

# CHAPTER V Draft Section 4(f) Evaluation for the Katy Trail State Park Interstate 70 Section of Independent Utility 3, Cooper and Boone Counties

na shekarala na fi ti bata na sakkilariki na t

Prepared Pursuant to 23 USC 138 and 49 USC 303

By the United States Department of Transportation Federal Highway Administration and the Missouri Department of Transportation

September 2004

Date of Approval

<u>Hondo & Noumann</u> For FHWA <u>Brogenanne Gyn</u>. Title

## A. Proposed Action

The Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA) have proposed improvements to Interstate 70 (I-70) between the metropolitan areas of Kansas City and St. Louis (I-70 corridor) to meet the current and future transportation-related needs of the corridor. A tiered environmental process was used to evaluate the improvements within this I-70 corridor. The First Tier process concluded with selecting the Widen Existing I-70 strategy between Kansas City and St. Louis, Missouri. The findings of this study are documented in the Final First Tier Environmental Impact Statement (EIS), or First Tier EIS (FHWA and MoDOT, 2001). A Record of Decision was issued for the First Tier EIS in December of 2001. A summary of the First Tier EIS is presented in Appendix A. Additionally, the First Tier EIS divided the I-70 corridor from I-470 at Kansas City to the Lake St. Louis exit near St. Louis into seven sections of independent utility (SIUs).

Improvements to the SIU 3 are proposed as part of the Second Tier environmental process. Section of Independent Utility 3 is located between mile marker 99, approximately two miles (3.2 kilometers) west of the Route 5 interchange in Cooper County to mile marker 115, 0.6 mile (0.96 kilometer) east of the Route BB interchange in Boone County (Figure V-1). The proposed project is approximately 16 miles (25.7 kilometers) in length. The primary purpose and need for the proposed project are to upgrade current roadway design features, increase roadway system capacity, improve safety, address the functional and structural needs of the Missouri River bridge, improve the efficiency of freight movement and national security and facilitate the usage of recreational facilities. Chapter I, Purpose and Need, presents detailed information on the description and purpose and need for the proposed project.

There are currently four lanes of traffic within the study area (two lanes in each direction). For SIU 3, the proposed action is to widen the existing I-70 by adding an additional lane of traffic in each direction, for a total of six lanes. These improvements include upgrading the current roadway design features by widening the median, reconfiguring the five interchanges that currently exist within the study area, and constructing a new bridge over the Missouri River at Overton Bottoms. The mainline of I-70 is recommended to widen to the south of the existing highway. Chapter II, Project Alternatives, presents detailed information on the recommended preferred alternative.

Section 4(f) of the Department of Transportation Act (49 United States Code [USC] 303) protects publicly owned parks, recreation areas, wildlife refuges, waterfowl refuges, and significant historic and archeological resources. The use of Section 4(f) resources can only be approved by the Secretary of Transportation if there are no feasible and prudent alternatives that avoid the Section 4(f) resource and all possible plans to minimize harm to the Section 4(f) resources have been incorporated into the preferred alternative. There is one Section 4(f) resource, the Katy Trail State Park, within the study area.

The Katy Trail State Park (Katy Trail), managed by the Missouri Department of Natural Resources (MDNR), is a cross-state hiking and biking trail that follows the route of an abandoned railroad bed. The Katy Trail is a publicly owned recreational facility and qualifies as a Section 4(f) resource. Within the study area, I-70 crosses the Katy Trail twice at approximate mile markers 100 and 114 (Figure V-1). The Katy Trail is an extensive linear recreational resource that cannot be avoided by the proposed project. As the proposed action recommends widening on the south side of existing I-70, both crossings will be affected by the recommended preferred alternative. These crossings will be modified so users can safely traverse the additional lanes of traffic. To avoid a temporary closure of the Katy Trail, a re-routing of the western crossing at approximately mile marker 100, is proposed during construction.

## B. Section 4(f) Property – Katy Trail State Park

The Missouri-Kansas-Texas Railroad (better known as Katy) was built in the mid-1890s. The railroad ceased operating the portion from Sedalia to Machens in 1986. Through provisions of the National Trail Systems Act (PL 90-543 [16 USC 1241-1251] [Rails to Trails]), the MDNR acquired the right of way and constructed the trail with a generous donation by the late Edward D. (Ted) Jones. In 1991, the Union Pacific Railroad donated an additional 33 miles (52.8 kilometers) of rail corridor from Sedalia to east of Clinton. The Katy Trail is currently open for approximately 225 continuous miles from Clinton to St. Charles and is operated by the MDNR as part of the state park system. The park is still being developed from St. Charles to Machens (http://www.mostateparks.com/katytrail/generalinfo.htm)

The Katy Trail is a cross-state hiking and biking trail. There are no camping facilities in Katy Trail State Park.

In 1995, the National Park Service designated a 165-mile (265.5-kilometer) portion of Katy Trail as an official segment of the Lewis and Clark National Historic Trail making this section a part of the National Trail System. This section corresponds to the segment from Boonville to Machens.

From west to east within the study area, the Katy Trail crosses I-70 at approximate mile marker 100 and utilizes the existing railroad bridge over I-70 in Cooper County. North of I-70, the trail continues in a northeasterly direction to Boonville where a trailhead is located. Access to this trailhead is from Route 5. The trail crosses the Missouri River north of Boonville and then takes a southeasterly direction to Rocheport where another trailhead is located. Access to this trailhead is from Route BB. The trail continues in a southeasterly direction and extends under the I-70 Missouri River bridge in Boone County just east of the Missouri River at approximately mile marker 114.

## C. Impacts to Section 4(f) Property – Katy Trail State Park

## 1. Mile Marker 100 Crossing

Currently, trail users cross I-70 via the steel-girder railroad bridge at approximate mile marker 100. At this location, the recommended preferred alternative includes widening the median and adding an additional lane of traffic in each direction and would require approximately 1.08 acres (0.44 hectare) of the Katy Trail State Park. During construction of the recommended preferred alternative, this bridge structure would have to be removed and ultimately replaced to provide a longer crossing over the proposed additional two lanes of traffic and a wider median. This new, longer structure would be established in cooperation with MDNR. The construction of the recommended preferred alternative of the trail at this location. Mitigation measures would include re-routing the trail during construction (see Subchapter V.E, Measures to Minimize Harm to the Section 4[f] Resources) to ensure continuity of the trail. Ultimately, the manner in which trail users cross I-70 would remain the same (over I-70 and at the approximate same location).

## 2. Mile Marker 114 Crossing

The Katy Trail currently extends underneath the I-70 Missouri River bridge just east of the Missouri River at approximate mile marker 114. The existing bridge is proposed to be used as the westbound lanes for the recommended preferred alternative. A companion bridge jies proposed south of the existing bridge for the eastbound lanes. The new bridge piers for the companion bridge would not be placed within the Katy Trail State Park. The recommended preferred alternative would not require any property from the Katy Trail State Park at this location. The continuity of the Katy Trail would be preserved by keeping the existing trail intact underneath the companion bridge. The manner in which trail users cross I-70 (underneath the bridge) would remain the same. For safety reasons, the trail could be temporarily closed for short periods of time (several hours) during construction of the companion bridge. Either a roofed structure over the trail or a safety net could be installed to protect the trail users and minimize temporary closures (see Subchapter V.E, Measures to Minimize Harm to the Section 4[f] Resources); however, no permanent impacts to Katy Trail State Park are anticipated at this location.

## D. Proposed Avoidance Alternatives of Section 4(f) Resource – Katy Trail State Park

The No-Build Alternative would maintain the current crossings of the Katy Trail.

There are no developed build alternatives that would avoid the Katy Trail. In order for a build alternative to avoid impacts to the Katy Trail, an alternative would have to be located north of Boonville and Rocheport, which would be far beyond the study area determined in the First Tier EIS. An alternative outside the study area would result in a loss of proximity to the existing highway, additional lane miles, and a new Missouri River crossing. Such an alternative would be far more costly, and have a much greater potential for overall environmental impacts.

For these reasons, alternatives to the north of the Katy Trail were not considered feasible or prudent and were eliminated during the First Tier process. Only one alternative was developed in the areas of the Katy Trail crossings (see Figure V-1) which was designed to minimize overall environmental impacts.

## E. Measures to Minimize Harm to the Section 4(f) Resources

In accordance with discussions between FHWA, MoDOT and MDNR on March 30, 2004 and MDNR's letter dated April 8, 2004 (Exhibit 1), the following minimization measures should be considered for the Katy Trail crossings:

 The Federal Highway Administration will temporarily detour the Katy Trail during construction. The trail currently crosses I-70 at approximate mile marker 100. The detour would consist of re-routing the trail just north of I-70 west of Old Highway 40. It would run approximately 3,400 feet (1,036 meters) along Old Highway 40 to Dunkles Drive. There it would turn left and cross I-70 via Dunkles Drive and continue to the south approximately 1,900 feet (579 meters) to Prairie Lick Road. From there it would run southwesterly approximately 1,500 feet (457 meters) along Prairie Lick Road at which point it would intersect with the trail again. This potential detour is depicted in Figure V-2. The re-routing of the trail to Dunkles Drive creates a situation where the Dunkles Drive overpass and the Katy Trail overpass cannot be constructed at the same time. Construction staging between the two overpasses would need to occur.

- Although approximately 1.08 acres (0.44 hectare) of the Katy Trail State Park is required at approximately mile marker 100, FHWA and MoDOT would compensate for the loss by replacing the existing crossing with a bridge that extends over a wider median and the proposed additional lanes. Compensation for impacts to this area of the park will be determined through coordination with MDNR and may include an acre for acre acquisition of lands to be dedicated to the Katy Trail State Park (e.g., land for use as additional access/parking).
- The Federal Highway Administration and Missouri Department of Transportation will consult with MDNR regarding the design of the new crossing at approximate mile marker 100. Coordination will ensure that vertical and horizontal clearances for the crossing will be established and maintained according to the National Trails System Act, MDNR, and MoDOT guidelines. Consideration will be given to the use of the existing bridge as a part of the crossing during the design phase.
- Regarding the crossing at approximate mile marker 100, FHWA will provide advance notification of extended trail detour dates and times to the public as well as appropriate information signing on the trail and at nearby trailheads. Additional signage will also be provided to warning motorists of the presence of bicyclists and pedestrians on the detour route.
- Consideration will be given to identification of a bike lane on the detour route.
- FHWA will provide advance notice and signing on the trail and at nearby trailheads for the crossing at approximate mile marker 114, should this crossing require a temporary closure. (Any closure at this location is anticipated to be of short duration several hours or less.) Either a roofed structure over the trail or a safety net could be installed to protect the trail users and minimize temporary closures.
- If practicable, FHWA will time trail closures and detour (at approximate mile marker 100) to occur during periods of off-peak use.

# F. Coordination

Coordination with the MDNR, who manages the Katy Trail, has been ongoing throughout the process. Coordination and communication has consisted of both written correspondence and agency scoping meetings (Appendix D). Additionally, nine interagency meetings have occurred throughout the proposed project in which MDNR was a participant. These have included five meetings with the Study Management Group and four meetings with Overton Bottoms Subcommittee as discussed in Chapter IV.

The MDNR has expressed concern regarding the new crossing at the western portion of the study area (mile marker 100) and has requested consultation prior to the design of the crossing to ensure the design meets MDNR standards (Exhibit 2, MDNR letter dated Dec. 26, 2002).

Further coordination between MoDOT and MDNR will result in an intergovernmental agency agreement between MoDOT and MDNR that addresses project coordination over the Katy Trail and details mitigation measures to be followed to minimize any disruptions in use of the trail.

#### I-70 Second Tier Environmental Assessment SIU 3 - MoDOT Job No. J4I1341F

Exhibit 1

APR 1 2 2004

STATE OF MISSOURI Dob Holden, Gavernor + Srephen, M. Mubfood, Director

www.dnz.state.mo.us

April 8, 2004

Mr. Don Neumann Programs Engineer Federal Highways Administration 209 Adams Street Jefferson City, MO 65101-3203

Re: 1-70 Section 3 Environmental Assessment, Mile Markers 100 and 114

Dear Mr. Neumann:

The Missouri Department of Natural Resources, Division of State Parks has reviewed the draft Environmental Assessment for I-70 SIU 3. The following are our suggestions regarding language to be inserted in the final Environmental Assessment, per meeting discussions between Federal Highway Administration (FHWA), Missouri Department of Transportation (MoDOT), MACTEC and Division staff on March 30, 2004.

As discussed, FHWA and MoDOT will provide advance notification to the Missouri Department of Natural Resources regarding Katy Trail State Park closures at mile markers 100 and 114. Additionally, Missouri Department of Natural Resources will be provided advance notice before trail users are rerouted to the proposed detour at mile marker 100. FHWA and MoDOT will provide signage notifying users of the trail detour at mile marker 100, as well as signage warning motorists of the presence of bicyclists and pedestrians on the road. If possible, a bike lane should be identified on the roadway. During construction at mile marker 114, the Division asks that the trail be covered during construction to avoid injury to trail users. Pertaining to temporary closure of Katy Trail, the Division asks, if at all possible, that construction be initiated during non-peak use of the trail.

Regarding the proposed new bridge crossing at mile marker 100, the Division has three issues of concern. The first issue of concern is the proposed removal of the 1958 railroad bridge and the construction of a new one. After discussion with our cultural resources staff, it was agreed that although the bridge is not yet eligible for listing on the National Historic Register, it will meet eligibility requirements in four years and thus has historic value. Also, the association of the bridge with the history of the Missouri-Kansas-Texas (MKT) railroad and with the history of I-70 suggests it should be considered a cultural resource. As years continue to pass, and bridges of this type begin to disappear from the landscape, its significance as a cultural resource may well increase. One element of our mission is to preserve cultural resources and we agree that this bridge qualifies as a cultural resource in our care. As such, it is worthy of our efforts to preserve it. We strongly encourage that the existing bridge be retained and incorporated in the construction of a longer crossing. Should the incorporation of the existing bridge not be possible, we ask that design of a new crossing be sensitive to railroad history and utilize similar design elements



Explanation Statement's President's

Integrity and excellence in everything we do

M comann Page 2

reminiscent of historic features of railroad bridges from this era. It is our assumption that all costs associated with bridge replacement are the responsibility of MoDOT.

Secondly, FHWA and MoDOT are proposing to compensate for the loss of 1.08 acres of Katy Trail rightof-way by replacing the existing crossing with a new bridge that extends over a wider median and the additional two lanes. The existing bridge serves our needs very well. It is FHWA and MoDOT who need a new bridge to accommodate the widening of the I-70 corridor. It is our contention that replacing the bridge does not compensate for the loss of 1.08 acres of land. FHWA and MoDOT should develop an alternative offer for mitigation of the loss of Katy right-of-way. We do not consider bridge replacement as mitigation.

Lastly, should the railroad corridor ever revert and rail service resume on the MKT line, it will be MoDOT's responsibility to construct a crossing that will accommodate rail traffic.

Thank you for the opportunity to review and comment on the draft environmental assessment. Should you have any questions or need additional information, you may contact Deborah Schnack at (573) 751-5374 or P. O. Box 176, Jefferson City MO 65102-0176.

Sincerely,

DIVISION OF STATE PARKS

Lung liken

Douglas K. Eiken Director

DKE/df



Mr. Kevin Keith, Chief Engineer, Missouri Department of Transportation

Mr. Frank St. Clair, Field Operations Supervisor, Northern Missouri Parks District Mr. Larry Larson, Interpretive Program Coordinator, Lewis and Clark Bicentennial Commission

Mr. John Cunning, Program Director, Resource Management and Interpretation Program

- Mr. Stan Fast, Section Leader, Cultural Resources Section, Resource Management and
  - Interpretation Program

Mr. Keith Petersen, Superintendent, Knob Knoster State Park

- Mr. Tom Lange, Office of the Director, Missouri Department of Natural Resources
- Ms. Jane Beetern, Office of the Director, Missouri Department of Natural Resources

Exhibit 2

### STATE OF MISSOURI Resources - Stephen M. Mathod, Director DEPARTMENT OF NATURAL RESOURCES

www.dur.state.mous

December 26, 2002

Jerry Mugg, P.E. HNTB Architects Engineers Planners 715 Kirk Drive P.O. Box 419299 Kansas City, MO 64105

Dear Mr. Mugg:

This letter is to convey information assembled from several Department of Natural Resources ' programs to assist in development of the I-70 second tier NEPA analyses, and to update information submitted by the department during the I-70 first tier Environmental Impact Statement. Hopefully this information will assist the consultants and sub-consultants as the study progresses. Where possible, the information is divided by section of independent utility (SIU). The project's consultants will need to verify that all of the information is divided appropriately by SIU.

In working with the programs to assemble this information, it was pointed out to me by Division of State Parks staff that a new, wider bridge will likely be necessary whenever the interstate is reconstructed where the KATY Trail State Park crosses over Interstate 70. The KATY crosses I-70 between mile markers 99 and 101, or mile 194.2 of the KATY Trail. The department should be consulted prior to the design of a new bridge at this location to assure that it meets the required standards and that construction results in minimal impact to the existing trail. In the Mineola Hill area of I-70, impacts to Graham Cave State Park may be possible. The information available from the Division of State Parks regarding developments planned for the park is on the attached Graham Cave State Park Conceptual Development Plan, although most of the projects depicted have already been completed.

If you have any questions or need clarification on any of this information, please contact me via phone at 573-522-2401, or e-mail: nrbeetj@mail.dnr.state.mo.us. For mailed correspondence, the address is Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102. Thank you.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

One Beitem

Jane Beetem Transportation Coordinator Office of the Director

c: Ken Bechtel, HNTB SIU Consultants Integrity and excellence in all we do

C PART

| 3199 Riverport Tech Center Drive<br>St. Louis, Missouri 63043<br>I-70 Improvement Project/SIU No. 3            |
|--|
| I-70 Improvement Project/SIU No. 3   |
|  |
| The following species and/or natural communities are known to occur on or in the vicinity of the project site: |
| Federal State  |
| Common Name Status Status Rank Range Sec. Subsection   |
| SICKLEFIN CHUB S3 049N015W 34 SLENDER LADIES' TRESSES  |
| S3 048N014W 17   |
| GHOST SHINER S2 049N015W 34 SE4  |
| E E S1 048N015W 12   |
| N  |
| S1 048N017W  |
| 048N015W   |
| S2 049N015W  |
| S3 049N015W  |
| S2 048N015W  |
| SICKLEFIN CHUB S3 048N015W 12  |

P:\510269\EA\04-10-15.SIU3.EA.doc

#### INTERSTATE 70 CORRIDOR - KANSAS CITY TO ST. LOUIS, MISSOURI HAZARDOUS WASTE PROGRAM INFORMATION - ATTACHMENT # 1 DECEMBER 16, 2002

Various sections of the department's Hazardous Waste Program (Superfund, Tanks, Budget & Planning, Permits and Voluntary Cleanup Program) have checked databases for information on possible contaminated sites in the I-70 project area. These findings are listed below by SIU number.

It should be noted that properties listed on the Registry, maintained by the Superfund Section, are subject to certain change of use and ownership provisions. The Tanks Section reviewed the project area maps and determined that there are tank sites of concern within the project area. Some of these are known remediation sites where a spill or leak has occurred. Other unregistered sites may exist along the corridor. The Tanks Section maintains a database of active underground storage tanks and release sites. Tanks requires notification of release, abatement and corrective action at tank release sites. As the proposed corridor becomes more defined and the project is closer to construction, project planners should contact staff from the Tanks Section for an up-to-date list of registered tank sites.

The Budget & Planning Section maintains a database of registered Missouri hazardous waste generators. Missouri hazardous waste generators are required to report all hazardous waste they generate. However, as the project progresses, project planners should continue to contact the Hazardous Waste Program for updates. In addition the following general information is provided as it may assist in interpreting information on the list, which is applicable to all SIU's:

MOR, MOD, and MOP Environmental Protection Agency (EPA) ID numbers are permanent numbers. MOG EPA ID numbers are old waste oil ID numbers. MOP EPA ID numbers are temporary ID numbers. Temporary ID numbers are valid for one initial 30-day period with the possibility of an extension of one additional 30-day period.

Conditionally Exempt Small Quantity Generators generate or accumulate less than 220 lbs. (100 kg) of hazardous waste per month or any one time. Small Quantity Generators generate or accumulate between 220 lbs. (100 kg) and 2200 lbs. (1000 kg) of hazardous waste per month or any one time. Large Quantity Generators generate or accumulate more than 2200 lbs. (1000 kg) per month or any one time.

Sites that are currently "Inactive" are sites that at one time registered with Missouri to dispose of hazardous waste. Sites that are listed as "Inactive Non-Reporter" have failed to complete the Generator's Hazardous Waste Summary Report form in past years and have had their status administratively inactivated.

Information in the database is based on information from the generators. With the exception of Inactive Non-Reporters, a generator's status is based on the information provided by the generator when they initially registered with us or when they filed a subsequent Notification of Regulated Waste Activity form. In addition, the generator may have sent a letter requesting to inactivate the identification number or change their status to Conditionally Exempt Small Quantity.

In all sections of the second tier I-70 study, project planners will need to determine whether any of the registered Missouri hazardous waste generator facilities are located within the actual areas of concern. It is the recommendation of the Hazardous Waste Program that additional investigation be undertaken of any sites or facilities identified within the area of concern. The planners should review the department's files and the EPA Region VII's files as part of their investigation for additional information on facilities or sites named.

It should not be assumed that there are no other facilities or sites in the area. Unreported facilities or contaminated sites may exist in this vicinity.

Further research may be pursued through the EPA's tracking record, CERCLIS, which lists all sites suspected of having had a release of a hazardous substance. To request information regarding the EPA's CERCLIS record, Ms. Karen Flournoy of the U.S. EPA Region VII should be contacted at (913) 551-7003.

As the project progresses, the planners may wish to review the Hazardous Waste Program's paper files regarding complaints, spills, and closed investigations. They are available by appointment through our file manager, Rhonda Loveall, who may be reached at (573) 751-3176.

In general, any waste or debris produced or encountered during construction should be properly characterized, managed and disposed of during the construction process. In the event that hazardous waste is encountered, construction activities should be stopped, and the Hazardous Waste Program should be notified.

#### SIU # 1

The Superfund Section found 41 facilities in its database in the vicinity of SIU # 1. Please refer to the attached list for names and addresses. Of these sites, the following are listed on the Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri: Amoco Oil, Armco, Prier Brass Manufacturing Company, Riverfront Landfill, Conservation Chemical Company, Lake City Army Ammunition, Independence FMGP #1, and HCI Chemtech on Stillwell Street.

An updated list of facilities identified by the Budget & Planning Section as being in the vicinity of SIU # 1 is attached.

The Permits Section and Voluntary Cleanup Program found no facilities of concern in the Boonville to Odessa section.

#### SIU # 3

One facility was identified by the Superfund Section as being in the vicinity of SIU # 3. Information on that site, Boonville FMGP, is attached.

An updated list of facilities identified by the Budget & Planning Section as being in the vicinity of SIU # 3 is attached.

The Permits Section and Voluntary Cleanup Program found no facilities of concern in the vicinity of SIU # 3.

#### SIU # 4

Five facilities were found by the Superfund Section in the vicinity of SIU # 4 and SIU # 5. (The search on these two sections overlapped because it was difficult to determine the exact cut-off at Route Z south of the existing I-70.) Please refer to the attached list for names and addresses. Of these sites, the University of Missouri, South Farm is listed on the Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri.

An updated list of facilities identified by the Budget & Planning Section as being in the vicinity of SIU # 4 is attached.

The Permits Section identified the following two Treatment, Storage and Disposal sites in the vicinity: Safety-Kleen, Columbia, 2400 Big Bear Court, Columbia 65202 (located slightly north of 70 and west of 63) and University of Missouri, Columbia.

The Voluntary Cleanup Program found no facilities of concern in SIU # 4.

#### SIU # 5

Five facilities were found by the Superfund Section in the vicinity of SIU # 4 and SIU # 5. (The search on these two sections overlapped because it was difficult to determine the exact cut-off at Route Z south of the existing I-70.) Please refer to the attached list for names and addresses. Of these sites, the University of Missouri, South Farm is listed on the Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri.

An updated list of facilities identified by the Budget & Planning Section as being in the vicinity of SIU # 5 is attached.

The Permits Section and the Voluntary Cleanup Program found no facilities of concern in the vicinity of SIU # 5.

#### SIU # 6

Two sites were found by the Superfund Section in the vicinity of SIU # 6. Please refer to the attached list for information.

An updated list of facilities identified by the Budget & Planning Section as being in the vicinity of SIU #6 is attached.

The Permits Section and the Voluntary Cleanup Program found no facilities of concern in the vicinity of SIU # 6.

#### SIU # 7

Fourteen sites in the vicinity of SIU # 7 were identified by the Superfund Section. Please refer to the attached list for names and addresses. Of these sites, the following are listed on the Registry of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri: St. Charles FMGP #1 and Zykan Landfill.

The Permits Section identified the following four Treatment, Storage and Disposal sites in the vicinity:

- Bob's Home Service (Zykan) is near Wright City. It is adjacent to JZ Disposal, which was also listed in the First Tier Study.
- 2. MEMC Electronics Material Inc., 501 Pearl Dr. St. Peters, MO 63366
- 3. PM Resources, 13001 St. Charles Rock Rd., Bridgeton, MO 63044
- 4. GM, Wentzville.

The Voluntary Cleanup Program found one facility of concern in SIU # 7: Whisk Products, 600 West Main, Wentzville, 63385. The property carries a restrictive covenant filed for contamination remaining underneath the building.

General Comments:

Removal of the existing pavement throughout the corridor during construction will generate a large volume of solid waste, and recycling possibilities could be considered to the maximum extent possible in the second tier studies.

One determination of the first tier I-70 study was that the median on the reconstructed facility will be significantly wider. The I-70 median could eventually consist of approximately 2500 acres (200 miles long by 100 feet wide), that would under current practices need routine mowing during the growing season. A reduction in maintenance costs and pollution from the fossil fuels used in mowing could be achieved by using either 1) a ground cover or variety of plants that would require less maintenance than grass but still be safe if a vehicle enters the median, and which might filter stormwater runoff better than grass, or 2) growing hay in the median - either for sale to farmers or grown under contract with farmers.

A pollutant of particular note at rest stops, but not always considered, is that of pet waste. Fecal coliform from pet waste can be a significant pollutant to receiving waters, negatively impacting whole body contact recreation and drinking water. This problem should be considered during project planning. A suggestion would be to have pet-only areas, where stormwater runoff could be properly controlled. One innovative solution for stormwater runoff from rest stops (both from paved areas and pet-only areas) would be a treatment wetland, used in conjunction with lagoons.

#### SIU #1 (Hwy 470-Odessa)

The beginning part of this section is moderately urbanized. Special attention needs to be paid when crossing the Little Blue and the East Fork of the Little Blue Rivers so that floodwaters are not backed up in these areas, which could inundate people's houses and businesses.

Near mile 29, it appears the highway may get moved more into the floodplain of a tributary to Sni-a-bar Creek on the north side of the highway.

The following information is based on analyses of the National Wetlands Inventory. There appear to be a lot of wetlands on a tributary to Little Blue River near the interchange with I-470. At the East Fork of the Little Blue, it appears there are more wetlands on the north side of the highway. At Sni-a-bar Creek, it appears there are more wetlands on the south side. At the East Fork of Sni-a-bar Creek, there appears to be more on the north side.

There are four streams near the highway in SIU #1 listed on the draft 2002 303(d) (impaired waters) list for the state of Missouri: Little Blue River, E. Fork of the Little Blue River, and the main branch and the East Fork of Sni-a-bar Creek. They are all listed for Livestock and Wildlife Watering (LWW), and Protection of Warm Water Aquatic Life and

Human Health-Fish Consumption (AQL). The Little Blue River and Sni-a-bar Creeks are also listed as impaired for Boating and Canoeing (BTG).

The Little Blue River was added to the draft 2002 303(d) list for mercury; the East Fork of the Little Blue River and the West Fork of the Sni-a-bar remain on the draft 2002 list both for volatile suspended solids, and the latter for biochemical oxygen demand as well.

#### SIU #3 (Hwy 5-Rocheport)

There are 2 classified waterways that runoff from this section of the highway feeds into: the Petite Saline and Missouri River. They are both listed on the draft 2002 303(d) list for Livestock and Wildlife Watering (LWW), and Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL). In addition, the Petite Saline is listed for Boating and Canoeing (BTG) and Whole Body Contact Recreation (WBC); the Missouri River is also listed for Irrigation (IRR), Boating and Canoeing (BTG), Drinking Water Supply (DWS), and Industrial (IND). Special consideration should be paid to the Petite Saline because it is considered a Biocriteria stream. The Missouri River is on the 2002 303(d) (impaired waters) list for the state of Missouri due to habitat loss.

The floodplain of the Missouri River warrants special attention because of its extensive wetland complex. It is recommended that the floodplain be completely spanned to minimize the likelihood of bridge closure in the event of a catastrophic flood similar to 1993; the bridge approach should also be at least 2 feet above the highest flood of record (1993).

#### SIU #4

This section includes the proposed Columbia by-pass, which should be studied carefully. As the maps provided in the first tier are not clear where the bypass routes would traverse, the comments are somewhat difficult to direct.

There are two creeks on the draft 2002 303(d) (impaired waters) list for the state of Missouri: Hinkson (unspecified), and Rocky Fork (nonvolatile suspended solids).

There are 7 classified streams that runoff from this section of the highway feeds into: Bear Creek, Callahan Creek, Hominy Branch, Hinkson, Perche, Rocky Fork, and Sugar Branch. All are listed for Livestock and Wildlife Watering (LWW), and Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL). In addition, Hinkson and Perche Creeks are listed for Boating and Canoeing (BTG).

It appears that the Near North (NN) option would impact less farmland, fewer wetlands and stream crossings, and a similar amount of urban development as the Far North (FN) option does. NN would also induce less sprawl since it would be closer to urban development.

There are numerous instances where FN crosses two creeks, but NN crosses them after they have joined. These include Callahan and Midway Branch, Perche and Slacks Branch, and Hinkson and Nelson Creeks. Thus, it appears NN would require fewer bridges and necessitate crossing fewer floodplains. NN impacts less wetlands acreage than FN on both Callahan and Perche Creeks. FN hits some wetlands on Rocky Fork that NN could miss entirely. It looks like they impact a similar amount of wetlands on Hinkson Creek, and NN hits a few on Hominy that FN misses completely. The intersection of FN with the existing I-70 might occur right at Little Cedar Creek which would magnify its impact on the wetlands there, whereas NN would not affect the creek at all (note: Little Cedar Creek is in SIU #5).

#### SIU #5

There are two creeks in this section on the draft 2002 303(d) (impaired waters) list for the state of Missouri: Stinson (for biochemical oxygen demand, and volatile suspended solids) and Cedar (for pH).

There are four classified streams that runoff from this section of the highway feeds into: Little Cedar, Cedar, Richland, and Stinson. All are listed for Livestock and Wildlife Watering (LWW), and Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL). In addition, Cedar Creek is listed for Boating and Canoeing (BTG).

The Far North option of the Columbia bypass could meet the current I-70 right of way at Little Cedar Creek, thereby exacerbating impacts to its floodplain and wetlands.

#### SIU #6

Of special importance is the Loutre River, which is considered a biocriteria water resource, and Whetstone Creek, which is an outstanding state resource water and flows into Whetstone Creek Conservation Area.

There are 5 categorized waterways: Maddox Creek, Auxvasse River, Whetstone Creek, Prairie Branch, and the Loutre River. All are listed for Livestock and Wildlife Watering (LWW), and Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL). In addition, the Auxvasse is listed for Boating and Canoeing (BTG).

It is good that MoDOT is planning on widening to the north at the Auxvasse because it appears to have approximately 3 times as many wetlands on the south side than on the north side of the highway, according to the NWI. The Loutre similarly has more on the south side, although it appears to have more floodplain on the north side. MoDOT wants to widen to the north at Whetstone Creek, which could have a greater impact on the creek and downstream Conservation Area.

#### SIU #7

According to the 1993 Wetland Watershed Identification Committee, there are two watersheds (Cuivre River, # 07110008 and Peruque/Dardenne Creeks, # 07110009) which contain Priority Wetlands for Non-point Source Pollution Protection, parts of which are in the project area.

There are 3 classified waterways that the highway might impact, depending on which bypass is chosen: Indian Camp, McCoy, and Peruque Creeks. All are listed for Livestock and Wildlife Watering (LWW), and Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL).

Perugue and Indian Camp Creek are both on the 2002 303(d) (impaired waters) list for the state of Missouri for nonvolatile suspended solids, with the latter also on for NH<sub>3</sub>.

There are three options for a bypass in this section of the highway: Near North (NN), Far North (FN) and South (S). Both FN and NN could hit a few wetlands on Big Creek, but NN has more possibilities to miss them. Same with Hickory Lick. NN is more likely to hit some on Indian Camp Creek than FN, but the latter it more likely to have greater impacts on it because it parallels it longer, and it is more in its floodplain. The north options will have no impact on Lake St. Louis, but the South could impact it significantly. The South option looks like it would not cross as many wetlands, but since it parallels Peruque Creek (which feeds into Lake St. Louis), it has more opportunity to have sediment run off into the creek during construction.

#### INTERSTATE 70 CORRIDOR - KANSAS CITY TO ST. LOUIS, MISSOURI GEOLOGICAL SURVEY AND RESOURCE ASSESSMENT DIVISION INFORMATION ATTACHMENT # 3 DECEMBER 16, 2002

The geology throughout the corridor is diverse, ranging from Pennsylvanian shales, sandstones and carbonates to Mississippian carbonates down to Ordovician carbonates. This leads to variable substrates which may affect construction. Each contractor is encouraged to review the most up-to-date geologic mapping available at the departments Geological Survey and Resource Assessment Division (GSRAD). Throughout the corridor, it should be noted that limestone is susceptible to karst development, and that shale is often an unstable substrate.

The route traverses Pennsylvanian strata from the westernmost termination to approximately 3 miles west of Sweet Springs. The route intermittently intercepts Kansas City Group from near Blue Springs west. This unit contains considerable limestone and shale, with some sandstone, underclay, and minor coal. In this group, the limestone beds are notable for their thickness. The route is intermittently in Pleasanton Group from several miles east of Odessa to the westward termination. This unit is primarily shale and sandstone, with minor coal and underclay. From Blue Springs to Concordia, much of the route intersects Marmaton Group. This unit is comprised of shale, limestone, clay, and coal beds. From near the intersection with Highway 13 to about 3 miles west, the route intersects an outlier of Pleasanton Group. From the Highway 13 intersection east to near Sweet Springs, the route mostly intersects Cherokee Group, primarily Cabaniss Subgroup. This unit consists of sandstone, siltstone, shale, underclay, limestone, and coal beds. A small portion of the route intersects the Krebs Subgroup, dominantly sandstone, siltstone and shale, with some limestone, clay and coal.

From just west of Sweet Springs until just west of Columbia, the route primarily crosses Mississippian Osagean strata. In this region, the Osagean is comprised of the Pierson, Burlington, and Keokuk formations. These are all primarily carbonate units, and are all highly susceptible to the development of karst structures. Sections of the route also intersect Mississippian Kinderhookian strata. These units are primarily carbonate rocks, and are susceptible to karst development. A section of the route may intersect Pennsylvanian Cherokee Group, Cabaniss Subgroup from near Lamine to approximately 4 miles east of the intersection with Highway 87. From just west of Columbia to around 6 miles east of the intersection with Highway 54, the unit again intersects Pennsylvanian Cherokee Group, Cabaniss Subgroup, and Marmaton Group.

The segment from 6 miles west of the Highway 54 intersection to several miles west of High Hill is, in terms of bedrock geology, the most variable section on the route. Bedrock varies from Pennsylvanian Cabaniss Subgroup and Mississippian Osagean and Kinderhookian to Devonian and Ordovician. The Devonian strata includes shales and limestones, that can have related karst features and cause an unstable substrate. The Ordovician units intersected include the St. Peter Sandstone and the Jefferson City Formation. The majority of the Ordovician intercepted is carbonate, and susceptible to karst development. From several miles west of High Hill east to the Missouri River, the route is in Mississippian carbonate rocks of the Osagean and Meramecian series. This region is one that is highly susceptible to karst development.

#### Structures

The presence of geologic structures is important, as these can affect substrate stability and the potential for karst. Contractors are encouraged to check for known geologic structures. This information is available at GSRAD. Some regions may have limited geologic mapping, which may result in a limited number of recorded structures. Additional geologic structures may be present, and the consultants should consider this possibility in future project planning efforts.

#### Mining Activity

The potential exists for abandoned coal mines where the route intersects Pennsylvanian-age rocks. This includes the portion from the western termination to 3 miles west of Sweet Springs, and the section east of Columbia. The considerable volume of carbonate rocks intersected by the route suggests strong potential for the presence of operating and abandoned quarries.

Attached is an Access table with information on known mines and quarries in the corridor. These are sites situated 1.5 miles or less from the current highway. If further information is needed on these sites, contractors should contact GSRAD.

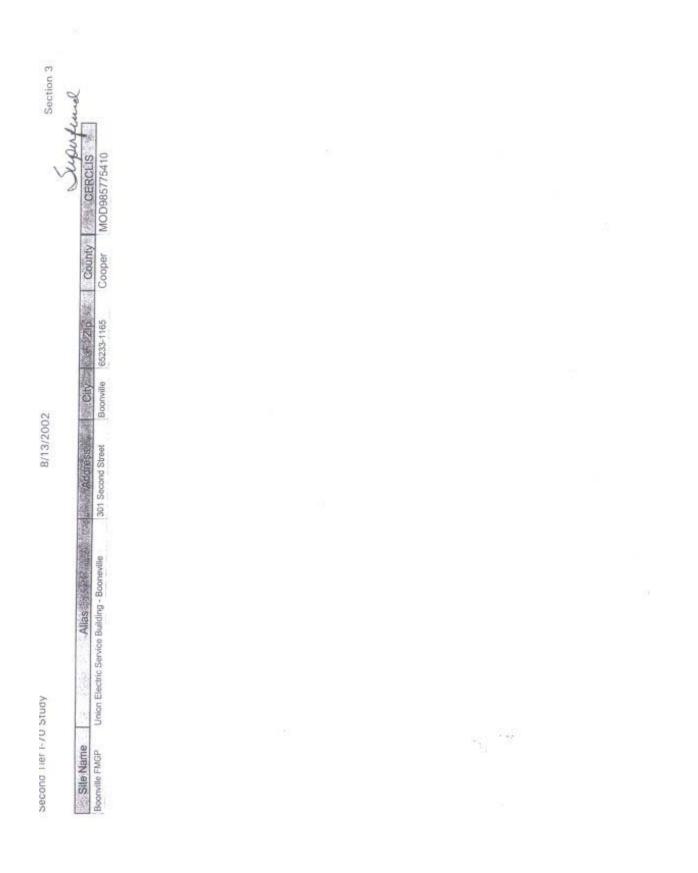
#### Karst

There is potential for karst throughout the area, wherever carbonate rocks are present. The consultants are encouraged to check GSRAD data for known springs, caves, etc. Information from these databases is available by specific request.

#### Seismicity

120

The potential for seismic activity in the corridor will have to be addressed, especially by the segments located near St. Louis, and where bridges built in floodplains are under consideration.



| STATUS                             | FACILITY                                       | ADDRESS                                     | CITY      | ST | dIZ      | LATITUDE | LATITUDE LONGITUDE |
|------------------------------------|--|---|-----------|----|----------|----------|--------------------|
| Conditionally<br>Exempt - Inactive | BOONVILLE<br>CORRECTIONAL<br>CENTER            | E MORGAN ST 1/2 ML BOONVILLE<br>E OFF HWY 5 | BOONVILLE | OW | 65233    | 38.97767 | -92.72882          |
| Conditionally<br>Exempt - Inactive | KEMPER<br>MILITARY<br>SCHOOL                   | 701 THIRD ST<br>MAINTANCE DEPT              | BOONVILLE | OW | 65233    | 38.97176 | -92.7456           |
| Conditionally<br>Exempt - Inactive | INTERSTATE<br>BRANDS CORP                      | 500 MAIN ST                                 | BOONVILLE | OW | 66233    | 38.97379 | -92.74303          |
|                                    | LAIDLAW<br>TRANSIT INC                         | 1226 11TH ST                                | BOONVILLE | OW | MO 65233 | 38.9637  | -92,7309           |
|                                    | BOONSLICK<br>AREA<br>VOCATIONAL<br>TECH SCHOOL | 1694 W ASHLEY RD                            | BOONVILLE | OW | 66233    | 38.94018 | -92,77076          |
|                                    | AMOCO FOOD<br>SHOP, BILL'S                     | I-70 & RT, B                                | BOOWVILLE | OW | 65233    | 38.88479 | -92.78845          |
|                                    |  |   |           |    |          |          | Direct of d        |

# aa La OL 4 TOTA UAT WASTE CENEDATORS EDAN

P:\510269\EA\04-10-15.SIU3.EA.doc

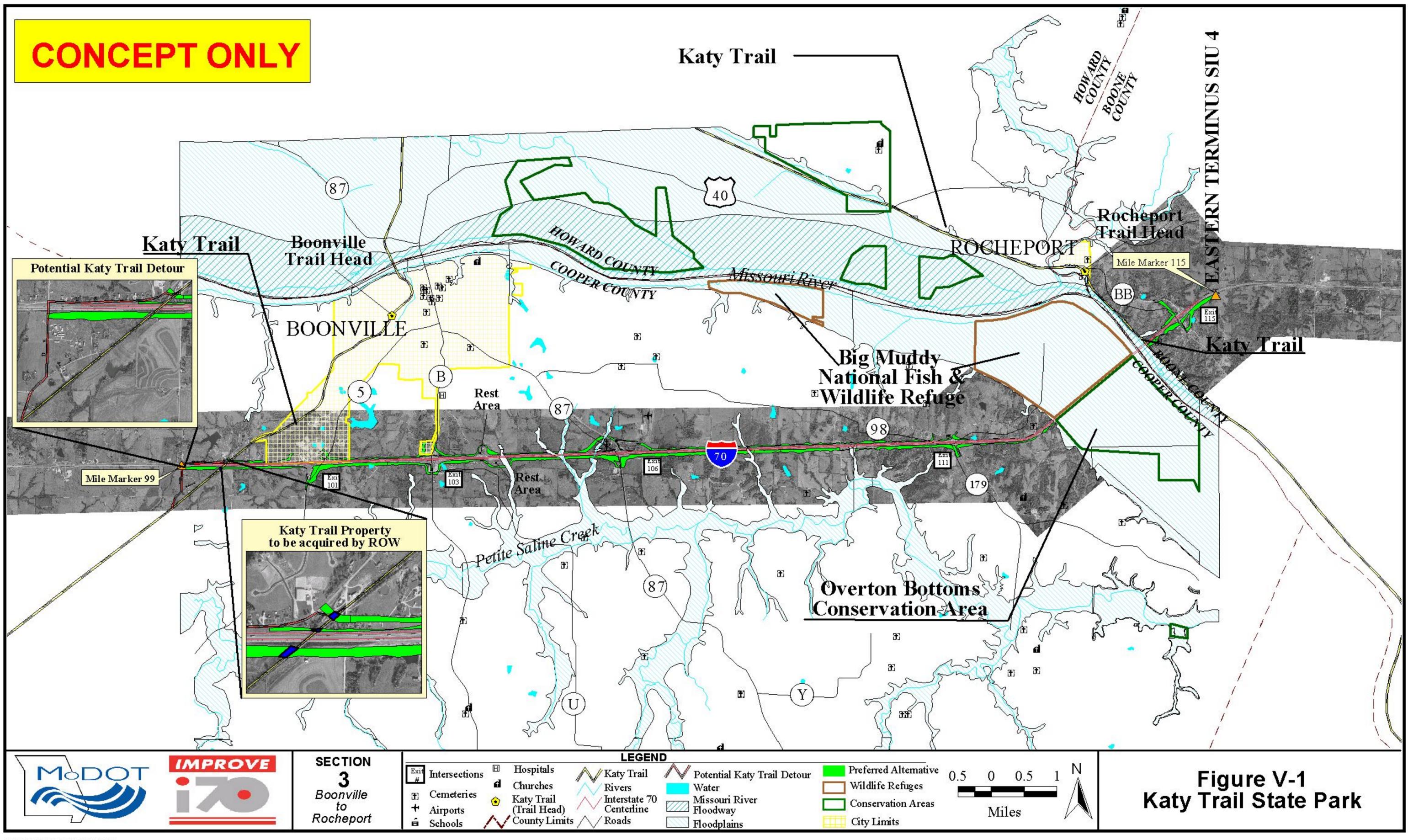
| ONGITUDE           | 92.74435            | -92,74849                               | -92,75251                   | -92.78845                 | -92,74263                           | -92.77178                       | -92.7426                         | -92.78845                          | -92.75099                          | Page 2 of 4            |
|--------------------|---------------------|---|-----------------------------|---------------------------|-------------------------------------|---------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------------|
| LATITUDE LONGITUDE | 38.97745            | 38.97515                                | 38.96442                    | 38,88479                  | 38.95371                            | 38.94031                        | 38.97225                         | 38.88479                           | 38.96567                           |                        |
| ZIP                | 65233               | 65233                                   | 65233                       | 65233                     | 65233                               | 65233                           | 65233                            | 65233                              | 65233                              |                        |
| ST                 | OM                  | MO                                      | OW                          | MO                        | QW                                  | OW                              | MO                               | OW                                 | WO                                 |                        |
| CITY               | BOONVILLE           | BOONVILLE                               | BOONVILLE                   | BOONVILLE                 | BOONVILLE                           | BOOWNLLE                        | BOONVILLE                        | BOONVILLE                          | BOOWVILLE                          |                        |
| ADDRESS            | 423 E. HIGH         | 301 SECOND ST.                          | 320 W. ASHLEY RD.           | JCT. 135 & I-70           | 1941 BOONE VILLA<br>DR              | 1507 W. ASHLEY RD. BOOWVILLE    | 629 MAIN STREET                  | SPRING & 6TH                       | 205 ASHLEY                         |                        |
| FACILITY           | SERVICE,<br>CLARK'S | UNION<br>ELECTRIC<br>BOONVILLE<br>WHOTR | R. B. FORD<br>MERCURY, INC. | FLOYD'S AUTO<br>BODY SHOP | HALL & RILEY<br>PAVING CO.,<br>INC. | RICK BALL<br>CHEVROLET,<br>INC. | GANDER AND<br>PFEIFFER<br>TEXACO | CASEYS<br>GENERAL<br>STORE NO 1017 | CASEYS<br>GENERAL<br>STORE NO 1454 |                        |
| STATUS             | Inactive            | Inactive                                | Inactive                    | Inactive                  | Inactive                            | Inactive                        | Inactive                         | Inactive                           | Inactive                           |                        |
| at ow              | 005738              | 001359                                  | 022031                      | 010491                    | 000766                              | 007366                          | 005105                           | 033380                             | 033416                             | 12                     |
| EPAID              | MOD985802099        | MO/300001359                            | MOD985819663                | MOD029696135              | MOD064645567                        | MOD066538396                    | MOD985798636                     | MOR000015917                       | MOR00016311                        | Tuesday, July 09, 2002 |

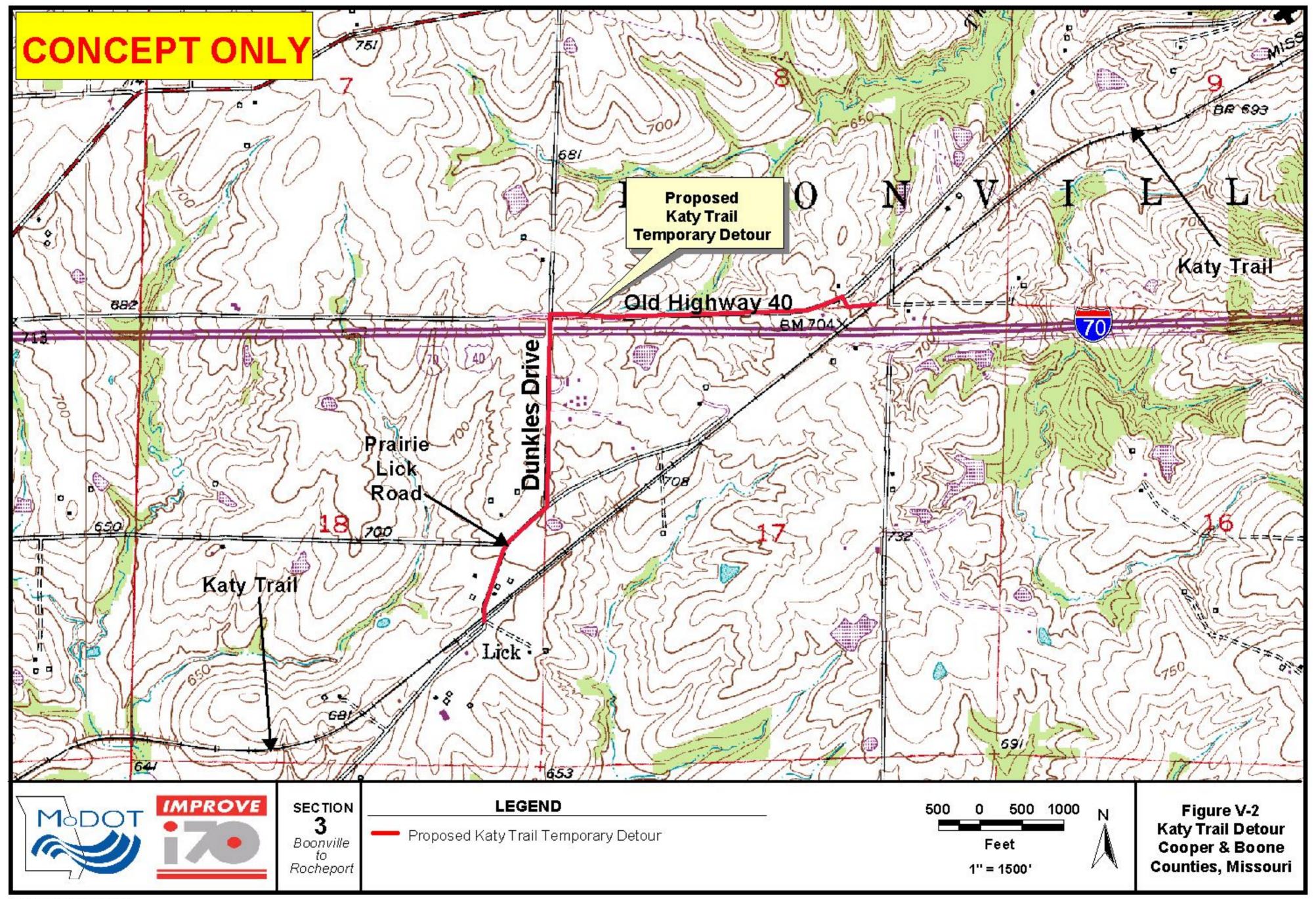
| EPA ID                 | MOID   | STATUS   | FACILITY                         | ADDRESS                                     | CITY        | ST | ZIP   | LATITUDE | LATITUDE LONGITUDE |
|------------------------|--------|----------|----------------------------------|---|-------------|----|-------|----------|--------------------|
| MOD006263545           | 003315 | Inactive | BOBEN<br>MANUFACTURIN<br>G CO.   | INDUSTRIAL PARK                             | BOONVILLE   | MO | 65233 | 38.88479 | -92.78845          |
| MOP00033027            | 035782 | Inactive | HOLTZCLAW<br>RESIDENCE           | 17051 CLEAR<br>SPRINGS RD                   | BOONVILLE   | MO | 65233 | 38,88061 | -92.76332          |
| MO00000070722          | 026110 | Inactive | BOONSLICK IND.                   | BOONSLICK IND. 1620 W. ASHLEY RD. BOONVILLE | BOONVILLE   | OW | 65233 | 38,94604 | -92.7696           |
| MOP00005055            | 036042 | Inactive | MSSDAR<br>ROSLYN<br>HEIGHTS BLDG | 821 MAIN ST                                 | BOONVILLE   | OW | 65233 | 38,96973 | -92.74253          |
| MOP00001397            | 028876 | Inactive | MID-MISSOURI<br>TELEPHONE        | 104 N. HWY 135                              | PILOT GROVE | OW | 65276 | 38.86995 | -92.9346           |
| MOP00000361            | 011655 | Inactive | SHORELINE<br>PRODUCTS INC.       | HWYS, 87 & 98                               | BOONVILLE   | OW | 65233 | 38.88479 | -92.78845          |
| MOP00026286            | 034869 | Inactive | FUJI PHOTO<br>FILM USA INC       | 311 MAIN ST                                 | BOONVILLE   | OM | 65211 | 38.976   | -92,74376          |
| MDP000022384           | 034375 | Inactive | SINCLAIR OIL                     | 929 MAIN ST                                 | BOONVILLE   | WO | 65233 | 38,96966 | -92.7415           |
| MOP00010421            | 032336 | Inactive | ROCHEPORT<br>FINA STATION        | RT BB &<br>INTERSTATE 70                    | ROCHEPORT   | OW | 65279 | 38.97042 | -92.53931          |
| MOP00010439            | 032337 | Inactive | VIERTEL'S<br>FIFTH & VINE        | 600 MAIN                                    | BOONVILLE   | MO | 65233 | 38.97254 | -92,74273          |
| Tuesday, July 09, 2002 | 200    |          |                                  |   |             |    |       |          | Page 3 of 4        |

#### I-70 Second Tier Environmental Assessment SIU 3 - MoDOT Job No. J4I1341F

| LATITIDE LONGITUDE | -92.75244                     | -92.74757                           | -92.78845                | -92,72746   | -92.77867                           | -92.7437                    | -92.77154  | -92.74379              | -92.75099                        | -92.75076                | Page 4 of 4            |
|--------------------|-------------------------------|-------------------------------------|--------------------------|---|-------------------------------------|-----------------------------|--|------------------------|----------------------------------|--------------------------|------------------------|
| LATITIDE           | 38.9146                       | 38.97785                            | 38.88479                 | 38.97804  | 38.93686                            | 38.95161                    | 38.94842   | 38.95254               | 38.96567                         | 38.96583                 |                        |
| ZIP                | 65233                         | 65233                               | 65233                    | 65233   | 65233                               | 65233                       | 65233  | 65233                  | 65233                            | 65233                    |                        |
| ST                 | OW                            | OM                                  | OW                       | OM  | WO                                  | OM                          | MO   | OM                     | OW                               | MO                       |                        |
| CITY               | BOONVILLE                     | BOONVILLE                           | BOONVILLE                | BOONNILLE   | BOONVILLE                           | BOOWNILLE                   | BOONVILLE  | BOOWVILLE              | BOONVILLE                        | BOONVILLE                |                        |
| ADDRESS            | 16318<br>BILLINGSVILLE RD     | 300 WATER ST                        | RT. 3, BOX 292           | TOASTMASTER, 1409 E. MORGAN ST. BOONVILLE<br>INC. | 2416 MID AMERICA<br>INDUSTRIAL DR   | 2501 BOONSLICK DR BOONVILLE | RADIO HILL RD. &                                 | 2301 BOONESLICK<br>DR. | 204 ASHLEY RD.                   | 400 W. ASHLEY RD.        |                        |
| FACILITY           | HALL & RILEY<br>PAVING CO INC | MDNR DSP MO<br>RIVER DIST<br>OFFICE | MOTOR CAR.<br>THE        | TOASTMASTER,<br>INC.                              | CATERPILLAR<br>BOOMVILLE<br>FACIUTY | NORDYNE, INC.               | CENTRAL MO<br>AUTO BODY &<br>FRAME SHOP,<br>INC. | INDEECO INC.           | BOOMVILLE<br>AUTO SUPPLY<br>INC. | MID MISSOURI<br>PRINTING |                        |
| STATUS             | Inactive                      | Inactive                            | Inactive<br>Non-Reporter | Large Quantity                                    | Large Quantity                      | Small Quantity              | Small Quantity                                   | Small Quantity         | Small Quantity                   | Small Quantity           |                        |
| di ow              | 031539                        | 030929                              | 010641                   | 001716  | 020774                              | 001336                      | 010533   | 013044                 | 011588                           | 022197                   | 2                      |
| EPA ID             | MOR000007096                  | MOP00005827                         | MOD985767003             | MOD006272843                                      | E02808580800W                       | M00000830448                | MOD056164379                                     | M00985772318           | MOD055871941                     | MOD985820554             | Twesday, July 09, 2002 |

|                          | Columbia Sand Co.              |                     |                      |                      |                     |
|--------------------------|--------------------------------|---------------------|----------------------|----------------------|---------------------|
|                          | Sand & Gravel Oblumbia Sand Co | Limestone cb        | Limestone ob         | Limestone co         | Limestone           |
|                          | Producer                       | Past Producer       | Past Producer        | Paul Producer        | Past Producer       |
|                          | Surface                        | Surface -           | Surface              | Surface              |                     |
| "Proprisme"              | Columbia Dredge                |                     |                      |                      |                     |
| "Quarter"                | 11                             | 6 SWSWSENE          | 12 EZWZNWNE          | 9 C NZWWSWN          | 12 E2               |
| 20°.                     |                                |                     |                      |                      |                     |
| Pag.                     | 1400                           | 14W                 | 15W                  | 15W                  | 15W                 |
| "Twp"                    | 48M                            | 48M                 | 48N                  | 48N                  | 46N                 |
| "Elevim" "Quad" "Copump" | 244 Rocheport BOONE            | 198 Rocheport BOONE | 226 Recheport COOPER | 204 Recheport COOPER | 226 Rocheport Boone |
| Longhude                 | 923116                         |                     |                      |                      | 2025303             |
| "Latitude"               |                                |                     |                      |                      | 385822              |
|                          | 1900061                        | 190125              | 530051               | 530057               | 1251051             |
| "Northing" [107          |                                | 4314800             |                      |                      | 4313650             |
| Easting"                 | 541496                         | 540125              | 533125               | 537950               | 538890              |





Ph1\_Ois/610389/apr/Figures/kaly\_tig\_u\_2.apr