UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

SEP 2 6 2013

ACTION MEMORANDUM

SUBJECT: Approval and Funding for a Removal Action at the Ellisville Site, Wildwood, St. Louis County, Missouri

FROM: J. Heath Smith, Federal On-Scene Coordinator
Emergency Response and Removal South Branch

THRU: David P. Williams, Chief
Planning and Preparedness North Section

TO: Cecilia Tapia, Director
Superfund Division

SITE ID#: 0708 (RV007)

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of a proposed removal action for the Ellisville site (Site), located in the city of Wildwood, St. Louis County, Missouri. Specifically the Action Memorandum calls for excavation, transportation and disposal of dioxin-contaminated soils from the Site to an approved disposal facility. The action proposed herein will reduce potential exposure to nearby human populations, animals and the food chain from dioxin-contaminated soils.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID #:	MOD980633010
SSID#:	0708 (RV007)
Category of Removal:	Time-Critical
Nationally Significant/Precedent Setting:	Yes

A. Site Description

1. Removal site evaluation

The Site is approximately one acre in area and includes portions of the extreme northeast corner of Strecker Forest as well as a portion of the Bliss-Ellisville site, west of the Mid-America Horse Arena. A general overview of the Site is depicted in Attachment 1.

A description of the history of Strecker Forest requires some discussion of the adjacent Bliss-Ellisville site. The Bliss-Ellisville National Priorities List (NPL) site is a subsite of the Ellisville Superfund site. Investigative activities at Bliss-Ellisville date back to September 16, 1980, when two waste disposal areas were identified to the northwest of a horse arena known as the Mid-America Arena. On June 2, 1981, trenching operations guided by eyewitness accounts identified buried drums at the Bliss-Ellisville site. Several follow-up geophysical surveys were conducted starting in June 1982 and continuing through August 1990. These surveys identified buried waste at a number of locations at the site. In August 1985, the Missouri Department of Natural Resources (MDNR) placed a liner in the stream bed of the Caulks Creek tributary to stabilize the stream banks, and constructed a berm to divert overland flow from the eroding stream. The EPA implemented a removal action in 1996, involving excavation and management of soil impacted by dioxin and non-dioxin wastes, along with bulk wastes in buried drums and other materials. During the removal action, dioxin-contaminated materials were transported to either the Times Beach site or to a waste management facility located in Coffeyville, Kansas, for thermal treatment (incineration). All non-dioxin hazardous wastes were managed off site at commercial hazardous waste facilities permitted under the Resource Conservation and Recovery Act (RCRA). Non-hazardous materials were disposed of at a sanitary landfill. In all, 24,700 tons of dioxin-contaminated soil, 581 tons of soil contaminated with hazardous substances other than dioxin, and 480 buried drums and other containers of wastes were removed from the site. Soil samples were collected to confirm that cleanup goals (1 part per billion [ppb] at the surface or 10 ppb at a depth of 12 inches) had been achieved. Once cleanup activities were completed, excavated areas were backfilled, re-graded, and seeded. The removal activities included a 0.15-acre area in the extreme northeast corner of the Strecker Forest property (referred to as the "NPL Area" of Strecker Forest during past investigations).

Due to proposed development at Strecker Forest, the EPA conducted reassessment actions at the Strecker Forest property from August 2011 through February 2012 to determine, among other things, if contaminants were present in soil and groundwater at concentrations that could present a threat to human health and the environment for the proposed land use. Information and recommendations from this reassessment were summarized in the "Site Reassessment Report for an Expanded Site Review, Proposed Strecker Forest Development Site, Wildwood, Missouri," dated June 13, 2012.

One of the findings of this reassessment was the discovery of elevated dioxin toxic equivalent (TEQ) concentrations in surface and subsurface soil samples collected in the northeastern portion of the Strecker Forest parcel (northeast area). Dioxin TEQ concentrations as high as 26,684 parts per trillion (ppt) were detected in subsurface soils; concentrations as high as 5,822 ppt were detected in surface soils. The reassessment concluded that, with regard to the northeast area, "immediate actions are not warranted in the short-term to mitigate exposure, while further site assessment is on-going."

On October 30, 2012, the construction of a fence around the northeast area was completed. A report entitled "Preliminary Removal Action Report Proposed Strecker Forest Development Site, Wildwood, Missouri," dated July 24, 2013, summarizes activities associated with this action. The fence serves, among other things, to keep the landowner and potential trespassers from unknowingly disturbing the contaminated soil as the Site is further evaluated.

On July 16, 2013, the EPA returned to conduct additional assessment. Surface and subsurface soils were sampled within the northeast area to evaluate concentration profiles and spatial distribution of contamination. The expanded assessment verified elevated concentrations of dioxin TEQ in the northeast area in surface and subsurface soils. In addition, an effort was made to further investigate soils around Soil Boring #20 (SB-20). Samples from SB-20 were collected during the aforementioned site

reassessment event. A single sample from SB-20, collected from beneath DU-38D, returned a subsurface dioxin TEQ concentration of 1,733 ppt. SB-20 is located along the northern boundary of the fence constructed during the previous action. On July 16, 2013, additional subsurface sampling was conducted near SB–20, below the surface of SU-38D and SU-39D, near the bank of the Caulks Creek tributary. Subsurface dioxin TEQ concentrations as high as 9,744 ppt and 1,904 ppt were identified in soils collected at Soil Boring #56 (SB-56) and Soil Boring #59 (SB-59) respectively. Both SB-56 and SB-59 were located outside of the fence along the southern bank of the Caulks Creek tributary, below SU-39D.

The EPA conducted a toxicological evaluation to determine health-based standards for the area based on youth recreational receptors. The report, "Preliminary Remediation Goals (PRGs) for Dioxin in Surface Soil Proposed Strecker Forest Development, Wildwood, Missouri" was made final on July 25, 2013. The report established cleanup goals for surface soils in the northeast area of Strecker Forest at a concentration less than or equal to 820 ppt dioxin TEQ where land use controls will be established to restrict future development and prevent residential use.

Because concentrations exist in the northeast area of Strecker Forest that exceed the site-specific cleanup goals for the youth recreational/trespass scenario and because source areas exist which, if disturbed by future development, could cause elevated levels of dioxin-contaminated soil to migrate, the EPA is proposing the removal action described herein.

2. Physical location

The Site includes portions of the extreme northeast corner of the Strecker Forest property as well as portions of the Bliss-Ellisville site west of the Mid-America Horse Arena. Attachment 1 to this Action Memorandum illustrates the general area in which the proposed action will be conducted. The removal will focus on surface and subsurface soils found to exceed the removal criteria as described below (Section IV). This removal action will specifically address non-residential soils from within the area previously fenced, as well as soils outside of the fence near SB-20, SB-56 and SB-59 along the banks of the Caulks Creek tributary.

The Bliss-Ellisville site is located in the western part of St. Louis County (approximately 20 miles west of downtown St. Louis) at 149 Strecker Road, Wildwood, Missouri (previously an unincorporated area near Ellisville until September 1995). The Bliss-Ellisville site borders Strecker Forest to the north and east, and includes a small portion of a proposed preservation area in the northeast corner of the Strecker Forest property.

Strecker Forest is located adjacent and to the south and west of the Bliss-Ellisville site, and is composed of three parcels of land encompassing 18.3 acres to the north of Strecker Road in Wildwood, Missouri. The three parcels include the former Dozier property located at 165 Strecker Road (approximately five acres); the former Primm property located at 173 Strecker Road (approximately ten acres); and the former Schoessel property located at 177 Strecker Road (approximately three acres). These three properties were purchased by W.J. Byrne Builders, Inc., of Glencoe, Missouri, with the intent to develop the proposed Strecker Forest subdivision.

3. Site characteristics

Bliss-Ellisville

The area surrounding the Bliss-Ellisville site is a mixture of residential, rural, and recreational property. Residential areas are located on all sides of the site. The nearest off-site residences are several hundred feet directly north of the site in a subdivision (Turnberry Place) that began development in the late 1980s. Quail Woods Park lies to the northeast of the site, immediately east of the Turnberry Place subdivision. The site covers about 15 acres. The geographic coordinates of the site are 38.599805 N latitude and 90.602980 W longitude.

In the 1970s, the site served as the headquarters for the Bliss Waste Oil Company and was also Russell Bliss's place of residence until the property was transferred to his son (Jerry Bliss) in the 1980s. The Bliss residence and one other residence are located at the south end of the property on the north side of Strecker Road. Other structures on the site (north of the Bliss residence) consist of a large indoor horse arena (Mid-America Arena), an outdoor horse arena, several stables and outbuildings, and two trailer homes located east of the indoor arena.

Two open areas ("arms") in the northern portion of the site extend in a "V" pattern toward the northwest and northeast and are the location of the 1996 removal action addressing dioxin-contaminated soil and buried drums containing hazardous materials. Prior to the 1996 removal action, portions of those areas were used as horse training areas and for vehicle parking.

Strecker Forest

Strecker Forest is mostly undeveloped, except for foundations remaining from a recently demolished garage structure and two abandoned homes on the former Dozier and Primm properties. The northern two-thirds of Strecker Forest is covered mostly by hardwood forest. The property is surrounded by suburban residential areas, except to the north and east where a 12-acre tract with residences, horse arenas and stables are located (Bliss-Ellisville). Specific features identified in previous investigations of the Strecker Forest property include the abandoned residences on the former Primm and Dozier properties, a Western Pond Area in the southwestern quadrant of the site, a Solid Waste Disposal Area in a drainage ravine in the central portion of the site, an Alleged Former Haul Road that parallels the drainage ravine, and an Eastern Disturbed Area (EDA) and National Priorities List (NPL) Area that are both located in the northeastern portion of the site. The EDA and NPL areas are located adjacent to the Bliss-Ellisville site.

The terrain at the Strecker Forest property slopes downward to the north from Strecker Road. Relatively steep slopes are present that vary in elevation from approximately 720 feet at Strecker Road to approximately 635 feet along a tributary of Caulks Creek at the northeast perimeter of the site in the NPL Area. The intermittent Caulks Creek tributary flows to the north along a ravine in the central portion of Strecker Forest and intersects another intermittent tributary crossing the northeast corner of the Strecker Forest property. All surface water and drainage pathways on the site flow in a northerly direction toward this area.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sampling has indicated that 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) is present in soils at the Site. This substance (2,3,7,8-TCDD) is listed as a hazardous substance pursuant to 40 CFR § 302.4. As such, 2,3,7,8-TCDD is a hazardous substance as defined in section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601(14). Analytical data from soil samples collected during the EPA's removal assessment indicate dioxin TEQ concentrations up to 26,684 ppt in subsurface soils and 5,822 ppt in surface soils within the fenced area at the Site.

5. NPL status

The Ellisville Superfund site, including Bliss-Ellisville, is on the NPL. A portion of the Strecker Forest northeast area, where elevated dioxin TEQ concentrations were detected, has historically been included within the boundaries of the Bliss-Ellisville site. The Strecker Forest development area is not on the NPL.

6. Maps, pictures and other graphic representations

A map of the site is included as Attachment 1.

B. Other Actions to Date

1. Previous actions

In October 2012, a fence was constructed at the Site to serve as a barrier, among other things, to keep the landowner and potential trespassers from unknowingly disturbing the contaminated soil as the Site was evaluated further.

The property owner of Strecker Forest performed a voluntary removal of waste in Decision Unit (DU)-19D of low level dioxin-related compounds found in surface soils. During the 2011-2012 reassessment actions conducted at the Site, DU-19D was determined to have elevated levels of dioxin-related compounds in surface soils. Asphalt-backed roofing shingles were also observed to have been discarded within DU-19D. Because the dioxin/furan congener profile in this sample did not correspond to the congener profile displayed in samples collected from the Bliss portion of the Ellisville site, it was determined that the dioxin TEQ originated from a separate source. Based on studies that have documented production of dioxins and furans from asphalt plants and similar operations, it was speculated that the asphalt-backed roofing shingles were the source of the elevated levels of dioxin-related compounds. In July of 2012, the property owner removed and disposed of the shingles and other miscellaneous debris from DU-19D. Post-removal confirmation sampling in DU-19D confirmed dioxin TEQ levels to be below SSLs for residential use. (See "Preliminary Removal Action Report, Proposed Strecker Forest Development site, Wildwood, Missouri," dated July 24, 2013.)

2. Current actions

The Strecker Forest area has been proposed for residential development.

C. State and Local Authorities' Roles

1. State and local actions to date

State of Missouri personnel have, among other things, provided input and feedback with respect to the proposed action at the Site.

2. Potential for continued state/local response

It is expected that personnel from the state of Missouri will continue to provide input and feedback on matters concerning this Site. The state will be requested to approve any necessary disposal site for any solid waste or construction debris from the Site.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The site conditions pose a threat to public health and welfare which meet the criteria for a response action under 40 CFR § 300.415(b) of the National Contingency Plan (NCP). These criteria are described as follows:

A. Threats to Public Health or Welfare

300.415(b)(2)(i)—Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

Dioxin TEQ concentrations as high as 26,684 ppt were detected in subsurface soils; concentrations as high as 5,822 ppt were detected in surface soils within the northeast area of Strecker Forest. Approximately 50 existing residential dwellings exist within 1,000 feet of the Site. In addition, new construction of approximately 23 properties has been proposed within 1,000 feet of the Site. The Site is currently non-residential. Based on consideration of the EPA Region 7 site-specific toxicological review of the site, the EPA recommends a dioxin cleanup level for non-residential soil at the Site of 820 ppt. This level is considered protective for human health and the environment at the Site.

Past analyses of soil samples from this and other related eastern Missouri dioxin sites contaminated with similar materials has shown that other 2,3,7,8-substituted dioxins and furans are either non-detectable or are present in low concentrations that do not contribute significantly toward dioxin toxic equivalents. For this reason, the measured concentration of 2,3,7,8-TCDD shall be considered equivalent to the TEQ concentration for the Site.

300.415(b)(2)(viii)—Other situations or factors that may pose threats to public health or welfare of the United States or the environment.

In addition to the above-listed factors, the EPA has considered studies conducted which assess the effects of dioxin on human health. The EPA also relies on widely-accepted toxicological references and on case studies which assess human health effects.

Dioxin was a manufacturing impurity in the production of certain herbicides and germicides. Animal studies have shown that dioxin is highly toxic although there are a wide variety of responses among the various species tested. Adverse health effects in animals tested include reproductive and developmental toxicity, hepatotoxicity, immunotoxicity, and carcinogenicity.

Dioxin has a tendency to persist in the environment. It can bind to soil particles and bioaccumulate in the food chain, especially in foods such as meats, dairy products, and fish. Dioxin can enter the human body through ingestion, inhalation, and dermal absorption. Human exposure to dioxin causes a skin condition called chloracne and is suspected of causing immunological problems and liver impairment. The EPA considers dioxin to be a probable human carcinogen; it is suspected of causing soft tissue sarcomas, lymphomas, peripheral neuropathy, birth defects and reproductive effects in humans. Dioxin can cross the placenta and accumulate in breast milk. Ingestion of contaminated soil due to pica or normal hand-to-mouth activities may contribute to a child's body burden.

B. Threats to the Environment

Dioxin in the environment may have adverse effects on animal populations because of its extreme toxicity and persistence in the environment. Because of its affinity for adhering to soil particles and the stability of the compound, dioxin contamination tends to spread by wind and water erosion.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The proposed action for this Site is consistent with previous removal actions conducted at other eastern Missouri dioxin sites, is consistent with CERCLA, and is not inconsistent with the NCP. The proposed action is based on the Administrative Record for this Site and was developed as a response action that will reduce the potential for direct contact with dioxin-contaminated soils and dusts.

a. Maintenance and fence repair

At the conclusion of this action, the existing fence and signage will no longer be required.

b. Excavation of contaminated soils

Response actions included under this Action Memorandum include excavation of dioxin-contaminated soils exceeding site-specific cleanup goals. Areas within individual Sample Units (SUs) that have been determined to exceed 820 ppt will be excavated initially to the observed depth of contamination and then resampled to determine the residual dioxin concentration. If

the concentration is 820 ppt or greater, excavation will continue in the upper 12 inches of soil. At depths equal to or greater than 12 inches, removal of soils will continue until a residual dioxin concentration of less than 3 times the site-specific cleanup goal or 2,460 ppt is reached. Excavation of soils in this manner will result in dioxin concentrations not exceeding 820 ppt in the surface 12 inches of soil and not exceeding 2,460 ppb at depths greater than one foot. All excavated soil will either be containerized in bulk lift bags, bulk-loaded into lined trucks or temporarily staged on the Site until transported off site.

After excavation of each soil layer from each cell, the exposed surface area will be sampled. Samples will be collected from a 0-2 inch depth interval. Data turn-around for these samples is expected to be from three to ten business days. If the analytical results confirm that a residual level of dioxin contamination in the excavated area is less than the health-based action level, the excavated cell will be backfilled to original grade with clean material and excavation will continue on other cells.

c. Restoration of excavated areas

After all excavated areas have been sampled and the health-based action level for dioxin-contaminated soils is attained, the excavated areas will be backfilled with clean fill matching the pre-removal grade. The backfilled areas will then be restored to the pre-response condition.

d. Transportation and disposal

To determine whether a waste is a listed waste under RCRA, it is often necessary to know the source. The source of contamination and nature of release with respect to the Site is unclear. However, due to the proximity to a former eastern Missouri dioxin site where soils containing elevated 2,3,7,8-TCDD were treated as listed waste, the agency will take a conservative approach and treat 2,3,7,8-TCDD contaminated waste as F027 dioxin-bearing waste. The Universal Treatment Standard for F027 dioxin-bearing waste is 1 ppb (40 C.F.R. § 268.48). The alternative Land Disposal Restrictions (LDR) treatment standard (40 C.F.R. § 268.49) states that treatment to achieve constituent concentrations less than ten times the UTS is not required. Dioxin-contaminated waste generated during the removal, up to concentrations of 10 ppb 2,3,7,8-TCDD, will be transported to an off-site RCRA-permitted hazardous waste facility for proper management.

Dioxin-contaminated materials with an average concentration greater than the alternative LDR treatment standard for contaminated soil will be managed by a facility capable of meeting the UTS for F027 dioxin bearing waste. Currently there are no facilities inside the United States that can manage F027 waste according to regulatory requirements. It is anticipated that dioxin-contaminated waste greater than 10 ppb 2,3,7,8-TCDD generated during the removal will be transported to an approved facility in Canada capable of properly managing the waste.

All other waste discovered at the site will be evaluated separately and managed as required. This includes dioxin-contaminated material from known sources (i.e., asphalt-backed roofing shingles, asphalt roofing tar, etc).

All non-hazardous materials will be disposed of at a sanitary landfill.

e. Institutional controls

Institutional controls are currently being developed for the Site, including a requirement for an environmental covenant.

f. Site security

After mobilization to the Site, security will be maintained whenever Site personnel are not present. Site security will be maintained until all removal activities on the Site are completed.

2. Removal action levels

Soil Removal Action Levels	
< 820 ppt dioxin	no excavation required
> 820 ppt dioxin and < 12 inches depth	excavation required
< 820 ppt dioxin and < 12 inches depth	no additional excavation required
< 2,460 ppt dioxin and > 12 inches depth	no additional excavation required
> 2,460 ppt dioxin and > 12 inches depth	excavation required

3. Contribution to remedial performance

Based upon information currently available, no long-term remedial actions are anticipated.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Not applicable.

5. Applicable or relevant and appropriate requirements (ARARs)

Section 300.415(j) of the NCP requires removal actions to attain applicable or relevant and appropriate requirements (ARARs) under federal or state environmental facility or siting laws to the extent practicable considering the exigencies of the situation. Other state and federal advisories, criteria, or guidance may be considered in formulating the removal action. Superfund actions conducted on the Site are exempt from administrative requirements of ARARs. Requirements which do not in and of themselves define a level or standard of control are considered administrative. Administrative requirements include the approval of or consultation with administrative bodies, issuance of permits, documentation, and generally, reporting and recordkeeping requirements to ensure that substantive levels or standards of control are being met. The following federal action-specific and chemical-specific ARARs have been identified:

Action-Specific ARARs

Requirements that may apply to the transportation of contaminated materials include:

Regulatory Citation	Requirement
40 C.F.R. §§ 262.20 and 262.23 40 C.F.R. §§ 263.20 and 263.21	Requirements for manifesting
40 C.F.R. § 262.30 49 C.F.R. §§ 173.202 and 173.241	Requirements for packaging of materials
40 C.F.R. § 262.31	Requirements for labeling materials
40 C.F.R. § 262.32	Requirements for marking of materials
40 C.F.R. § 263.11	Requirements for EPA identification number

Chemical-Specific ARARs

Regulatory Citation	Chemical	Maximum Concentration
40 C.F.R. §§ 50.6	Particulates PM_{10}	150 ug/m^3 (24 hour average)

The EPA has requested that MDNR identify requirements that the state would like considered as potential ARARs for this removal action. To qualify as ARARs, these requirements must be (1) promulgated, (2) identified by the state within the time period specified in the letter, and (3) more stringent than federal requirements.

6. Project schedule

Once the project is initiated, it is estimated that it will take approximately five months to complete.

B. Estimated Costs

The costs associated with this removal action are estimated as follows:

Extramural Costs:	
Cleanup Contractor Costs	$ 1,013,501
Extramural Costs Contingency (20%)	202,700
Removal Ceiling	$ 1,216,201

EPA direct and indirect costs, although cost recoverable, do not count toward the Removal Ceiling for this removal action. Refer to the enforcement section for a breakout of these costs.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action may increase public health risks to the adjacent population due to disturbance and/or migration of the contaminated soil.

VII. OUTSTANDING POLICY ISSUES

EPA Headquarters has been consulted on national policy matters and there are no outstanding policy issues.

VIII. ENFORCEMENT

The total estimated EPA costs for the removal action based on full cost-accounting practices are estimated to be $1,729,132.

Direct Extramural Costs	$1,216,201
Direct Intramural Costs	80,000
EPA Indirect (33.4% of all costs)	432,931
Total Project Costs	$1,729,132

Direct costs include direct extramural and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full-cost accounting methodology effective October 2, 2000. These estimates do not include prejudgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

See the Confidential Enforcement Addendum for additional information.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Ellisville site in Wildwood, Missouri. The removal action was developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site continue to meet the NCP section 300.415(b) criteria for a removal action and I recommend your approval of the proposed removal action. The total project ceiling, if approved, will be $1,216,201. Of this, as much as $1,216,201 will come from the regional removal allowance.

Approved:

Cecilia Tapia
Director, Superfund Division

9/26/13
Date

Attachment

Attachment 1