located at 50 CFR § 13.25.

2.3.3 Alternative 3 – Issuance of a 10-year ITP and Approval of the NiSource HCP

Alternative 3 involves the same issuance, approval, and acceptance actions detailed above in Alternative 2. However, Alternative 3 considers a reduced permit duration of 10-years, subject to ITP renewal and potential amendments to the HCP by NiSource. ITP renewal would be subject to NEPA review.

Public input was received with regard to the proposed length of the ITP permit term. Specifically, input was received suggesting that a 50-year permit term was too long. All of the associated comments suggested that the permit term be shortened, but most did not include a suggestion for an alternative timeframe. One commenter however did recommend a 10-year permit term and inter-agency discussions have raised the 10-year timeframe as a potentially workable option based on prior HCP experience.

For a permit duration of 10-years, uncertainty about the implementation of covered activities, take analysis, adaptive management, and environmental consequences would be somewhat reduced. Upon receipt of a renewal request, the Service would re-examine the operating conservation plan to determine whether the biological goals are being met, the mitigation approach is functioning as envisioned, whether mitigation is compensating for the take that has occurred over the first 10-years, and whether any adjustment to the incidental take authority may be required to renew the permit. It would also consider any new information regarding species occurrences in relation to the covered lands.

With respect to the results of choosing a 10-year permit duration, there are several factors that must be considered. Due to the extensive discussions between NiSource and the Service to develop the HCP, NiSource has proposed a mitigation approach relative to the O&M activities that involves completing all mitigation for O&M within the first seven years of implementing the HCP. As a result, the effects to species would be mitigated prior to the completion of those O&M activities that are anticipated to occur over the 50-year HCP timeframe. Conversely, the 10-year timeframe would not benefit from the “up front” aspect of O&M mitigation because NiSource has only agreed to that mitigation strategy provided they receive a 50-year permit. Furthermore, the anticipated take associated with O&M will be skewed toward the early years of implementation due to a backlog of O&M maintenance that currently exists. In other words, once a forested ROW has been trimmed and cut back, maintenance on a cyclical basis would involve a lesser impact than the initial “catch-up” that currently faces NiSource.

Another result of choosing a 10-year ITP is that there would be a formalized application review process built in by regulation. The Service's permit regulations require that a renewal or amendment application for a permit must be made available for public review and comment. An amendment or renewal request could result in another 10 year term or could result in a longer permit term since the nature of the request is the permit holder's prerogative. Similarly, the agency would need to evaluate the NEPA analysis completed to determine whether this EIS remained sufficient to analyze project impacts beyond the existing permit timeframe. This NEPA would be subject to public review concurrent with the permit renewal application. Should the Service select Alternative 3, this more formalized public review process would be in place. If the Service selects any Alternative with the 50-year permit term, public review processes could occur in the event of an application to amend the permit (which is expected to occur). In

addition, NEPA tiering will provide opportunity for agency and public review of site-specific implementation over time.

Evaluation of the conservation plan implementation would occur as part of compliance monitoring, at least annually, but would be largely internal review resulting from review of reports and monitoring permit implementation. The public review component would be required for an amendment application from NiSource or required review associated with the tiered NEPA.

2.4 Summary and Comparison of Alternatives Considered for Detailed Analysis

Table 2.4-1 provides an overview summary of each of the three alternatives by major feature.

Table 2.4-1: Alternative Comparison by Major Feature

Topic	No Action Alternative	Proposed Action	10-Year Duration Alternative
Permit Duration	No permit issued; NiSource would continue to operate status quo	50 years	10 years with possible renewal
Covered Lands	Determined on a project by project basis for future projects	9.8 million acres	9.8 million acres
HCP Species	Listed species will be determined on a project by project basis for future projects	See Table 2.3-1 for HCP Species; however additional listed species addressed as appropriate.	See Table 2.3-1 for HCP Species; however additional listed species addressed as appropriate.
Covered Activities	Determined on a project by project basis for future projects.	See Appendix B	See Appendix B
Conservation Strategy	Determined on a project by project basis	Commitments to avoid, minimize, and mitigate for projected impacts, including take of HCP species; including all upfront O&M mitigation during the first 7 years of the permit	Commitments to avoid, minimize, and mitigate for projected impacts, including take of HCP species; no upfront O&M mitigation
Monitoring and Reporting	Determined on a project by project basis	Compliance monitoring, effects and effectiveness monitoring, and annual reporting	Compliance monitoring, effects and effectiveness monitoring, and annual reporting

Topic	No Action Alternative	Proposed Action	10-Year Duration Alternative
Adaptive Management	Determined on a project by project basis	Adaptive management program is based on results of monitoring and reporting; components of the conservation strategy may then be modified based on results of adaptive management.	Adaptive management program is based on results of monitoring and reporting; components of the conservation strategy may then be modified based on results of adaptive management.
No Surprises Rule	No Surprises not available through Section 7 consultation	Regulatory assurances for all HCP Species included for the following reasonably anticipated and planned changed circumstances: (1) Climate Change; (2) Droughts; (3) Floods; (4) Fires; (5) Tornados; (6) Disease; (7) Invasive Species; (8) Species Range Expansion/ Contraction; and (9) Species Listing/ Delisting.	Regulatory assurances for all HCP Species included for the following reasonably anticipated and planned changed circumstances: (1) Climate Change; (2) Droughts; (3) Floods; (4) Fires; (5) Tornados; (6) Disease; (7) Invasive Species; (8) Species Range Expansion/ Contraction; and (9) Species Listing/ Delisting.
Amendment Process	Determined on a project by project basis	HCP, ITP, and IA can be amended via administrative, minor, or major amendment processes.	HCP, ITP, and IA can be amended via administrative, minor, or major amendment processes.
Permittee	Determined on a project by project basis	NiSource and its designated agents	NiSource and its designated agents

Table 2.4-2 provides an overview summary and comparison of the four alternatives considered for detailed analysis in Chapter 4.

Table 2.4-2: Comparison of Alternatives Considered for Detailed Analysis

Alternative	Streamline Future ESA and NEPA Compliance	Enhanced Conservation and Recovery of HCP Species	Develop and Coordinate Mitigation Opportunities	Foster Efficient Use of Time and Money	Impact (Take)
No Action Alternative	No opportunity	None	None	Advantages of efficiency and streamlining associated with Proposed Action would not be realized	None documented. In addition, there is no reliance on recently developed AMMs and mitigation program associated with the action alternatives.
Proposed Action	Yes	Yes, through conservation and mitigation programs, including upfront O&M mitigation during first 7 years	Yes, through mitigation program	Yes, through reallocating resources associated with individual project review (up to 400 per year) by field office staff	Yes, but offset by conservation and mitigation program to provide net benefit to take species and ancillary benefit to other wildlife and natural resources components associated with future conservation lands
Reduced Duration Alternative	Yes, during the duration of the permit	Yes, through conservation and mitigation, though benefits associated with upfront O&M mitigation during first 7 years	Yes through mitigation program during ten-year permit term	Yes, during ten-year permit term	Yes, though less take than Proposed Action due to shortened permit duration if permit not renewed.