

Illinois Department of Natural Resources
CONSERVATION PLAN
Application for an Incidental Take Authorization
Per 520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080

PROJECT APPLICANT: Mounds Production Company LLC
OIL-DRI Corporation of America
700 Industrial Drive
Mounds, Illinois 62924

PROJECT NAME: OIL-DRI Tucker Mine: Spotted Dusky Salamander

COUNTY: Pulaski

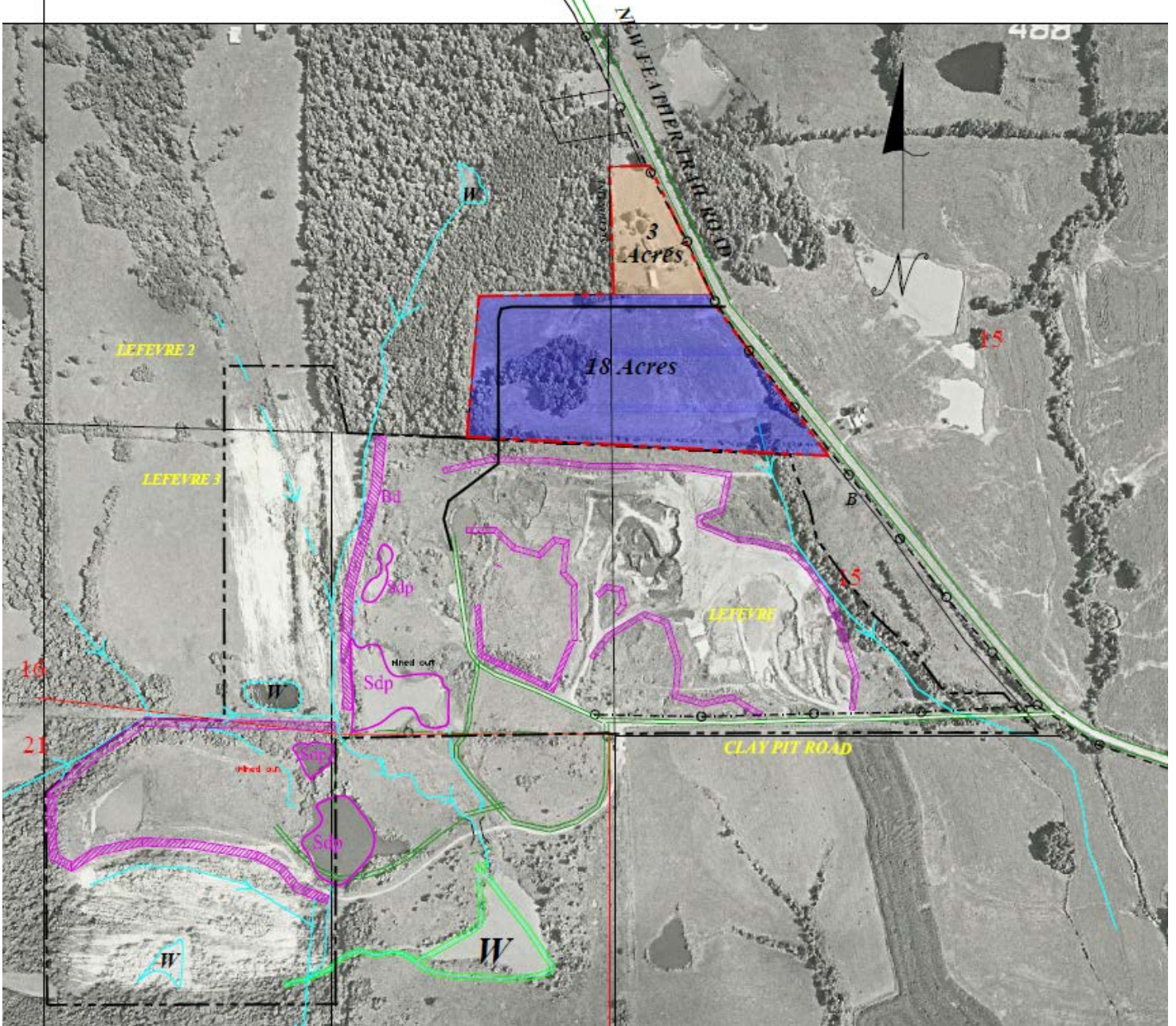
AMOUNT OF IMPACT AREA: 21 total acres; critical habitat for spotted dusky salamander population 2.51 acres.

1. AREA DESCRIPTION

A) Affected Area

The proposed Tucker Mine (hereinafter the “Tucker Mine”) lies in parts of Sections 15 and 16, T15S R1E 3rd PM, Pulaski County, Illinois, approximately 1.5 miles north of Olmsted. It is accessible from Feather Trail Road (County Hwy 14), west of Illinois Route 37 (Fig. 1). Physical address of homesite located on the property is 1305 Feather Trail Road, Olmsted, Illinois 62970.

MOUNDS PRODUCTION COMPANY
TUCKER MINE - PERMIT
OLMSTED, ILLINOIS
Part of Sec., 15, 16 & 21
T. 15 S., R 1 E., of the 3rd
Principal Meridian, Pulaski Co., IL



All property for the Tucker Mine is held in title by OIL-DRI Corporation, Mounds Production Company LLC. Contiguous OIL-DRI holdings at Tucker Mine are 21 total acres, including 2.51 acres of critical habitat for the spotted dusky salamander (*Desmognathus conanti*) within a forested stream corridor (Fig. 2). This stream runs west onto an unmined parcel, which at this current time, has no plans of being mined. Physical disturbances such as ploughing or earth-moving (removing cover crops or other surface vegetation) and mining and associated activities will result in extirpation of the species from Tucker Mine.

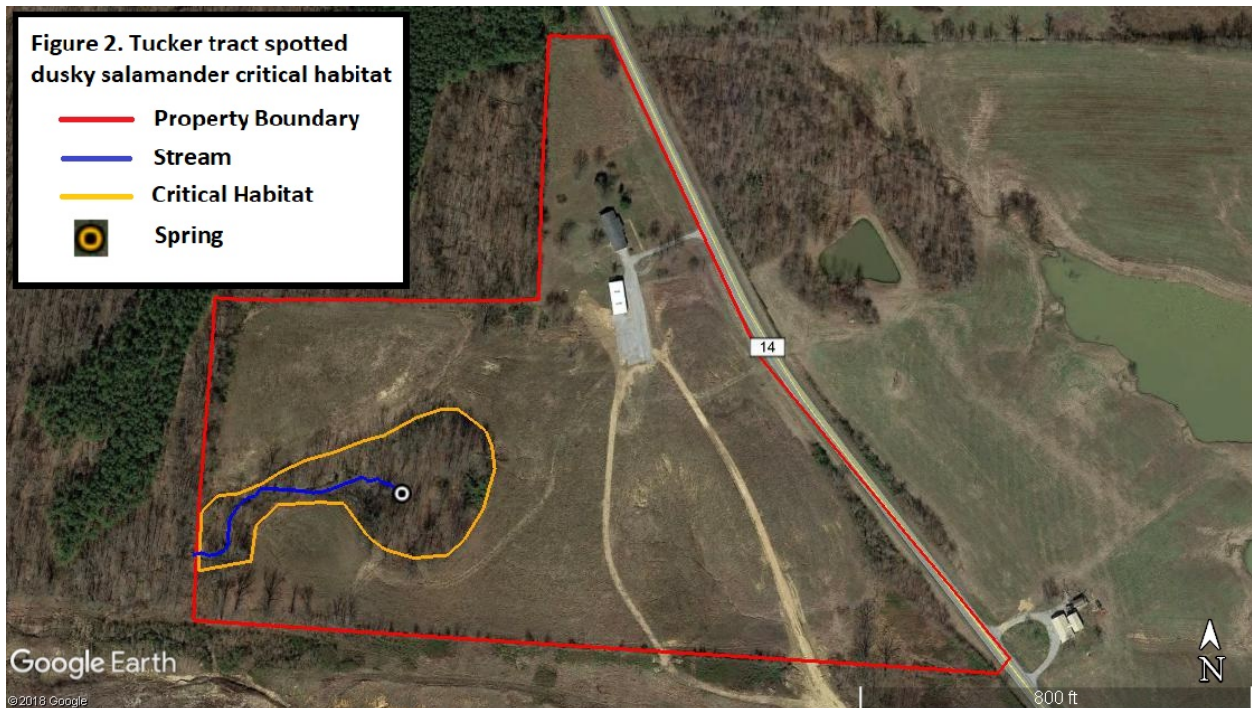


Figure 2a (Wooded area in center of photo contains Critical Habitat)



Figure 2b (Spotted Dusky Salamander habitat on Tucker Mine)

B) Biological Data

The spotted dusky salamander (*Desmognathus conanti*) is a medium-sized plethodontid salamander native to the Mississippi Embayment region of North America (Fig.3). It is a dark tan to brown, moderately stocky salamander, 12-14 cm in length (Fig. 4). It has flecks of black, remnant dark spots from its juvenile coloration, and a tan stripe that runs down its back from its head to its tail. The belly color is mottled, with black and light flecks. They have 13-14 costal grooves and nasolabial grooves. Tails are triangular in cross section (Smith, 1961). Males have enlarged mental glands, while females possess yoked egg follicles (visible in their abdomen) during breeding. Larvae have short glistening white gills and 5-8 pairs of light spots on their backs.

Figure 3. North American distribution of the Spotted Dusky Salamander (from Green et.al. 2014)



Figure 4. Spotted Dusky Salamander from Pulaski County, Illinois (IDNR/ R. A. Brandon)



Spotted dusky salamanders are mainly nocturnal. Logs, rocks, moss, and leaf litter on the edge of streams are their usual diurnal refugia. They are more active during mating season (in early spring to mid-summer) than at other times of the year. Females lay eggs in the summer, peaking

in July (Jones, 1986). Preferred nesting sites are under rocks on the banks of a stream, on average 65 cm from the water's edge. Eggs are generally placed in contact with the soil (Jones, 1986). Females stay with the clutch of 8-45 eggs for 46 to 61 days until hatching begins (Juterbock, 1987). Oophagy (egg eating) observed in the closely related *D. fuscus* may also happen in this species; what prompts this is unknown (Baldauf, 1947, Wood and Clarke, 1955). Eggs mature in early autumn and larvae make their way to the water where they metamorphose the following spring (Phillips et. al., 1999). During late fall, once water temperature drops below 7.0 C they make their ways to winter retreats where they congregate in groups, remaining active and feeding (Ashton, 1975).

They feed on a variety of invertebrates including arthropods, annelids, and mollusks, as well as amphibia larvae of their own and other species (Smith, 1961). According to a study done by Jones (1986) in the Unicoi Mountains on the border of North Carolina and Tennessee, males reach sexual maturity at 35 mm in length and 2 years old and females reach sexual maturity at 40 mm in length and 3 years of age. Home range averages 1.4m², generally not moving more than 0.49m in a week (Ashton, 1975) They are, in turn, fed upon by numerous predators including fish, snakes, birds, and mammals like racoons, opossums, and, skunks. Their anti-predator defenses include biting and tail autotomy (breakage) (Whiteman and Wissinger, 1991).

The range includes the northern two-thirds of Louisiana, much of Mississippi and Alabama, northern Georgia, northwestern South Carolina, most of Tennessee, southwestern Kentucky, and southernmost Illinois (see Fig. 3) (Green et al 2014). The species reaches the northern extent of its range in southern Illinois, where its populations are confined to seepage springs in unique sands, gravels, and clays of the Cretaceous Hills Section, Coastal Plain Natural Division (Schwegman 1973), all in Pulaski County.

In southern Illinois, the species only inhabits seep springs and their associated streams at the critical zones where the unusual local clays (Porter Creek Clay) and gravels intersect with the water table and are exposed or near the ground surface. They are able to survive only in such areas, under a forest canopy, that are relatively undisturbed and unpolluted. Brandon and Huheey (1979) described the limited range and very specific habitats in southern Illinois:

... all within 40-square miles. All known localities are confined to 12 sections of two adjacent townships of Pulaski County, and are isolated geographically between the Cache and Ohio rivers and west of Post Creek Cutoff. All populations are in small streams draining an island of Tertiary upland surrounded by Pleistocene terraces and alluvial sediments, at the northern edge of the Mississippi Embayment. Populations have been found all around the periphery of this tertiary upland ... All localities are along the edge of the Pliocene Lafayette Gravel deposits, in ravines eroded into Pleistocene deposits or older deposits of the Eocene, Paleocene and Cretaceous materials.

Their specialized habitat needs may have prevented their extending into what might appear to be similar spring habitats in nearby Shawnee Hills sandstones or Ozark limestone or chert formations. The limited distribution may also be related to its being south of the ancient former channel of the Ohio River, which presumably flowed through the present Cache River valley,

north of where these animals are found. Evidently the wide Cache valley, with its lack of spring habitats, frequent flooding, and deeper water with fish (predator) populations is a barrier to northern and western migration of the species.

Brandon (2006) completed what is, to date, the most complete survey of the species in Illinois. He stressed that the best habitats for these salamanders are (1) in streams fed by cool seepage springs with consistent year-round flow, (2) with “abundant small rocks and pieces of conglomerate” that provide decent protective cover. Fewer salamanders were found in streams that are entrenched, with clay sides, and have little rock or wood cover. They are also not common in streams that have low, inconsistent flow.

A survey of the Tucker Mine was completed on October 24, 2017 (Stroh and West 2017, App. A). Twelve confirmed spotted dusky salamanders were captured, examined, and released. Habitat quality of this site is marginally suitable for the species, when compared to a high-quality site such as Hartman Spring Nature Preserve or at Chestnuts Hills Nature Preserve (2 protected areas in Pulaski County). Its stream is entrenched (the west 2/3 is “deeply incised”, App. A) apparently due to unnaturally accelerated water flow caused by channel modifications downstream from the site. Although the survey may have been impaired by the difficulty of searching leaf packs within the stream, and the general lack of larger rock or logs in the streambed to overturn, the number of individuals located at the site appears to point towards a low to low-moderate population. The mixture of ages and sexes suggests that this is a viable, reproducing population.

C) Adverse Effects on Spotted Dusky Salamanders

As described above, the size and layout of the proposed Tucker Mine will not accommodate a viable population of spotted dusky salamanders within critical habitat on the site. Since the population will be essentially removed from the Tucker Mine (along with remaining vegetation) in the course of mining, all aspects of spotted dusky salamander life history will be affected, and the population will be locally extirpated.

Within the next five years we would plan on being on the Tucker Mine. Current mining activity on the neighboring LeFevre/Mager Mine would continue northward. The Tucker Mine is estimated to contain approx. 1.9 million tons of clay which will allow Mounds Production Co to continue to operate for an additional 20 years. We will be using earth moving equipment such as dozers, excavators, and front-end loaders to remove the overburden from the clay, then the clay from the earth.

This mine will remove one of the 22 remaining known populations in the Illinois range, albeit a small population within marginal habitat. However, as is pointed out in the NO ACTION alternative (3A, below), the fate of such unprotected marginal habitat sites is uncertain, and one can expect population levels at this site to drop as habitat quality declines.

Initially, the mine crew will create travel ways for access to clay-bearing strata. The lowest level and most easily extracted clay source, in the southwest portion of the property, encompasses the stream corridor with salamander habitat. Since even the development of access routes involves crossing the stream corridor, habitat removal will be in the earliest stages of mining.

In summary, the confined, small area, its unique geological and hydrological connections and the landscape topography will not allow protection of critical habitat. Mining will locally extirpate this small spotted dusky salamander population. If critical habitat and the population itself is removed, mine-related noise, increased traffic, and removing woodland cover will not be factors, since the population will no longer exist on the project area.

2. MINIMIZING/MITIGATING IMPACTS TO SPOTTED DUSKY SALAMANDERS

A) Minimizing the Tucker Mine Affected Area

There is no minimizing the potential impacts of mining on spotted dusky salamanders at the Tucker Mine. Area size, topography, and mine layout and dimensions will not permit impacts to be lessened. If mining is permitted, critical habitat and the local population will be removed from the site. Based on the survey completed in 2017, which identified 12 spotted dusky salamanders, potentially this amount would be taken.

The forested area that consists of the 2.51 acre habitat is the lowest point of the Tucker Mine. All of the water from mining activity will drain through this area. The stream is approx. 675 feet in length, 2-5 feet in width, and has anywhere from 30 to 100 feet of forest on either side of it along its length.

B) Management or Restoration of the Area Enabling Presence of Spotted Dusky Salamanders

Corrective management or habitat restoration for spotted dusky salamanders will not be possible during or after mining the Tucker Mine. There are no alternatives other than NO ACTION (see 3A, below) to avoid disturbing, conserving, or minimizing impacts on the Tucker Mine population. OIL-DRI proposes to compensatorily mitigate the loss of this local population.

C) Proposed Mitigation for Loss of the Tucker Mine Spotted Dusky Salamander Population

Mitigation to the maximum possible extent is expected under the Illinois Endangered Species Act. Although there is no legislated mitigation ratio for state endangered species, IDNR uses the mitigation ratio commensurate with the Implementation Procedures for the Interagency Wetlands Policy Act (17 ILL. ADM. CODE CH. I, SEC. 1090 Section 1090.50, subsection (a) 8). The ratio commonly used by IDNR is 5.5:1 in cases of Destruction (see *Location of Replacement Wetland* in 17 ILL. ADM. CODE CH. I, above).

An appraisal of the Tucker Mine established a land value of \$63,000 for 21.28 acres, \$2913.53 = \$2900 (rounded) per acre (J.A. Clarke 2/18/2018). The appraiser (J.A. Clarke pers. com. 16 October 2018) recently disclosed that this value is based upon an average that includes tillable land on the Tucker Mine and that the non-tillable (including the 2.51-acre stream and wooded critical habitat along the stream) has a lower value, averaging \$2200.

OIL-DRI offers to offset loss of the Tucker Mine population at 5.5 acres : 1 acre of habitat loss, $2.51 \times 5.5 = 13.8$, $13.8 \text{ acres} \times \$2200 = \$30,371.00$. OIL-DRI proposes this 5.5:1 ratio to mitigate a site that will likely be lost through continued degradation (resulting in loss of the salamander population) even if mining is not done.

The Illinois Audubon Society is the owner of a dedicated Illinois Nature Preserve in Pulaski County, Hartman Spring Nature Preserve, approximately 3 miles north of the Mounds Production Plant. OIL-DRI proposes to pay this compensatory mitigation directly to Illinois Audubon, who can then apply it toward stewardship projects on the Nature Preserve. Payment shall be made to Illinois Audubon 3 months prior to OIL-DRI commencing operation or physical preparations for opening and operating the Tucker Mine. The Spotted Dusky Salamander is known to be present at this reservation.

Using these monies locally for the benefit of the species will not only offset loss of the small Tucker Mine population, local citizens, including those interested in salamander conservation, will be assured that OIL-DRI does not take its responsibilities for environmental protection and land stewardship lightly. Working locally with a conservation NGO allows flexibility for maximizing benefits to the affected species.

This offer represents the maximum affordable mitigation for the Mounds Production Plant. The Plant has limited operational resources, being autonomous and self-supporting (as are other plants working under the OIL-DRI umbrella). The last compensatory settlement dealing with Illinois endangered species (dusky salamanders) resulted in plant cutbacks.

D) Monitoring

Since the population will be extirpated from the Tucker Mine, there is no monitoring protocol to monitor the impacts of mining activities on the site's population.

E) Adaptive management practices

There are no adaptive management practices applicable to development of the Tucker Mine since mining activities will extirpate the site's population. However, the recommended mitigation payment will support survival of spotted dusky salamanders in Illinois at one of the most important sites in the State.

F) Verification and stewardship of funding

Oil-Dri Mounds Production Co offers to obtain a bond that would cover the reclamation costs of the Tucker Mine.

Transfer of compensatory mitigation funds or acres will be verified upon approval of this ITA. Final arrangements shall be made 3 months prior to OIL-DRI's Tucker Mine preparations for mining, to involve OIL-DRI, IDNR, the Illinois Endangered Species Board, and Illinois Audubon.

3) ALTERNATIVE ACTIONS FOR MITIGATION OR MANAGEMENT

A) NO ACTION

Mining is a regulated, lawful activity undertaken by OIL-DRI through the Mounds Production Corporation. Not carrying through with their lawful use of the Tucker Mine will adversely affect the operations and progress of OIL-DRI in southern Illinois and have a negative impact on the regional economy. As stressed below, survival of the salamander population on the proposed mine site would remain uncertain even if mining is not done; OIL-DRI is taking the high road in this application, offering compensation to ensure survival of this species within its Illinois range.

OIL-DRI's Mounds operation will be jeopardized if the company is unable to expand its operation to the Tucker Mine. Production will be cut short, staff will likely be reduced, and total company operations will be adversely affected without the Tucker Mine.

Tucker Mine is one of 22 spotted dusky salamander sites in Pulaski County. Ten of the sites are protected within Chestnut Hills Nature Preserve and 1 is in Hartman Spring Nature Preserve. The remaining 11 sites are privately owned. Sites on private land will continue to be threatened by grazing, poor farming practices, and localized pollution (e.g. solid and chemical waste dumping, sewage, and household wastewater drainage). If OIL-DRI does not mine the property, it will likely be sold to a private landowner. The fate of the population is uncertain under such circumstances.

B) LEAVE THE 2.51 ACRES UNDISTURBED WHILE MINING THE REMAINING ACRES

As stated, this stream is the lowest point of the Tucker Mine. With the removal of the vegetation and topsoil on the rest of the mine site, the amount of storm/ground water that would run through the existing stream would be substantial and would likely destroy what we're trying to protect by leaving the land untouched. The alternative of leaving the 2.51 acres intact can physically be done but would not achieve the goal of protecting the salamander habitat.

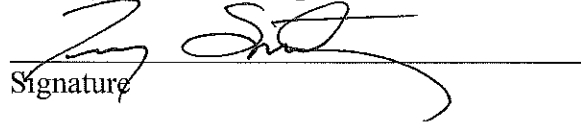
4) IMPACTS OF THE PROPOSED TAKING ON SURVIVAL OF SPOTTED DUSKY SALAMANDERS IN ILLINOIS

Enough of the populations are in protected sites, and field observations since then indicate that the species is doing well in unpolluted streams within shaded forested habitats; in short, where habitats are healthy, the salamanders are as well. The loss of the Tucker Mine population will not threaten the survival of the species in Illinois or its North American range.

It is unfortunate that this species of salamander is dependent upon the same clays that are required in so many important industrial processes. However, through this application and mitigation proposal, Oil-Dri intends to support continued survival of the species in accordance with administrative rules of the State of Illinois and the Illinois Endangered Species Act.

5) IMPLEMENTATION AGREEMENT

A) Signatures of Responsible Parties for this Conservation Plan


Signature _____ Date 6-2-20

Name and title: Tracy Smithey, Central Region Mfg Mgr, Mounds Production Company, LLC

B) Responsibilities

The Plant Manager, Mounds Production Company, LLC, will be responsible for MPC's execution of this Conservation Plan and the subsequent Incidental Take Authorization.

The Vice President and General Counsel, OIL-DRI Corporation of America, will be responsible at the corporate level for ensuring Mounds Production Company obligations under the Incidental Take Authorization.

Once an Incidental Take Authorization is fully executed and compensatory mitigation has been granted to Illinois Audubon Society, OIL-DRI Corporation and Mounds Production Company will be relieved of responsibility for the loss of the Tucker Mine spotted dusky salamander site.

C) Legal Authority

Each of the above who have signed this Conservation Plan/Incidental Take Application have the legal responsibility for the contents of the Plan and are representatives of their respective entities.

D) Assurance of Compliance

Mounds Production Company, LLC and Oil-Dri Corporation of America attest that they are in compliance with all federal, state, and local regulations pertinent to the Incidental Taking of spotted dusky salamanders during mining activities at the Tucker Mine.

E) Federal Authorizations for Incidental Taking

Mounds Production Company, LLC and Oil-Dri Corporation of America have not been issued any federal authorizations for Incidental Taking of spotted dusky salamanders. This species, though listed as endangered at the State (Illinois) level, is not a federally endangered or otherwise listed species.

A Federal biological opinion (U.S. Fish and Wildlife Service) is not required since this salamander is not a Federally-listed species. The Tucker Mine spring and ephemeral stream are elements within a larger terrestrial environment and not under the prevue of the Clean Water Act (U.S. Army, Corps of Engineers).

SUBMITTED TO: Incidental Take Authorization Coordinator, Illinois Department of Natural Resources, Division of Natural Heritage,
One Natural Resources Way, Springfield, IL, 62702 DNR.ITAcordinator@illinois.gov

References

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Appendix A. Field survey of Tucker Mine

**Spotted Dusky Salamander (*Desmognathus conanti*) Survey
Tucker Mine of OIL-DRI Corporation
Pulaski County, Illinois**

**Ozark Koala Ecosystem Services report to
OIL-DRI Corporation of America
Mounds Production Co. LLC
700 Industrial Park Road
Mounds, Illinois 62964**

December 7, 2017



Plain Citizens with a Mission to enrich Ecosystems

**Ozark Koala Ecosystem Services
P.O. Box 1767, 1811 North Court Street
Marion, Illinois 62959
573 820-1822
ozkoala5@frontier.com**

**Robert Randall Stroh, Biologist and Operations Manager
K. Andrew West, Proprietor**

Introduction

The Spotted Dusky Salamander (*Desmognathus conanti*) is an Illinois state endangered species. Oil-Dri Corporation intends to mine clay on one of its holdings that has a population of these endangered salamanders, the Tucker Mine. In southern Illinois, spotted dusky salamanders are limited to Pulaski County where they are associated with spring-fed streams issuing from Cretaceous clay and gravel layers. In addition to being a substrate of critical dusky salamander habitats, these clays are mined by companies such as Oil-Dri as valuable absorbents and used as important components of many products.

Under Illinois law (per 520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080) an Incidental Take Application (ITA) is required prior to any action that will impact a population of a state-listed species. Oil-Dri commissioned Ozark Koala Ecosystem Services (OKES) to conduct a survey of the Tucker Mine and complete its ITA for mining.

The Spotted Dusky Salamander was once thought to be the same species as the Northern Dusky Salamander (*Desmognathus fuscus*). In 1958 Rossman proposed that the species should be split into two subspecies, *D. fuscus fuscus* and *D. fuscus conanti*. In 2002 Bonett found that the organisms would be more accurately be describe as two distinct species, *D. fuscus* and *D. conanti*. The southern Illinois population of *D. conanti* is at the northern limit of its range which includes the northern 2/3 of Louisiana, Mississippi, Alabama, northern Georgia, northwestern South Carolina, Tennessee, southwestern Kentucky, and southernmost Illinois (Green et.al., 2014). In these states, spotted dusky salamanders are found in forested, cool headwater seep springs.



Spotted Dusky Salamander

Figure 1- U.S. Distribution of the Spotted Dusky Salamander (Green et.al., 2014)

Site Description

The Tucker Mine is 21 acres more or less, located approximately 1.5 miles north of Olmsted: 11 acres in part of NW ¼ SW ¼ Section 15 west of Feather Tail Road and 10 acres in part of SE ¼ NE ¼ SE ¼ Section 16 T 15S R1E, 3rd P.M. The location of the spring head is 37°12'1.87"N, 89° 6'3.78"W. The stream is 661 feet long; the western 2/3rd of the stream is deeply incised. The active spring provides a relatively stable downstream flow of water – on the day of the survey there was about 1 to 3 inches moving along the stream bottom.

The flora of the area was consistent with degraded bottomland forest habitat. Tree species included sycamore (*Platanus occidentalis*), boxelder (*Acer negundo*), silver maple (*Acer saccharum*), sweetgum (*Liquidambar styraciflua*) and green ash (*Fraxinus pennsylvanica*). Shrubs and herbaceous species included multiflora rose (*Rosa multiflora*), blackberry (*Rubus allegheniensis*), Japanese stiltgrass (*Microstegium vimineum*), chaff-flower (*Achyranthes japonica*), sensitive fern (*Onoclea sensibilis*), and Christmas fern (*Polystichum acrostichoides*). The only stream fauna noted were unidentified isopods and a seemingly common species of crayfish.

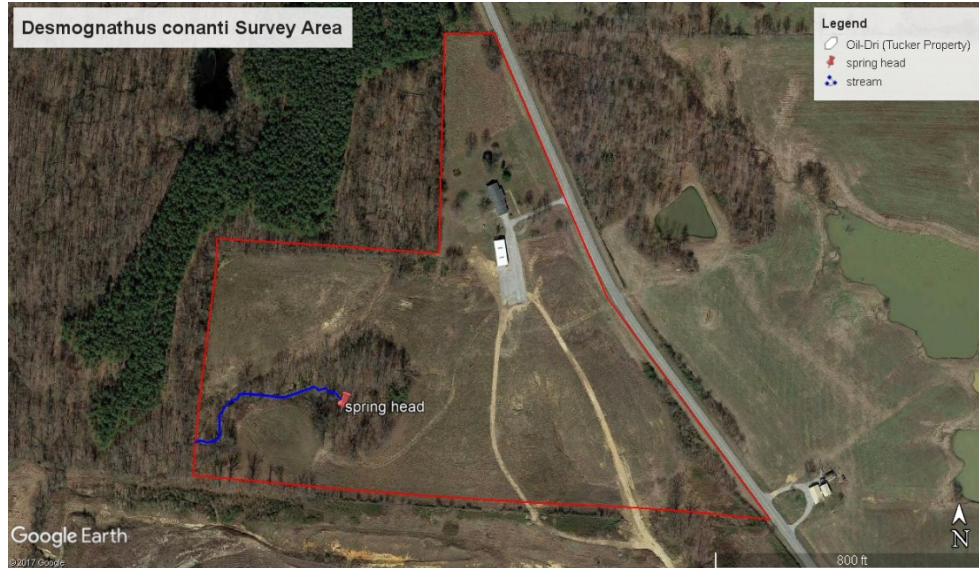


Figure 2 – Map of the Survey Site

Methods

We modified Brandon's 2006 survey methods. Though Brandon conducted a number of 20-minute surveys at a number of sites, the Tucker site was small enough for us to cover the entire stream. We performed the survey on October 24th, 2017, starting at 1055 and ending at 1330. There were 4 surveyors, 3 of which stayed for the entire survey and one that left at 1245, a total of 12.6 labor hours. We started at a downstream point near the property boundary and worked our way toward the spring head. Three of the surveyors searched in and 2 feet either side of the stream. The fourth searched under likely cover more than 2 feet away from the stream. We turned over logs and rocks, looked in crevasses, and inspected leaf packs for specimens. The survey crew wore latex gloves to prevent injury to the salamanders.

When a salamander was captured it was immediately placed in a sealed plastic tube inscribed with millimeter increments. We took length measurements from snout to vent (SVL) in millimeters, determined its life stage based on length (Jones, 1986), determined sex by physical characteristics (Phillips et al., 1999), documented the habitat cover where each specimen was found and measured how far the animal was collected from the stream edge. We did not attempt to determine the sex of sexually immature individuals. We ended the survey at the spring head.

Results

We found 12 individual spotted dusky salamanders (Table 1); no other salamander species were located. All were directly in the stream under logs or in leaf packs. Only one was found outside the stream (46 cm from the edge of the water). One of the 12 individuals escaped before measurement, age, or sex could be determined but a positive identification as a dusky salamander was obtained. Of the 12 found 8 were mature enough to determine sex. Of those 8, 6 were male and 2 were female. There were 7 adults, 3 subadults, 1 juvenile and 0 larvae. Average SVL length was 36.2 mm. All appeared to be healthy individuals.

Table 1: Spotted dusky salamanders captured at Tucker Mine

Individual Number	Notes	Sex	SVL (mm)	Habitat	Life Stage	Distance from Stream (cm)
1		M	40	Under log	Adult	0
2			5	In stream	Juvenile	0
3		F	45	In stream	Adult	0
4		M	45	In crevasse	Adult	46
5		F	36	In stream	Adult	0
6		M	42	In stream	Adult	0
7	escaped					0
8		M	44	Under log	Adult	0
9		M	47	Leaf pack	Adult	0
10		M	29	Leaf pack	Subadult	0
11			31	Leaf pack	Subadult	0
12			34	Leaf pack	Subadult	0

Discussion

Given the 3 age classes found on the site, there is a viable population present at the Tucker Mine. The forested ravines directly north of the Tucker Mine (not surveyed, not currently a planned mining site) may contain springs with dusky salamanders. Brandon (2006) reported 22 sites in Pulaski County with spotted dusky salamanders, 2 of which are on protected preserves. The Tucker Mine population is likely comparable in numbers and site characteristics to 12 of Brandon's 22 sites. The numbers appear to reflect a small to lower moderate-sized population at the site, though a commensurate site-by-site comparison would be necessary to substantiate this.

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