Adaptive Management Plan

Fort McCoy Phosphorus Compliance

Fort McCoy, WI

141425 | August 1, 2017

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August 1, 2017

RE: Fort McCoy Phosphorus Compliance
Adaptive Management Plan
Fort McCoy, WI
SEH No. 141425 4.00

Mr. Dave Gundlach
2171 South 8th Ave
Fort McCoy, WI 54656-5136

Dear Dave:

Enclosed please find the Final Compliance Alternatives Plan for Phosphorus for Fort McCoy which contains the Adaptive Management Plan per WDNR requirements. The final report includes all of the following sections of the Adaptive Management Plan:

- Watershed Information & Load Reduction Goals
- Potential Partners
- Watershed Inventory
- Identify Where Load Reductions Will Occur
- Describe Management Measures
- Estimate Load Reductions Expected by Permit Term
- Measuring Success
- Financial Security
- Implementation Schedule with Milestones

Please feel free to contact me with any questions prior to submitting the Adaptive Management Plan to WDNR.

Sincerely,

Dan Schaefer, PE
Senior Professional Engineer

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Adaptive Management Plan

Adaptive Management Plan
Fort McCoy, WI

Prepared for:
USAMC
2171 South 8th Ave
Fort McCoy, WI 54656-5136

Prepared by:
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I, Dan Schaefer, PE, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

Dan Schaefer, PE, PE	40481-6	August 1, 2017
Senior Professional Engineer	PE Number	Date

List of Abbreviations

Abbreviation	Definition
ACUB	Army Compatible Use Buffer
AM	Adaptive Management
BOD	Biochemical Oxygen Demand
BMP	Best Management Practice
CAFO	Concentrated Animal Feeding Operations
CEMML	Center for Environmental Management Military Lands
CESU	Cooperative Ecosystem Studies Unit
CREP	Conservation Reserve Enhancement Program
CSP	Conservation Stewardship Program
CSU	Colorado State University
DATCP	Department of Agriculture, Trade and Consumer Protection
EQIP	Environmental Quality Incentives Program
ERW	Exceptional Resource Waters
LIDAR	Light Detection and Ranging
LOD	Limit of Detection
LOQ	Limit of Quantification
LWCD	Land and Water Conservation Department
NMP	Nutrient Management Plan
NPS	Nonpoint Source
NRCS	Natural Resources Conservation Service
NTU	Nephelometric Turbidity Units
OER	Optimization Evaluation Report
ORW	Outstanding Resource Waters
STEPL	Spreadsheet Tool for Estimating Pollutant Loads
TP	Total Phosphorus
TRM	Targeted Runoff Management
TSS	Total Suspended Solids
USDA	United States Department of Agriculture
USFW	United States Fish and Wildlife
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WDNR	Wisconsin Department of Natural Resource
WEAL	Water & Environmental Analysis Lab
WHIP	Wildlife Habitat Incentive Program
WinSLAMM	Source Loading and Management Model for Windows
WPDES	Wisconsin Pollutant Elimination Discharge System
WQBEL	Water Quality-Based Effluent Limitation
WQS	Water Quality Standard
WQT	Water Quality Trading

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Adaptive Management Plan

Fort McCoy Phosphorus Compliance

Prepared for USAMC – Fort McCoy

1 General Information

Wisconsin promulgated water quality standards for phosphorus in December 2010 under Wisconsin Administrative Code NR 217. The new water quality criteria for phosphorus are among the most stringent in the country. Fort McCoy received a renewed WPDES permit in 2013 containing a 9 year compliance schedule to comply with NR 217. This schedule is on pages 10 through 12 of the permit in Appendix A. The permit includes calculated effluent phosphorus limits of 0.225 mg/L on a monthly average basis and 0.075 mg/L and 0.83 lb/d on a 6-month average basis. The permit compliance schedule requires a Final Compliance Alternatives Plan be submitted for DNR review and approval by July 1, 2017. This report serves as Fort McCoy's submission for this permit compliance action.

2 Background Information

2.1 Existing Treatment Facility Considerations

Fort McCoy trains approximately 145,000 soldiers per year. The future goal is to maintain this training load. Most soldiers are not permanently stationed at the Fort but come there to train a few days to several weeks. The post population fluctuates from low populations in the winter to high populations in the summer. In general, the winter period runs from October through March and the summer period is from April through September. Approximately 4,000 full time people work on-post and live off post. There are 55 housing units and there are plans to increase this to 134 housing units in the future. Weekly populations range from the 4,000 full-time workers and soldiers to 16,000 in peak training periods. The highly fluctuating base population presents challenges for WWTP operation.

Fort McCoy's WWTP is designed for an average day flow of 1.32 million gallons per day (mgd) based on information provided in the operation and maintenance manual for the facility. The plant operates under WPDES discharge permit No. WI 0022420-07-0 (see Appendix A) issued by the State of Wisconsin Department of Natural Resources (WDNR). The permit was issued on July 1, 2013 and expires on June 30, 2018. The WWTP is located at 2280 Treatment Plant Dr., Fort McCoy, WI and discharges effluent to the La Crosse River in the Upper La Crosse River Watershed.

The major treatment processes at the WWTP include the following:

- Influent screening
- Grit removal and dewatering
- Raw wastewater pumping
- Primary clarification

- Trickling filters
- Solids contact stabilization
- Ferric chloride feed for phosphorus removal
- Final clarification
- UV disinfection
- Anaerobic digestion and liquid sludge storage
- Sludge dewatering sand drying beds
- Contract hauling of liquid and dewatered sludge to land application sites

There are three major buildings (Headworks, Mechanical and Service) in addition to the tanks related to the wastewater treatment process. The Headworks Building houses the preliminary treatment equipment and raw wastewater pumps. The Mechanical Building includes sludge pumps, digester gas handling equipment, aeration blowers and the emergency power generator. The Service Building includes a garage, office and plant laboratory.

The last major WWTP upgrade was completed in 1997.

2.2 Influent Flows & Loadings

Influent flows and loadings to the Fort McCoy WWTP vary seasonally based on training activities. Figure 2-1 presents an average monthly influent flow summary and Figure 2-2 presents a summary of influent BOD and TSS loadings from 2014 through current. Fort McCoy has not always sampled for influent phosphorus.

2.3 Existing Performance

Average monthly effluent phosphorus concentrations for the period from November 2013 through April 2017 are presented in Figure 2-3.

2.4 Proposed Effluent Limitations

Fort McCoy received a renewed WPDES permit in 2013 containing a 9 year compliance schedule to comply with NR 217. This schedule is on pages 10 through 12 of the permit in Appendix A. The permit includes calculated effluent phosphorus limits of 0.225 mg/L on a monthly average basis and 0.075 mg/L and 0.83 lb/d on a 6-month average basis.

2.5 Current Effluent Total Phosphorus Annual Mass Discharge

A summary of annual TP mass discharge for the previous three years is provided in Table 2-1.

3 Optimization Plan Summary

Fort McCoy submitted the Optimization Evaluation Report (OER) required by the compliance schedule in the WPDES Permit on July 31, 2014. WDNR granted approval of OER activities on September 16, 2014. A summary of the optimization status, the facilities ability to meet the new stringent limits, and a calculation of the offset required is provided in the following sections of this chapter.

3.1 Optimization Status

Fort McCoy staff is currently attempting to optimize TP removal across the existing WWTP based on the optimization plan approved in the OER. The approved OER consisted of the activities identified in the list below:

- **Wastewater Collection System Sampling Program** – Collection system sampling was conducted during the summer of 2014 and attempted to identify potential Fort McCoy locations or facilities contributing higher than average phosphorus discharge. Subsequent interviews were conducted at each facility discharging higher than average concentrations. No additional source reduction measures were identified as a result of this optimization activity.
- **Optimize Ferric Chloride Flow Pacing** – Fort McCoy staff coordinated optimization of the ferric chloride feed pump flow pacing and flow meter calibration with the current controls integrator during the fall/winter of 2014. Results of the optimization effort indicated effluent TP can be controlled to a tight range when the WWTP is operating well.
- **Jar Testing of Polymer and Ferric Chloride Dose** – Jar testing was completed in 2014 and did not identify a cost effective dose to bring the facility into compliance with the Water Quality-Based Effluent Limitation (WQBEL). Results of jar testing for ferric chloride and other coagulants indicate a tertiary treatment upgrade will be required to comply with the WQBEL, if a WWTP upgrade is selected as the compliance alternative.
- **Polymer Addition Pilot Testing** – Pilot testing for polymer dosing has yet to be completed as the Fort McCoy WWTP was plagued by failures of both final clarifier mechanisms/drives during 2015. Once replaced, Fort McCoy Staff will attempt to pilot test polymer addition to identify the performance improvement and calculate an estimated cost to implement if favorable results are identified.

3.2 Ability to Meet WQBEL Limits

The OER indicated that it was unlikely for the future WQBEL for TP to be achieved using only optimization of the existing WWTP, and that a tertiary treatment upgrade coupled with addressing age and condition of the existing WWTP unit processes would be required, if upgrading the facility was pursued in lieu of a watershed based approach.

Coagulant pilot testing conducted following submittal of the OER indicated it would not be cost effective to attempt to meet the WQBEL simply by increasing coagulant doses. Fort McCoy has since concluded that the existing facility will not be able to comply with the new, more restrictive WQBEL for phosphorus using only optimization of the existing facility.

3.3 Ability to Meet AM Limits

The language of the next WPDES permit will reflect the requirements of Adaptive Management, upon adaptive management approval, including:

- In-stream and effluent monitoring requirements.
- Requirements to implement the actions identified in the adaptive management plan.
- Annual reporting of monitoring data and actions completed over the previous calendar year.
- Adaptive management interim limits.

Interim limits for the WWTP during the AM term will be as shown in Table 3-1. The existing Fort McCoy WWTP has provisions to meet the interim limits during permit terms 1 and 2 shown in Table 3-1.

3.4 Current Point Source Load

The Fort McCoy WWTP is the only WPDES permitted discharge located within the identified action area, and thus is the only point source impact on the La Crosse River at the point of compliance just downstream of the facility. Both water quality trading and adaptive management require calculation of the current point source load to determine potential offset requirements. The current point source load for the Fort McCoy WWTP is found as follows:

$$Current\ Point\ Source\ Phosphorus\ Load\ =\ Qe \times Ce \times 8.34 * 365\ days/year$$

- **Design Effluent Flow** – For dischargers subject to ch. NR210 and which discharge for 24 hours per day on a year−round basis, Qe shall equal the maximum effluent flow, expressed as a daily average, that is anticipated to occur for 12 continuous months during the design life of the treatment facility unless it is demonstrated to the department that this design flow rate is not representative of projected flows at the facility. The design average annual flow for the Fort McCoy WWTP is 1.32 MGD, as shown in Appendix B, however, this flow is not expected to be observed during the design life of the facility, and a more representative design effluent flow of 0.8 MGD, is recommended for calculation of the current point source loading contribution.
- **Effluent Phosphorus Concentration** – This value is represented as the optimized average annual effluent TP concentration for the WWTP. It is assumed that the Fort McCoy WWTP will achieve an optimized effluent TP concentration = 0.3 mg/L.

$$Fort\ McCoy\ WWTP\ Phosphorus\ Load = 0.8\ MGD \times 0.3 \frac{mg}{L} * 8.34 * 365 \frac{days}{year} = 731\ lb \frac{P}{year}$$

4 Adaptive Management Plan

4.1 Watershed Information & Load Reduction Goals

The goal of this step is to provide a detailed account of the receiving water and to set a load reduction goal for the watershed so that water quality criteria can be attained. There are three required actions to fulfill this step of the plan: identify the action area, describe the receiving water, and set a load reduction target.

Fort McCoy and the surrounding properties/farmsteads that are upstream and tributary to the La Crosse River are contained within the Upper La Crosse River Watershed. This watershed covers roughly 125 square miles, and more than half of this area is contained within Fort McCoy. Many streams in this watershed originate outside the boundaries of Fort McCoy, but then flow through the fort, eventually reaching the La Crosse River. Fort McCoy has implemented many practices over time in an attempt to improve the water quality in the La Crosse River and its tributaries including: erosion reduction; particularly along streambanks, vegetation promotion, fish surveys, and groundwater/surface water contamination analysis among others.

The Fort McCoy fisheries program initiated a three year assessment of stream water characteristics as water enters and exits the installation. Since 1995, stream fish community assessments have been conducted using methods from “Coldwater Index of Biotic Integrity” as described by Lyons and other. Water quality assessments were refined to characterize stream

flow and nutrient trends since 1997. The data collection and analysis methods are either the same or very similar to Wisconsin Department of Natural Resource (WDNR) methods. The sharing of information, ideas, and cooperative agreements between Fort McCoy, the Monroe County Land Conservation Department and WDNR have resulted in increased knowledge and improvement of many streams and lakes in Monroe County.

Fort McCoy currently participates in the Cooperative Ecosystem Studies Unit (CESU) National Network through an Army agreement with the Rocky Mountain CESU. The CESU program provides research, technical assistance, and education to federal land management, environmental, and research agencies and their partners. The partners serve the biological, physical, social, cultural, and engineering disciplines needed to address natural and cultural resource management issues at multiple scales and in an ecosystem context. The multi-disciplinary structure of CESUs makes them well-suited to address federal agency needs for sustainability science.

Through the CESU, Fort McCoy is contracted with the Center for Environmental Management Military Lands (CEMML) at Colorado State University (CSU) to conduct annual watershed water quality monitoring. CSU's historic water quality monitoring program includes monitoring at several locations within the La Crosse River and Silver Creek Watersheds for the following:

- TSS
- Turbidity
- TP
- Ammonium
- Nitrate & Nitrite
- Chloride

Vegetation within this watershed consists of forested areas, farmlands, grasslands/prairies, and some wetland areas near major rivers. Hardwoods are also common at the bottoms of the major rivers and are dominated by maples and cottonwoods. Soils are predominantly sands and sandy loams over sandstone and dolomite deposits. This watershed is located in the Western Coulee and Ridges Ecological Landscape in southwestern and west central Wisconsin and is characterized by its highly eroded, driftless topography and relatively extensive forested landscape.

Table 4-1 presents a summary of the selected Adaptive Management Action Area. The action area is described further in Section 4.1.1 below.

4.1.1 Action Area Description

The action area includes the entire drainage area for the compliance point located on the La Crosse River at County Highway BB, as illustrated in Figure 4-1. The action area includes three HUC-12's which encompass much of Fort McCoy's installation, as well as private lands east of the main installation. The action area includes over 60 sub-watersheds. These sub-watersheds are within the Upper La Crosse River Watershed; further details are found within Section 4.3 of this report. Proposed Adaptive Management activities/potential Best Management Practice (BMP) projects will be located within the farmland properties adjacent to and upstream of the Fort. Planning/design incorporating BMP's as part of the Adaptive Management Program will be on a property by property basis. Back-up Adaptive Management strategies will also be explored; these strategies would be installed when BMP's are not implemented properly on a site, certain

strategies are destroyed during extreme weather, or additional water quality treatment is required.

The Upper La Crosse River Watershed contains 4 individual HUC-12 watersheds; the action area is contained within three of these, 070400060201, 070400060202, and 070400060204. 070400060201 is approximately 13,700 acres and is located in the southern and eastern portions of the action area. 070400060202 is approximately 24,900 acres and is located in the northern and western portions of the action area. 070400060204 is approximately 17,375 acres and is located in a small southwest portion of the action area. 070400060201 is associated with Tarr Creek. 070400060202 is associated with the headwaters of the La Crosse River, Suuk Jak Sep Creek, and Ash Run Creek. 070400060204 contains a small southwest portion of the action area that drains to the La Crosse River near County Highway BB. Figure 4-1 shows the location/boundaries of the HUC-12 watersheds.

4.1.2 Characteristics of Receiving Water

The receiving water for the action area is the La Crosse River upstream of County Highway BB. Major upstream tributaries include Suuk Jak Sep Creek, Ash Run Creek, Tarr Creek, Sparta Creek, and Stillwell Creek.

NR102 establishes water quality standards for Wisconsin surface waters and contains several categories for standards, including:

- Fish and Aquatic Life Uses
  - Cold Water Communities
  - Warm Water Sport Fish Communities
  - Warm Water Forage Fish Communities
  - Limited Forage Fish Communities
  - Limited Aquatic Life
- Recreational Use
- Public Health and Welfare

All stream segments within the action area are defined as Fish and Aquatic Life cold water communities. In addition, two stream segments have been designated as Exceptional Resource Waters (ERWs).

Wisconsin has designated many of the state's highest quality waters as Outstanding Resource Waters (ORWs) or ERWs. Waters designated as ORW or ERW are surface waters which provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly impacted by human activities. ORW and ERW status identifies waters that the State of Wisconsin has determined warrant additional protection from the effects of pollution. These designations are intended to meet federal Clean Water Act obligations requiring Wisconsin to adopt an "antidegradation" policy that is designed to prevent any lowering of water quality – especially in those waters having significant ecological or cultural value.

Attainment statuses for the La Crosse River and contributing tributaries are summarized below:

- **La Crosse River:** Class II trout stream from the Suuk Jak Sep confluence downstream to the Village of Rockland; Class I trout stream upstream of the Suuk Jak Sep Creek confluence.

- **Suuk Jak Sep Creek:** Class I trout stream above Squaw Lake; Class III trout stream below Squaw Lake to confluence with La Crosse River. Suuk Jak Sep Creek is also designated as an Exceptional Resource Water (ERW) from stream mile 0.79 to stream mile 7.47.
- **Ash Run Creek:** Cold water Class I trout stream for its entire length.
- **Tarr Creek:** Cold water Class I trout stream for its entire length. Tarr Creek is also designated as an ERW from stream mile 0.32 to stream mile 10.5.
- **Sparta Creek:** Class I trout stream for the lower 0.7 miles; Class II trout stream for next upstream mile to Spring Bank Lake; stream classification is unknown upstream of Spring Bank Lake.
- **Stillwell Creek:** Class III trout stream for lower 2.8 miles; Class II trout stream for 1.9 miles upstream of cranberry operation.

Figure 4-1 also identifies stream segments by trout classification and identifies ERW segments.

4.1.3 Available Phosphorus Data

Limited growing season (May to October) phosphorus data within the action area is available from several sources. Data availability and results are summarized below:

1. WDNR Surface Water Data Viewer Dataset: The Surface Water Viewer Dataset indicates a calculated NR217 rolling average median total phosphorus concentration of 0.077 mg/L in the La Crosse River at Treatment Ave just upstream of the Fort McCoy WWTP. This concentration was calculated from nine samples between July 17, 2005 and September 11, 2006.
2. Fort McCoy Water Quality Sampling: Fort McCoy has performed water quality sampling at several locations within the fort. Many sample locations are within the action area, as shown in Figure 4-1. Samples were taken during baseflow and after rain events during the growing season from 2001 through 2016. Total phosphorus concentrations at the compliance point on the Lacrosse River at County Highway BB ranged from .009 mg/L to 0.59 mg/L. The median value was 0.098 mg/L and the geometric mean was 0.095 mg/L. The median in-stream total phosphorus value will be utilized to determine achievement of the WQC in the La Crosse River and is used as the basis to establish a load reduction target in Section 4.1.4 below. Phosphorus data for all locations is included in Appendix C.

4.1.4 Load Reduction Target

The load reduction target was calculated using Method 1 in the WDNR Adaptive Management Technical Handbook. Method 1 calculates the current phosphorus load based on the in-stream phosphorus concentration, as summarized below:

- **Step 1** – Calculate the point source loading from within the action area.
- **Step 2** – Calculate the current load in the receiving water.
- **Step 3** – Calculate the allowable load in the receiving water.
- **Step 4** – Calculate the needed reductions in the receiving water.

For Fort McCoy, the required phosphorus offset is calculated as follows:

- **Step 1** – Fort McCoy is the only permitted point source discharger in the action area, so the point source loading calculation is as follows:

$$Fort\ McCoy\ WWTP\ Phosphorus\ Load = 0.8\ MGD \times 0.3 \frac{mg}{L} * 8.34 * 365 \frac{days}{year} = 731\ lb \frac{P}{year}$$

- **Step 2** – Current Load in La Crosse River at compliance point is calculated as follows:

$$47.7\ MGD\ (Qs) \times 0.098 \frac{mg}{L} (Cs) \times 8.34 \times 365 \frac{days}{yr} = 14{,}230\ lb\ P/yr$$

  Where Qs is the daily mean discharge averaged from 2009 to 2016 at the USGS County Highway BB gauging station, and Cs is the geometric mean of all measured phosphorus concentrations at County Highway BB from 2001 to 2016.

- **Step 3** – Allowable load in Receiving Water is calculated as follows:

$$(0.8\ MGD + 47.7\ MGD) \times 0.075 \frac{mg}{L} \times 8.34 \times 365 \frac{days}{yr} = 11{,}073\ lb\ P/yr$$

- **Step 4** – Needed Reductions is calculated as follows:

$$731 \frac{lb}{yr} + 14{,}230 \frac{lb}{yr} - 11{,}073 \frac{lb}{yr} = \mathbf{3{,}888\ lb\ P/yr}$$

4.2 Identifying Partners

4.2.1 Army Compatible Use Buffer (ACUB) Program

The Army has a specific program designed to limit the effects of encroachment. The ACUB program was borne out of a 2002 expansion of the Private Lands Initiative (10 USC §2684a) allowing military departments to partner with private organizations to establish conservation easements or buffer areas around active installations.

These partnerships are beneficial in a number of ways:

- To Fort McCoy:
  - Manages development adjacent to and near Fort McCoy.
  - Protects effective training space to the installation boundaries.
  - Averts training restrictions.
  - Mitigates against noise and smoke complaints.
- To Fort McCoy's Community Partners:
  - Protects Fort McCoy's mission and strength.
  - Does not remove lands from tax base.
  - Maintains local agricultural and wild lands.
- To Landowners:
  - Maintains current, compatible land uses.
  - Provides cash in hand.
  - Retain rights to ownership and management of land.

The ACUB program at Fort McCoy is currently under early stages of implementation, and will be closely coordinated with implementation of this AM plan, as many of the goals of ACUB overlap with goals identified in the AM plan.

4.2.2 Monroe County

The Monroe County Land and Water Conservation Department (LWCD) has been an active participant in development of the adaptive management plan. The Monroe County LWCD is knowledgeable of farming operations within the Upper La Crosse Watershed and resources for implementing phosphorus management practices. On May 12, 2017 a meeting was held at the

Monroe County Land Conservation Department Office to identify and prioritize potential partners. Several farming operations were identified within the adaptive management plan action area. An initial farmer visit was conducted between Monroe County LWCD, SEH and two farmers that actively farm over 500 acres within the Tarr Creek sub-watershed (Sub-watershed 61) on June 23, 2017. The Monroe County LWCD and SEH are in the process of contacting additional farm operators to discuss potential management practices. Fort McCoy will continue to coordinate with the Monroe County LWCD in developing partnerships within the action area, particularly farm operators.

4.2.3 Nonpoint Sources(Agricultural Landowners & Operators)

Agricultural nonpoint sources contribute significant phosphorus loading within the action area. Thus, it is critical to develop partnerships with farm operators. Major agricultural operations within the action area are identified in Table 4-2 and shown in Figure 4-2. On June 23, 2017, the Monroe County LWCD and SEH met with Dave and Don Hall, two farm operators in the Tarr Creek watershed, to discuss current and potential management practices. Don and Dave operate over 500 acres of cropland. They said they would be open to implementing a nutrient management plan, filter strips, and manure management for feedlots. Given that Don and Dave operate a large portion of the cropland within the Tarr Creek watershed, it is expected cooperation will continue to be pursued. Meeting notes are included in Appendix D.

4.2.4 Other WPDES Permitted discharges

Fort McCoy is the only permitted WPDES discharge within the action area.

4.2.5 Concentrated Animal Feeding Operations (CAFOs)

A review of the WDNR database indicates that there are no CAFO's near Fort McCoy or within the Upper La Crosse River Watershed.

4.2.6 Other Partners

On Thursday, May 5, 2016, SEH held a workshop at Fort McCoy to discuss Fort McCoy's Adaptive Management effort to date. Potential partners/stakeholders in attendance included:

- Fort McCoy
- University of Wisconsin (UW) Extension
- WDNR
- United States Department of Agriculture-USDA-NRCS
- U.S. Fish and Wildlife (USFW)

Elements of Adaptive Management and the Compliance Plan were discussed; all who attended showed interest in the program and there was open dialogue. Partnerships with these other entities is anticipated during the term of the Fort McCoy AM Program, as benefits include: providing technical expertise, assisting with project outreach and education, or providing alternative funding sources.

Fort McCoy will coordinate with appropriate entities listed above as the implementation process identified in Section 4.9 of this plan begins. Roles for each entity are described further in Section 4.9.

4.3 Watershed Inventory

A watershed inventory was conducted to determine how factors such as land use, soils, and topography may affect water quality within the action area. Light Detection and Ranging (LIDAR) topographic contours were used to delineate 65 sub-watersheds within the Fort McCoy action area, as illustrated in Figure 4-3a. Sub-watersheds were delineated according to stream tributary and land use. Within the action area, tributaries of the La Crosse River include Suuk Jak Sep Creek, Ash Run Creek, Sparta Creek, Tarr Creek, and Stillwell Creek. The urbanized area of the Fort McCoy property was divided into 55 sub-watersheds, as illustrated in Figure 4-3b. Outside the urbanized area of the fort, the action area was split up into 10 sub-watersheds which have been numbered 56 through 65. These larger sub-watersheds outside the fort are illustrated in Figure 4-3a.

Physical features such as land use, soil properties, and topography were analyzed within the action area to identify potential phosphorus sources. Land use, soil texture, and topography are illustrated in Figures 4-4, 4-5, and 4-6, respectively. A summary of physical features is provided below.

Fort McCoy urbanized area (sub-watersheds 1-55):

- Land use within the Fort McCoy urbanized area (cantonment) can be described as low density urban. This area consists of several buildings used for housing soldiers, training, administration, civilian workforce, and grounds operations. The cantonment functions much like a small city with a gas station, convenience store, hotel, restaurants, laundromats, etc. The area also has several roadways, parking lots, open space, and forest.
- Soil textures are primarily sand with some loamy fine sand and muck.
- Topography varies within the Fort McCoy urbanized area. Areas to the southwest near buildings and parking lots are flatter with slopes near 0.5%. Forested areas to the east have higher slopes ranging from 3% to 20%. Drainage is generally towards the west. Several different tributaries to the La Crosse run through the urbanized area. The urbanized area contains the lower portions of tributaries as they meet with the La Crosse River. Upper tributary reaches are contained within sub-watersheds 56-65.
- Existing runoff is treated primarily with grass swales along roadways. These swales are very effective at treating phosphorus due to the high infiltration rates of the sandy soils. Thus, it is expected the Fort McCoy urbanized area will have a small phosphorus load.

La Crosse River Upstream Sub-watersheds (56-58 and 64-65):

- Land cover within La Crosse River sub-watersheds upstream of the Fort McCoy urbanized area is primarily meadow/open space, forest, and some agriculture. Sub-watersheds 56 and 57 are almost entirely within Fort McCoy and contain some open field training areas. Sub-watersheds 56 and 57 contain large portions of the north impact area, which receives artillery fire and is generally not accessible to human traffic. Sub-watershed 58, the most upstream portion of the La Crosse River watershed, has a higher percentage of forest and contains some agriculture.
- Soil textures are primarily sand with muck and loamy fine sand near waterways. The eastern portion of sub-watershed 58 contains a mixture of sandy loam, silt loam, and soil complexes.
- Terrain is characterized by several steep ridges and gullies near the periphery of the sub-watersheds with slopes ranging from 15 to 50%. The gullies tend to flatten out to slopes near 3% with proximity to waterbodies.

- Phosphorus loading potential is expected to be low for upstream La Crosse River sub-watersheds due to the high amount of forest and meadow/open space land cover. However, some agriculture is present in sub-watershed 58 and should be explored for potential phosphorus management practices.

Suuk Jak Sep Creek Upstream Sub-watershed (59):

- Land cover within the Suk Jaak Sep Creek sub-watershed upstream of the Fort McCoy urbanized area is primarily meadow/open space, forest, and some agriculture. Downstream areas closer to the urbanized area contain open field training areas. Upstream areas to the east are mostly forest with some agriculture.
- Soil textures in the western half of the sub-watershed are primarily sand with muck and loamy fine sand near waterways. The eastern portion of the sub-watershed contains a mixture of sandy loam, silt loam, and soil complexes.
- Terrain is characterized by several steep ridges and gullies near the periphery of the sub-watersheds with slopes ranging from 15 to 50%. The gullies tend to flatten out to slopes near 1-4% with proximity to waterbodies. Some gullies drain directly to agricultural areas on the east end of the sub-watershed.
- Phosphorus loading potential within the Suuk Jak Sep upstream watershed is expected to be higher compared with other subwatersheds due to the agricultural land use on steep slopes.

Ash Run Creek Upstream Sub-watershed (60):

- Land cover within the Ash Run Creek subwatershed upstream of the Fort McCoy urbanized area is primarily forest with some open space.
- Soil texture in the southwest portion of the sub-watershed is primarily sand. The northeast portion of the sub-watershed contains a mixture of sandy loam, silt loam, and soil complexes.
- Terrain is characterized by several steep ridges and gullies near the periphery of the sub-watersheds with slopes ranging from 15 to 50%. The gullies tend to flatten out to slopes near 2% in the center of the sub-watershed.
- Phosphorus loading potential within the Ash Run Creek upstream sub-watershed is expected to be low due to the high amount of forest and meadow/open space land cover.

Tarr Creek Upstream Sub-watershed (61):

- Land cover within the Tarr Creek sub-watershed upstream of the Fort McCoy urbanized area is primarily agriculture and forest with some single-family residential. This watershed also contains two dairy operations.
- Soil texture in the southwest portion of the sub-watershed is primarily sand. The north portion of the sub-watershed contains a mixture of sandy loam, silt loam, and soil complexes.
- Terrain is characterized by several steep ridges and gullies near the periphery of the sub-watersheds with slopes ranging from 15 to 50%. The gullies tend to flatten out to slopes near 1-2% with proximity to waterbodies.
- Phosphorus loading potential within the Tarr Creek upstream watershed is expected to be higher compared with other sub-watersheds due to the large amount of agricultural land use and steep slopes.

Sparta Creek Upstream Sub-watershed (62):

- Land cover within the Sparta Creek sub-watershed upstream of the Fort McCoy urbanized area is primarily forest. A large quarry is located on the east side of the sub-watershed.
- Soil textures in sub-watershed 62 are primarily sand with muck and loamy fine sand near waterways. The far east end of the sub-watershed contains loamy sand and soil complexes.
- Terrain is characterized by several steep ridges and gullies near the periphery of the sub-watersheds with slopes ranging from 15 to 50%. The center of the sub-watershed flattens out to approximately 1% as it drains towards Sparta Creek.
- Phosphorus loading potential within the Sparta Creek upstream sub-watershed is expected to be low due to the high amount of forest and meadow/open space land cover.

Stillwell Creek Upstream Sub-watershed (63):

- Land cover within the Stillwell Creek sub-watershed upstream of the Fort McCoy urbanized area is primarily forest with some open space and agriculture. A cranberry farm is located in the center of the sub-watershed along Stillwell Creek.
- Soil textures in sub-watershed 63 are primarily sand with muck and loamy fine sand near waterways. Some loamy sand, silt loam, and soil complexes are located in the southeast of the watershed.
- Terrain is characterized by several steep ridges and gullies near the periphery of the subwatersheds with slopes ranging from 15 to 50%. The center of the sub-watershed flattens out to approximately 1% as it drains towards Sparta Creek.
- Phosphorus loading potential within the Stillwell Creek upstream sub-watershed is expected to be low due to the high amount of forest and meadow/open space land cover.

4.4 Identify Where Reductions Will Occur

Phosphorus loading was calculated for each sub-watershed to identify critical phosphorus source areas. Two separate models were used to calculate phosphorus loads from urban and rural areas:

- Source Loading and Management Model for Windows (WinSLAMM).
- Spreadsheet Tool for Estimating Pollutant Loads (STEPL).

WinSLAMM was developed for use in urbanized areas and is thus more appropriate for use in sub-watersheds 1-55 located in the cantonment. It can calculate phosphorus loads in runoff generated from various urbanized source areas such as parking lots, roads, roof tops, and open space. It can also calculate phosphorus reductions from best management practices such as wet ponds, grass swales, and biofilters. The rural sub-watersheds 56-65 were modeled using STEPL. STEPL is more appropriate for rural areas because it can calculate phosphorus loads in runoff generated from source areas such cropland, pasture, and forest.

WinSLAMM and STEPL models were constructed using several different data sources, as summarized below:

WinSLAMM Model

- LIDAR topographic contours were used to delineate sub-watersheds and identify treatment practices such as swales and infiltration basins. Treatment practice properties, such as dimensions and slopes, were also obtained from topographic contours.

- NRCS soil data was used to obtain soil textures and estimate infiltration rates of treatment practices.
- Aerial photography was used to determine source areas such as roof tops, parking lots, roadways, and open space.

STEPL Model

- LIDAR topographic contours were used to delineate sub-watersheds and determine properties such as slope and slope length for use in the Universal Soil Loss Equation.
- NRCS soil data was used to obtain hydrologic soil groups and soil erosion factors (k).
- Aerial photography was used to determine land use such as cropland, feedlots, pasture, and forest.

WinSLAMM modeling results for subwatersheds 1 through 55 are provided in Appendix E. WinSLAMM outputs annual phosphorus load with and without treatment devices. The phosphorus load with treatment devices reflects current conditions within the Fort McCoy urbanized area. The total average annual phosphorus load for sub-watersheds 1 through 55 with and without treatment devices is 792 lb/year and 268 lb/year, respectively. Approximately 69% of the total phosphorus within the Fort McCoy urbanized area is already being reduced. Treatment practices perform well within the Fort McCoy urbanized area because of the prevalence of sandy soils with high infiltration rates.

STEPL modeling results for sub-watersheds 56 to 65 are summarized in Table 4-3. A total of 14,501 pounds of phosphorus are generated from these sub-watersheds on an average annual basis. Large phosphorus loads tended to be generated from sub-watersheds with higher amounts of agricultural land use. The largest phosphorus contribution of 7,920 lb/year occurs in the Tarr Creek sub-watershed 61. This sub-watershed contains the largest amount of agricultural land use. The high phosphorus load is supported by water quality sampling within the action area. The highest concentrations of total phosphorus were obtained in Tarr Creek downstream of the agricultural areas. Sub-watersheds 59 and 58 have the second and third highest average annual phosphorus loads of 2,435 lb/year and 1,230 lb/year, respectively. These sub-watersheds also have agricultural land use. Other sub-watersheds had lower phosphorus loads due to higher percentages of forested and meadow land cover.

A total annual average phosphorus load of 14,769 pounds is obtained by combining WinSLAMM and STEPL modeling results. This compares well with the current phosphorus load of 14,230 lb/year that was calculated in Step 2 of section 4.2.4. 3,888 pounds of phosphorus must be removed through implementation of best management practices. This amount is an order of magnitude larger than the annual phosphorus generated in the urbanized areas of Fort McCoy. Also, this number is approximately 65% of the total phosphorus generated in non-agricultural areas outside the urbanized area of Fort McCoy. It would be very difficult to meet the phosphorus reduction goal in non-agricultural areas alone due to the large amount of land area that would need to be treated. Therefore, it is expected that the majority of phosphorus reduction would occur in agricultural areas east of Fort McCoy. When compared to forest and meadow, agricultural land generates a much greater amount of phosphorus over a smaller area. Potential projects are described further in Section 4.5.

4.5 Describe Management Measures

4.5.1 Agricultural Management Measures

Several best management practices (BMPs) could be utilized in the agricultural areas east of Fort McCoy. BMPs reduce phosphorus by managing application of nutrients, reducing erosion, and encouraging infiltration of runoff. Possible practices and their phosphorus reductions (estimated by STEPL or literature values) are listed below:

- **Riparian vegetative buffers (filter strips)** – 75% P reduction - A vegetative filter strip is a grassy area between agricultural areas and waterbodies. As the name implies, this practice would separate the feedlot or cropland from the bank of the creek and filter runoff before it enters the creek. Filter strips are meant to prohibit the transport of solids before entering surface waters. Filter strips are typically effective when their width is 75-100 feet.
- **Grass swales** – 30% P reduction - Grass swales prevent erosion where runoff tends to concentrate in agricultural fields. Runoff is also filtered as it flows along the swale.
- **Contour farming** – 55% P reduction - Contour farming is a planting practice that locates a single row of crop along a constant elevation, or contour, instead of the downslope direction. When cropping occurs in the downslope direction, runoff channelization between rows is encouraged. Instead, the contoured crop rows will interrupt runoff as it proceeds in the down slope direction.
- **Reduced tillage** – 45% P reduction - In cropland areas, a potential BMP would be the reduction or modification in the way crop fields are tilled. Less tillage reduces the potential for sediment and other pollutants from entering waterways and results in healthier soils. No till or conservation tillage practices could be implemented; for instance, going from chisel plowing to disc-tilling.
- **Nutrient Management** – 28% P reduction - Within NR 151 of the Administrative Code, Nutrient Management Plans are required. These plans manage the amount of nutrients in the soil for maximum crop yield. A Nutrient Management Plan balances the optimum amount of nutrients required for farming operations taking into account existing soils, slops, and tillage practices. These plans help to reduce nutrient concentrations in runoff and eroded soil.
- **Cover Crops** – 32% P reduction[1] - Cover crops are planted in late fall after harvest to protect the soil from erosion until the primary crop is planted in Spring.
- **Feedlot Improvements** – ~80% P reduction - Feedlots generate phosphorus due to the large amount of manure produced in these areas. Feedlot improvements can reduce phosphorus loading to waterbodies by managing manure and preventing runoff from carrying manure to waterbodies. Manure management measures typically separate manure from the feedlots and provide storage until the manure can be used beneficially. Other measures include constructing roofs over feedlots or directing runoff away from feedlots to prevent manure from being carried to waterbodies.

4.5.2 Non-Agricultural Management Measures

Potential BMPs in non-agricultural areas outside the urbanized area of Fort McCoy are designed to infiltrate and filter runoff before entering a waterbody. When possible, infiltration basins are

[1] Evans, Barry M., Corradini, Kenneth J. 2001. Environmental Resources Research Institute. Pennsylvania State University.

proposed because of the prevalence of sand soils in the action area. It was assumed infiltration basins achieve a 100% phosphorus reduction by infiltrating all runoff volume. Typical management measures included an infiltration basin and grass swales to help divert large areas to the basin. Filter strips were also proposed if flat topography prevented implementation of grass swales and infiltration basins.

Selected potential Best Management measures for each sub-watershed are as follows:

- **Watershed 56** – Infiltration Basins (with grassed swales), Filter Strips (note: currently applied to 25% of stream segment in Watershed 56, can be increased to remove more TP loading)
- **Watershed 57** – Infiltration Basin, Filter Strips
- **Watershed 58** – Filter Strips
- **Watershed 59** – Infiltration Basin (with grassed swales)
- **Watershed 60** – Infiltration Basin (with grassed swales), Filter Strips
- **Watershed 62** – Infiltration Basins (with grassed swales)
- **Watershed 63** – Infiltration Basin (with grassed swales)

Locations of non-agricultural best management practices are shown in Figure 4-7.

4.5.3 Other Management Measures

Streambank restoration can also be implemented to reduce the amount of eroded soils entering waterways. The streambank erosion routine in STEPL was used to estimate the phosphorus reduction from streambank stabilization projects. It was assumed the streambanks are 4 feet high and that restoration occurs on both sides of the stream. For moderately and severely eroded streambanks, approximately 30 and 92 lb/year of phosphorus are reduced per 1,000 feet of streambank restoration, respectively. For planning purposes, these two numbers were averaged, and it is assumed 60 lb/year of phosphorus are reduced for a 1,000 linear foot streambank restoration project.

4.6 Estimate Load Reduction Expected By Permit Term

The term of the current permit expires in 2018. The new adaptive management requirements will be incorporated into the next permit issuance. The adaptive management plan can be extended over two successive permit terms before compliance with the WQS is required. For the purpose of this AM Plan, it is assumed minimum of half of the required phosphorus reduction is achieved each permit term, which is approximately 1,944 lb/year per term.

4.6.1 Estimating Load Reductions from Nonpoint Sources

Potential load reductions from nonpoint sources were estimated using the % reductions given in section 4.5. Potential loads and reductions for agricultural areas were calculated separately for each landowner in the action area. Phosphorus load reductions were calculated for four different management options:

- Alternative A: Nutrient Management Plan Only
- Alternative B: Cover Crops Only
- Alternative C: Filter Strips Only
- Alternative D: Combination of Nutrient Management Plan, Cover Crops, and Filter Strips

Table 4-4 presents phosphorus loads, potential BMPs, and estimated phosphorus load reductions by agricultural landowner for each of the four alternatives. Differences in annual phosphorus loading rates were due primarily to the erosion soil factor (k) and land slope. Total average annual phosphorus loads and pounds of phosphorus per acre are shown in Figures 4-8 and 4-9.

Other potential BMPs in the action area treat mostly woodland and meadow lands outside the Fort McCoy urbanized area, as discussed in Section 4.5.2. Estimated phosphorus reductions from these BMPs, as well as total estimated phosphorus reductions within agricultural areas, are summarized in Table 4-5. For agricultural areas, Table 4-5 uses phosphorus reductions for Alternative D.

4.7 Adaptive Management Monitoring Program

Adaptive Management Program success can be measured most effectively by conducting regular phosphorus sampling downstream of implemented BMP projects. As discussed, ongoing stream sampling is conducted at Fort McCoy in several locations. Future sampling related to potential BMP's will be included as part of the current sampling program to gauge success.

4.7.1 Background

Both wet-weather and baseflow sampling have been historically conducted at Fort McCoy. Wet weather (event) sampling is more event-specific sampling that helps to determine how increased streamflow and associated runoff affects TSS and TP concentrations. Per WDNR guidance, monthly sampling should occur on the same day of every month. By performing monthly sampling in this fashion, any bias in the data regarding pollutant concentrations from very dry to very wet weather can be reduced.

Beginning with the 2016 monitoring program Fort McCoy selected additional sample collection sites to begin building a database of in-stream phosphorus concentrations for streams within the watershed, specifically targeting locations to prepare for the Adaptive Management Program.

4.7.2 Monitoring Strategy

4.7.2.1 Adaptive Management Sampling Locations & Frequency

Additional adaptive management sampling locations for phosphorus were identified in 2016 as part of CSU's annual watershed monitoring program. Table 4-6 provides a summary of proposed TP monitoring points for Fort McCoy's adaptive management program that incorporates sites selected in 2016, as well as locations that will be beneficial to determining reductions occurring as a result of BMP implementation. Figure 4-10 provides an adaptive management sampling plan location map that correlates with Table 4-6.

4.7.2.2 Sample Collection

CSU Water quality monitoring in the La Crosse River watershed is conducted using both instantaneous grab sampling during runoff events and continuous remote monitoring utilizing four United States Geological Survey (USGS) gage stations. These USGS gages provide a complete understanding of water quality when comparted to instantaneous grab samples.

CSU utilizes the following protocols to determine when and how sampling will occur:

1. Attempts are made each year to sample the peak of the snowmelt runoff as this event typically has higher sediment and nutrient loads.
2. Major rain events are sampled. However, water quality can be difficult to monitor using grab samples during extreme events as stream volume and velocity can create a dangerous situation for collection and in some cases make it impossible to safely enter the stream channel. When these conditions do exist, stream discharge is not measured and the collection of a water sample is done along the stream bank and not in the center of channel. Sample collection in this manner results in fewer non-dissolvable nutrients, i.e. sediments, within the sample and are noted in the data. During these situations, the USGS gage stations provided valuable data that would have otherwise been impossible to collect.

4.7.2.3 Quality Assurance

CSU follows quality assurance protocols that include the following:

1. Sample bottles are preserved with sulfuric acid to a pH of less than 2 and cooled less than or equal to 6°C (but not frozen).
2. Samples are collected in the portion of the stream with the greatest/strongest flow.
3. Samples are collected at a depth of 3 to 6 inches below the surface using triple rinsed bottles, completely filling the sample bottle.
4. Sample site is avoided from disturbance by wading into the stream and walking upstream to the sample and taking the sample facing upstream.
5. All sampling is conducted by CSU on federal lands without trespassing on private property.

Additional “unofficial” in-stream and soil sample collection may also be conducted on private property with permission from landowners by partners such as:

- Engineering Consultants
- Monroe County LWCD Staff
- Agricultural Landowners
- Local Agronomists
- Citizen-Based Volunteers

“Unofficial” samples collected during the adaptive management program will be used to track progress of BMP implementation, establish additional baseline data, or update watershed models. Once a BMP project area is determined, unofficial monitoring/sampling is anticipated to occur in the waterbody adjacent to the BMP and just downstream of the practice location as a practice is implemented. The data collected from the sampling would represent baseline conditions. Upon project completion, sampling is anticipated to be performed at certain time intervals and compared to determine if reduction in pollutants is occurring.

4.7.2.4 Other Parameters

CSU’s annual watershed monitoring project also includes the following sample parameters which are not required to be collected as part of Fort McCoy’s adaptive management program, but may prove beneficial in identifying loading reductions following BMP implementation:

- Total Suspended Solids (TSS)
- Turbidity (measured in nephelometric turbidity units (NTU))

- Ammonium-N + Ammonia-N
- Nitrate and Nitrite
- Chloride

Table 4-6 also identifies the standard methods and Limits of Detection and Quantification (LOD and LOQ) for TSS and turbidity, which both aid in identifying and prioritizing projects in high runoff areas.

4.7.3 Certified Laboratory, Sample Preservation & Analysis

Fort McCoy has an established relationship with a WDNR certified laboratory based on CSU's annual monitoring program. Fort McCoy intends to continue this relationship during the Adaptive Management Program. However, should a change be required during the course of the Adaptive Management program, samples will continue to be analyzed by an accredited laboratory per ch. NR 149, Wis. Adm. Code, using proper sample preservation and analysis protocols.

CSU currently submits preserved samples to the following WDNR certified lab:

University of Wisconsin – Stevens Point
Water & Environmental Analysis Lab (WEAL)
DNR Certification No.: 750040280
800 Reserve Street
Stevens Point, WI 54481
Daniel O. Trainer Natural Resources Building, Room 200
weal@uwsp.edu
715.346.3209

Should Fort McCoy conduct additional AM sampling, staff will work with WEAL or another selected certified lab of their choosing to establish a budget code, create lab forms, and ensure that the lab has proper LODs and LOQs to meet the project needs. It is anticipated that WEAL will directly submit results to DNR.

An Adaptive Management Monitoring Plan is developed in Table 4-6, and represented via a map with sampling location callouts in Figure 4-10.

4.8 Financial Security

This section of the Fort McCoy AM Plan provides a summary of total implementation costs to achieve compliance with the WQS for TP in the La Crosse River during the AM term (10 years). Also presented are summaries of potential funding avenues and grant opportunities depending on the type and location (federal vs private land) of the project.

4.8.1 Implementation Costs

Fort McCoy's AM program implementation costs include a number of activities and are described in the sections that follow.

4.8.1.1 BMP Implementation

Constructing BMPs as part of an Adaptive Management Program have associated capital, maintenance, sampling, and administrative costs. Table 4-7 provides total estimated costs for each agricultural alternative by property owner. Table 4-7 is organized by recommended order of

project implementation, which is discussed further in section 4.9. Likewise, Table 4-8 provides total estimated costs for each non-agricultural BMP project identified within Fort McCoy's property. The initial cost estimate reflects contingency, markups, and engineering associated with the capital costs where applicable. Annual costs include maintenance, inspections, model updates, and outreach and education. Detailed estimates for initial and annual costs are provided in Appendix F.

4.8.1.2 WWTP Modifications to Comply with Interim Limits

Interim TP effluent limits for the Fort McCoy WWTP will be included in each permit during the AM period as presented in Table 3-1. In order for the existing WWTP to comply with these limits, increased chemical feed rates may be required, however recent effluent data suggests the WWTP is capable of meeting interim limits a majority of months without additional chemical feed. Accordingly, no addition chemical or sludge production costs are included.

4.8.1.3 Outreach and Education

Outreach and education costs for Fort McCoy's AM Plan include costs for the following activities:

- Cost of meetings
- Cost of outreach materials such as brochures
- Staff time needed to communicate AM in watershed

Several different AM partners will be involved in outreach and education activities as identified in Section 4.9.4. Outreach and education for agricultural properties is included as an annual cost as detailed in Appendix F.

4.8.1.4 Modeling

Annual modeling costs for Fort McCoy's AM Plan include costs for the following activities:

- Engineering Consultant Staff time needed to run and re-run models
- Technology needs to use models

Model updates for agricultural properties are included as an annual cost, as detailed in Appendix F.

4.8.1.5 In-Stream & Effluent Monitoring

Annual in-stream monitoring costs for Fort McCoy's AM Plan include costs for the following activities:

- Cost to collect the samples
- Number of sampling points
- Cost to analyze the samples

Annual effluent monitoring costs at the Fort McCoy WWTP are not anticipated to increase as a result of the AM Plan, as the facility is already required to sample for TP by the current WPDES permit.

4.8.1.6 Technical Support

Annual technical support costs for Fort McCoy's AM Plan include costs for the following activities:

- Engineering consultant costs
- Financial needs of Monroe County LWCD

- Soil Agronomist costs pertaining to NMP preparation

Soil agronomist costs for agricultural properties are included as an annual cost, as detailed in Appendix F. Monroe County LWCD costs are included in annual outreach education costs. Engineering Consultant costs are included in both capital cost estimates for design, and annual cost estimates for modeling.

4.8.1.7 Compliance Checking

Annual compliance checking costs for Fort McCoy's AM Plan include costs for the following activities:

- Travel costs
- Reporting costs
- Cost of sending compliance notifications

Compliance checking for agricultural properties are included as an annual cost, as detailed in Appendix F.

4.8.2 Funding Discussion

AM Project funding will likely come from a variety of sources, given the complex nature of Fort McCoy's AM Plan. Additional complexity stems primarily from the inability of Fort McCoy to directly spend Federal money on capital projects located on private property. However, in cases such as this AM Plan which is intended to be utilized by Fort McCoy to maintain compliance with a regulation, several funding avenues may be available for AM implementation activities.

Additionally, Monroe County LWCD has access to and currently utilizes several grant programs to assist the non-point community (primarily agricultural) with implementation of a number of BMP's.

Finally, Fort McCoy has an opportunity to generate WQT credits within the Silver Creek Watershed on federal lands (not part of the AM action area), and sell these credits to the City of Sparta through Monroe County LWCD to help fund BMP projects on private property within the AM action area.

Each of these funding mechanism categories is described in further detail in the sections that follow.

4.8.2.1 Federal (Fort McCoy)

Fort McCoy intends to utilize the project matrix developed in Tables 4-7 and 4-8 to submit federal funding requests where applicable. Federal funding is for projects identified can be provided by different funding mechanisms depending on project type, location and features. Where federal funding cannot be utilized, it is anticipated that a number of grant or other funding avenues will be considered, primarily for projects identified off of Fort McCoy property. These opportunities are further described in 4.8.2.2 and 4.8.2.3.

4.8.2.2 Grant Opportunities

Several state and federal grant programs have been establish to assist private landowners (primarily agricultural) with BMP implementation offering varying levels of cost sharing. A summary of grant programs that will be investigated and evaluated as part of Fort McCoy's AM program are found in the following sections. It is anticipated that Monroe County LWCD staff and

engineering consultant staff will play the lead role investigating grant opportunities and determining eligibility on a project-by-project basis.

4.8.2.2.1 Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) Conservation Reserve Enhancement Program (CREP)

CREP is a resource to help farmers meet their conservation goals, particularly those who till or graze land along rivers and streams.

CREP pays landowners to install filter strips along waterways or to return continually flooded fields to wetlands while leaving the remainder of the adjacent land in agricultural production. The size of land put into CREP varies, and can be a strip as narrow as 30 feet with no minimum acreage size. This allows farmers to enroll land as needed and leave the remainder for farming. Enrollment options either a 15-year agreement or a perpetual easement.

CREP financial incentives of CREP include:

- Cost sharing of conservation practice installation.
- Upfront incentive payments.
- Annual soil rental payments.

Participants on average receive total combined state and federal payments per acre of $2,000 for the 15-year contracts and $2,850 per acre for the perpetual conservation easements over the agreement timeframe.

Many land cover and management practice options are available under CREP, depending on the preference of the landowner and site factors. Some of the more common practices are filter strips, riparian buffers, and wetland restorations.

CREP is a joint effort between the federal, state and county governments.

4.8.2.2.2 USDA-NRCS Environmental Quality Incentives Program (EQIP)

EQIP is a voluntary program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air and related natural resources on agricultural land and non-industrial private forestland. EQIP may also help producers meet Federal, State, Tribal, and local environmental regulations.

Owners of land in agricultural or forest production or persons who are engaged in livestock, agricultural or forest production on eligible land and that have a natural resource concern on that land may apply to participate in EQIP. Eligible land includes cropland, rangeland, pastureland, non-industrial private forestland and other farm or ranch lands.

4.8.2.2.3 USDA-NRCS Conservation Stewardship Program (CSP)

The NRCS Conservation Stewardship Program (CSP) helps agricultural operations build on existing conservation efforts while strengthening operations. This includes: improving grazing conditions, increasing crop yields, or developing wildlife habitat. A CSP plan can be custom designed to help meet those goals. CSP's help schedule timely planting of cover crops, development a grazing plan that will improve forage base, implementation of no-till to reduce erosion or manage forested areas in a way that benefits wildlife habitat. If you are already taking steps to improve the condition of the land, chances are CSP can help you find new ways to meet your goals.

To enroll in CSP, the local NRCS conservation planner will have a one-on-one consultation with the landowner to evaluate the current management system and the natural resources on the land. Then the NRCS conservation planner will present a variety of CSP enhancement alternatives to consider implementing on the land, based on existing conservation practices. The variety of CSP conservation activities that are offered provide freedom to select enhancements or practices that help meet management goals.

CSP offers annual incentive payments for installing these practices. Taking it a step further, CSP also offers bundles enhancements to implement to receive higher payment rates.

CSP contracts are for five years, with the option to renew if the initial contract is successfully fulfilled and additional conservation objectives are agreed to achieve.

Contract payments are based on two components:

- Payments to maintain the existing conservation based on the operation type and number of resource concerns that are meeting the stewardship level at the time of application.
- Payments to implement additional conservation activities.

All CSP contracts will have a minimum annual payment of $1,500.

Landowners will be required to maintain the stewardship level of the resource concerns you are already meeting plus meet or exceed at least one additional resource concern in each land use by the end of the contract. If the objectives of the initial CSP contract are achieved, you may be eligible to re-enroll for an additional five-year contract if you agree to adopt additional conservation activities to meet or exceed two additional priority resource concerns.

4.8.2.2.4 Targeted Runoff Management (TRM) Grants

The Targeted Runoff Management (TRM) Grant Program offers competitive grants for local governments for the control of pollution that comes from diffuse sources, also called “nonpoint source (NPS)” pollution. Grants from the TRM Program reimburse costs for agricultural or urban runoff management practices in targeted, critical geographic areas with surface water or groundwater quality concerns.

Cities, villages, towns, counties, regional planning commissions, tribal governments and special purpose lake, sewerage and sanitary districts may apply. Grant monies may fund the construction of best management practices (BMPs) to control nonpoint source pollution. They can also fund BMP design as part of a construction project. The cost-share rate for TRM projects is up to 70 percent of eligible costs. Municipal employee force account work may be reimbursable up to 5 percent of the total project reimbursement.

4.8.2.2.5 USDA-NRCS Wildlife Habitat Incentive Program (WHIP)

The Agricultural Act of 2014 (enacted on February 7, 2014) repealed the Wildlife Habitat Incentive Program (WHIP). Portions of the WHIP Statute were rolled into EQUIP.

4.8.2.2.6 United States Fish & Wildlife Service (USFWS)

The U.S. Fish and Wildlife Service (Service) issues financial assistance through grants and cooperative agreement awards to commercial organizations, foreign entities, Indian tribal governments, individuals, institutions of higher education, non-profit organizations, and state and local governments.

4.8.2.2.7 Trout Unlimited

Trout Unlimited works to create partnerships between landowners, agencies, municipalities, and all stakeholders to protect critical habitat, to reconnect degraded waterways, and restore populations to coldwater fisheries. The National Conservation Agenda is set by the National Leadership Council of Trout Unlimited, a body of representatives from the grassroots and volunteer leaders.

4.8.2.3 Water Quality Trading – Potential Revenue Source

Fort McCoy also owns land in the Silver Creek Watershed located outside of the AM action area. Within this watershed, Fort McCoy has identified several long range BMP projects with the potential to generate WQT credits. At this point, the total amount of WQT credit has not been quantified, however, Fort McCoy and Monroe County LWCD staff have begun initial conversations regarding the ability for Fort McCoy to complete the projects and sell credits to the City of Sparta.

Credit payments could then be utilized through Monroe County LWCD to offset the costs of BMP implementation primarily in the Tarr Creek sub-watershed (61).

4.9 Implementation Schedule & Milestones (Timing)

This section establishes project priorities and milestones during the AM period with the goals of:

1. Prioritizing the installation of management measures.
2. Installing sufficient management measures to offset the minimum AM reduction requirement on an annual basis.
3. Setting a compliance date for AM interim limits.
4. Water quality milestones.

4.9.1 BMP Selection & Implementation Schedule

BMP selection will depend on cost, phosphorus reduction impacts, and partner cooperation. Table 4-9 presents the maximum estimated phosphorus reduction and average cost per pound of phosphorus removed for agricultural alternatives A through D and projects in non-agricultural areas. It is recommended to pursue alternatives with higher phosphorus reduction potential, such as Alternatives C or D. Some alternatives by themselves will not meet the overall phosphorus reduction goal. For example, even if Alternative A was implemented on all agricultural properties, 2,662 lb/year of phosphorus is reduced, which is well below the goal of 3,888 lb/year. Realistically, not all agricultural operators will be willing cooperate. Pursuing an alternative with a high phosphorus reduction potential increases the chances that goals will be met. Alternatives with lower phosphorus reduction potential should only be pursued if other alternatives cannot be implemented.

An implementation schedule for agricultural best management practices was developed based on cost and anticipated level of cooperation with land owners. Table 4-7 shows estimated phosphorus reductions and costs for Alternatives A through D and is organized by order of implementation. It was assumed Alternative D would be pursued for each agricultural property. Properties operated by Dave and Don Hall were given first priority because communications with

these operators have already begun. Projects in Table 4-7 were ordered using the following procedure:

1. Select properties operated by Dave and Don Hall (13 properties).
2. Order properties from Step (1) based on Alternative D cost in terms of lb/year.
3. Order remaining properties based on Alternative D cost in terms of lb/year and add after the Dave and Don Hall properties.

The remaining agricultural properties were ordered based on the total cost per pound of phosphorus for Alternative D. Table 4-7 also gives the following: 1) aa running sum of estimated total phosphorus reductions following the implementation of each project; and 2) the permit term that each project should be completed in. For example, implementing the first three projects (area ID 810, 1211, and 810) will result in 722 lb/year of total phosphorus removal. To provide a factor of safety, the overall phosphorus reduction goal was increased by 20% to 4,666 lb/year. Thus, the first permit term has a phosphorus reduction goal of 2,333 pounds. This goal is achieved after completing the seventh project (Area ID 3). Therefore, the first seven projects are identified as being implemented in the first permit term, and subsequent projects are identified as being implemented in the second permit term. The third project increases the phosphorus reduction total to over 1,296 lb, the reduction expected in the first permit term, so subsequent projects are scheduled for completion in the second and third permit terms. This schedule should be adjusted if property owners choose a different alternative and anticipated phosphorus reductions change.

4.9.2 Milestones

Water quality milestones are set based on the current measured in-stream phosphorus concentration of 0.098 mg/L and the goal of 0.075 mg/L. It is expected water quality reductions will not be achieved in the first two years due to the time required to implement best management practices. Assuming reductions are achieved incrementally over the remainder of the 10-year Adaptive Management term, an approximate 0.0029 mg/L reduction in the annual median in-stream phosphorus concentration should be observed per year. Below are major water quality milestones:

- June 2022: 0.092 mg/L
- June 2024: 0.087 mg/L
- June 2026: 0.081 mg/L
- June 2028: 0.075 mg/L

4.9.3 Annual Reporting

Annual reports are required pursuant to s. NR 217.18(3)(d), Wis. Adm. Code, and are important to maintain communication between the Fort McCoy and WDNR as well as reinforce accountability. Fort McCoy intends to submit annual reports that:

- Evaluate monitoring data collected
- Describe the adaptive management actions that have been installed
- Describe the outreach and education efforts that have occurred over the past year

Fort McCoy also intends to use annual reporting to adjust the adaptive management actions used to improve water quality within the action area.

4.9.4 Partner Roles

4.9.4.1 Fort McCoy

Fort McCoy, being the WPDES permit holder is responsible for overall coordination of the AM Implementation plan and compliance with the new requirements contained in the reissued WPDES Permit containing AM requirements. In addition, Fort McCoy staff will be responsible for coordination efforts of all remaining partners described below. This includes ensuring adequate funding and compliance with milestones.

Fort McCoy WWTP operations staff will be responsible for compliance with the interim effluent TP limits contained in the WPDES permit.

4.9.4.2 CSU

CSU is responsible for the annual in-stream monitoring per the Monitoring Section of the AM Plan and submittal of samples to the certified lab.

4.9.4.3 WEAL

WEAL is anticipated to perform the following for Fort McCoy's AM program:

- Perform certified TP compliance analysis for in-stream sampling and submit to WDNR through the Surface Water Integrated Monitoring System (SWIMS) database.
- Perform certified TP analysis for "unofficial" sample events as described in Section 4.7.3.

4.9.4.4 Monroe County LWCD

Initial Monroe County LWCD roles are anticipated to include:

- Outreach & Education to Private Landowners.
- Compliance Checking.
- Coordination of WQT between Fort McCoy and Sparta to generate additional funding for the LWCD for managing AM projects located in Tarr Creek sub-watershed.
- Coordination with Engineering Consultant to assist with modeling updates.
- Coordination with NMP Agronomists.

4.9.4.5 Engineering Consultant

Initial Engineering Consultant roles are anticipated to include:

- Outreach & Education to Private Landowners.
- Compliance Checking.
- Model Updates.
- WWTP Engineering Assistance.
- BMP Design.
- Coordination with Soil Agronomists and Monroe County LWCD for Model Updates.

4.9.4.6 USFW

USFW roles are anticipated to include:

- Outreach and Education
- Technical Assistance to Landowners

USFW has a program titled “Partners for Fish & Wildlife” whose mission is to work with private landowners to improve fish and wildlife habitat on their lands. USFW are leaders in voluntary, community-based stewardship for fish and wildlife conservation.

To accomplish this work, USFW teams up with private conservation organizations, state and federal agencies and tribes. Together, with the landowner, this collective shares funding, materials, equipment, labor and expertise to meet both the landowner’s restoration goals and our conservation mission.

Before implementing habitat projects, the landowner(s) and the project biologist sign an agreement that specifies the work to be done and financial contributions.

- The length of the agreement must be at least 10 years, although longer time commitments are encouraged.
- There is no minimum cost-share requirement, although projects with a higher cost-share, especially from the landowner, are more competitive. Cost-share may be in-kind (e.g. labor, materials, use of equipment) or monetary.
- The landowner agrees to maintain the restoration project throughout the agreement period.
- The agreement states that a landowner will not return the project to its former use or damage or destroy the project during the agreement period without reimbursing us for the funds spent on the project.

4.9.4.7 USDA-NRCS

NRCS roles are anticipated to include:

- Conservation Grants – Development and management of the grant programs for private landowners described in Section 4.8.2.2
- Technical Assistance
- Coordination between Monroe County LWCD, Engineering Consultants and Fort McCoy

4.9.4.8 Private Landowners

Private landowner participation and cooperation is of utmost importance to the success of Fort McCoy’s AM Plan. Initial landowner and farm operator visits have shown willingness to participate. Private landowners will determine AM implementation success, and as such the outreach and education of private landowners will be re-visited each year during the annual reporting completed by Fort McCoy.

4.9.4.9 Trout Unlimited

Trout Unlimited roles are anticipated to include:

- Outreach & Education
- Conservation Grants

4.9.4.10 Local Agronomists

Local agronomist roles are anticipated to include:

- Technical Assistance
- NMP Development

Appendix G presents a listing of key contacts involved with development of this AM Plan, or intended to be involved with implementation of the projects identified above.

4.9.5 Adaptive Management Request Form

The completed AM request form for Fort McCoy is found in Appendix H.

ms

Tables

Table 2-1 - Effluent TP Characteristics for Fort McCoy WWTP from 2014-Apr 2017

Month	Effluent Avg. Flow (MGD)	Effluent Avg. TP Concentration (mg/L)	Effluent Avg. Mass (lb/day)
14-Jan	0.28	0.25	0.59
14-Feb	0.31	0.83	2.54
14-Mar	0.59	0.58	2.84
14-Apr	0.55	0.86	3.84
14-May	0.55	0.66	3.16
14-Jun	0.65	0.5	3.06
14-Jul	0.56	0.57	2.72
14-Aug	0.48	0.59	2.48
14-Sep	0.58	0.45	2.27
14-Oct	0.62	0.41	2.07
14-Nov	0.57	0.18	0.88
14-Dec	0.44	0.33	1.27
15-Jan	0.28	0.38	1.03
15-Feb	0.28	0.72	1.97
15-Mar	0.47	0.46	1.73
15-Apr	0.45	0.7	2.47
15-May	0.32	1.35	3.62
15-Jun	0.52	0.7	3.22
15-Jul	0.31	0.93	2.54
15-Aug	0.35	1.36	4.48
15-Sep	0.3	0.43	1.01
15-Oct	0.36	0.55	1.68
15-Nov	0.23	0.56	1.11
15-Dec	0.3	0.52	1.5
16-Jan	0.3	0.55	1.45
16-Feb	0.31	0.36	0.94
16-Mar	0.36	0.4	1.19
16-Apr	0.36	0.41	1.3
16-May	0.24	0.36	0.71
16-Jun	0.34	0.59	1.87
16-Jul	0.35	0.94	2.87
16-Aug	0.55	1.03	4.9
16-Sep	0.61	0.81	4.09
16-Oct	0.57	0.66	3.48
16-Nov	0.3	0.34	0.86
16-Dec	0.28	0.45	1.19
17-Jan	0.37	0.35	1.14
17-Feb	0.36	0.72	2.22
17-Mar	0.33	0.62	1.75
17-Apr	0.33	0.62	1.75

Table 4-1 - Adaptive Management Action Area Description for Plan Development

HUC and Watershed Name	**Total Area of Watershed**	
Upper La Crosse Watershed HUC 070400060201, 070400060202, and 070400060204	Acres	Sq. Miles
	80,460	126

County	**Area of watershed in the county**	**Percentage of watershed within the county**
Monroe	80,460 acres	100%

What watershed scale was used to develop the action area? *Note: If action area is full HUC 12 STOP.*	☒ - Full HUC 12 ☐ - Portion of the HUC 12 ☐ - Based on TMDL reach ☐ - Other

Size of the Action Area	
Acres	Sq. Miles

County	**Size of action area per county**			**Percentage of action area within the county**		

Table 4-2 - Potential Agricultural Partners

ID	Owner	Operator	Area (acres)
Tarr Creek			
1	HALL TRUST	DONALD AND DAVE HALL	58.2
2	LARRY F HALL	TO BE DETERMINED	72.7
3	HALL TRUST	DONALD AND DAVE HALL	97.8
4	KERMIT E GASPER	TO BE DETERMINED	4.7
5	HALL TRUST	DONALD AND DAVE HALL	104.3
6	R & R RANCH LLC	TO BE DETERMINED	100.8
7	HALL TRUST	TO BE DETERMINED	72.1
8	DOROTHY SHUTTER	TO BE DETERMINED	140.7
9	DONALD J HALL	TO BE DETERMINED	19.1
10	DONALD J HALL LIVING TRUST	DONALD AND DAVE HALL	17.2
11	DONALD L DE VOE	DONALD AND DAVE HALL	27.9
12	GARY E SHUTTER	TO BE DETERMINED	16.0
13	DORIS M HALL	TO BE DETERMINED	66.3
14	DAVID O HALL	TO BE DETERMINED	33.1
15	DONALD J HALL	TO BE DETERMINED	22.6
16	R & R RANCH LLC	TO BE DETERMINED	35.7
17	LARRY F HALL	TO BE DETERMINED	55.1
18	Ricky L Kennedy	TO BE DETERMINED	53.0
19	LARRY F HALL	TO BE DETERMINED	7.5
20	RED QUEEN LLC	TO BE DETERMINED	25.4
21	WADE E LASISTER	TO BE DETERMINED	2.2
22	LARRY F HALL	TO BE DETERMINED	27.8
23	RICKY L KENNEDY	TO BE DETERMINED	5.4
24	RICK M CARLSON	TO BE DETERMINED	5.9
25	KRISTI L CARLSON	TO BE DETERMINED	10.6
26	RICK M CARLSON	TO BE DETERMINED	1.0
27	RAYMOND E HABELMAN	TO BE DETERMINED	4.0
28	HALL TRUST	TO BE DETERMINED	19.6
Suuk Jak Sep Creek			
29	GIORGIO GAMBINO REVOCABLE TRUST	TO BE DETERMINED	8.5
30	DEAN D GRIFFIN	TO BE DETERMINED	54.0
31	GIORGIO GAMBINO REVOCABLE TRUST	TO BE DETERMINED	9.4
32	GIORGIO GAMBINO REVOCABLE TRUST	TO BE DETERMINED	5.3
33	GIORGIO GAMBINO REVOCABLE TRUST	TO BE DETERMINED	3.6
34	GIORGIO GAMBINO REVOCABLE TRUST	TO BE DETERMINED	27.4
La Crosse River			
35	R & R RANCH LLC	TO BE DETERMINED	17.9
36	JOHN C SAUNDERS	TO BE DETERMINED	34.9
37	BRIAN M LORD	TO BE DETERMINED	7.2
38	BESSIE KMIECIK	TO BE DETERMINED	9.7
39	ARTHUR D BUDZINSKI	TO BE DETERMINED	16.8
40	JOAN SPATAFORA DECLARATION OF TRUST	TO BE DETERMINED	7.2
41	ANTONINO PITRELLO TRUST	TO BE DETERMINED	13.3
42	JOAN SPATAFORA DECLARATION OF TRUST	TO BE DETERMINED	8.7
43	JOAN SPATAFORA DECLARATION OF TRUST	TO BE DETERMINED	30.8
44	MICHAEL L MILLER	TO BE DETERMINED	15.2
45	CLAIRE L FROST	TO BE DETERMINED	14.6
46	ARTHUR D. & LINDA S. BUDZINSKI	TO BE DETERMINED	12.1
47	ARTHUR D BUDZINSKI	TO BE DETERMINED	21.4
48	JOHN M BATTISTA	TO BE DETERMINED	2.5
49	KATHLEEN A HORNAK	TO BE DETERMINED	8.9
50	DENNIS A FROST	TO BE DETERMINED	6.0
51	NORITA E KORTBEIN	TO BE DETERMINED	37.4
52	TIMOTHY D KORTBEIN	TO BE DETERMINED	1.1
53	LANCE CONRAD KACHIKIS	TO BE DETERMINED	40.2
54	SHIRLEY A KEENE REVOCABLE TRUST	TO BE DETERMINED	7.3
55	JOSEPH B LORD	TO BE DETERMINED	9.5
56	JOSEPH B LORD	TO BE DETERMINED	64.7
57	DIANE JOHNS FAMILY TRUST	TO BE DETERMINED	5.8
58	DIANE JOHNS FAMILY TRUST	TO BE DETERMINED	6.0

Table 4-3 - Average Annual Phosphorus Loading - Sub-watersheds 56 - 65

Sub-Watershed	Receiving Waterbody	Total Annual Average P Load (lbs)	Agriculture Total Annual Average P Load (lbs)	Non-Agriculture Total Annual Average P Load (lbs)
56	La Crosse River	604	0	604
57	La Crosse River	813	0	813
58	La Crosse River	1,230	545	684
59	Suuk Jak Sep Creek	2,435	1,791	644
60	Ash Run Creek	109	0	109
61	Tarr Creek	7,920	6,972	948
62	Sparta Creek	515	0	515
63	Stillwell Creek	651	0	651
64	La Crosse River	92	0	92
65	La Crosse River	133	0	133
Total		14,501	9,309	5,192

Table 4-4 - Phosphorus Loading and Estimated Reductions for Agricultural Landowners

	ID	Owner	Area (acres)	P (lbs/yr)	P (lbs/acre/yr)	Estimated P Reductions (lbs/yr)			
						Alternative A - Nutrient Management Plan (NMP)	Alternative B - Cover Crops (CC)	Alternative C - Filter Strips	Alternative D - NMP, CC, and Filter Strips
Tarr Creek Sub-Watersheds	1	HALL TRUST	58.2	130.6	2.2	36.6	41.8	97.9	114.6
	2	LARRY F HALL	72.7	1092.3	15.0	305.8	349.5	819.2	958.6
	3	HALL TRUST	97.8	420.3	4.3	117.7	134.5	315.3	368.9
	4	KERMIT E GASPER	4.7	7.0	1.5	2.0	2.2	5.3	6.2
	5	HALL TRUST	104.3	182.0	1.7	51.0	58.2	128.3	155.7
	6	R & R RANCH LLC	100.8	174.1	1.7	48.8	55.7	130.6	152.8
	7	HALL TRUST	72.1	117.3	1.6	32.9	37.5	88.0	103.0
	8	DOROTHY SHUTTER	140.7	1381.3	9.8	386.8	442.0	1036.0	1212.3
	9	DONALD J HALL	19.1	141.9	7.4	39.7	45.4	106.4	124.6
	10	DONALD J HALL LIVING TRUST	17.2	238.2	13.8	66.7	76.2	178.6	209.0
	11	DONALD L DE VOE	27.9	342.9	12.3	96.0	109.7	257.2	301.0
	12	GARY E SHUTTER	16.0	207.1	13.0	58.0	66.3	155.4	181.8
	13	DORIS M HALL	66.3	207.9	3.1	58.2	66.5	155.9	182.5
	14	DAVID O HALL	33.1	201.5	6.1	56.4	64.5	151.1	176.8
	15	DONALD J HALL	22.6	148.7	6.6	41.6	47.6	111.5	130.5
	16	R & R RANCH LLC	35.7	188.7	5.3	52.8	60.4	141.5	165.6
	17	LARRY F HALL	55.1	577.1	10.5	161.6	184.7	432.8	506.4
	18	Ricky L Kennedy	53.0	348.5	6.6	97.6	111.5	196.0	273.9
	19	LARRY F HALL	7.5	65.6	8.7	18.4	21.0	49.2	57.6
	20	RED QUEEN LLC	25.4	267.9	10.5	75.0	85.7	200.9	235.1
	21	WADE E LASISTER	2.2	3.5	1.6	1.0	1.1	2.6	1.8
	22	LARRY F HALL	27.8	213.5	7.7	59.8	68.3	160.1	187.4
	23	RICKY L KENNEDY	5.4	61.8	11.4	17.3	19.8	46.3	31.5
	24	RICK M CARLSON	5.9	69.7	11.9	19.5	22.3	52.3	61.2
	25	KRISTI L CARLSON	10.6	63.6	6.0	17.8	20.3	47.7	55.8
	26	RICK M CARLSON	1.0	6.0	6.0	1.7	1.9	4.5	1.8
	27	RAYMOND E HABELMAN	4.0	26.1	6.5	7.3	8.4	9.8	18.1
	28	HALL TRUST	19.6	87.0	4.4	24.4	27.8	65.2	76.3
Suuk Jak Sep Sub-Watersheds	29	GIORGIO GAMBINO REVOCABLE TRUST	8.5	138.7	16.2	38.8	44.4	104.0	121.7
	30	DEAN D GRIFFIN	54.0	655.7	12.1	194.9	220.5	495.7	577.4
	31	GIORGIO GAMBINO REVOCABLE TRUST	9.4	130.6	13.9	36.6	41.8	97.9	114.6
	32	GIORGIO GAMBINO REVOCABLE TRUST	5.3	77.7	14.8	0.0	0.0	58.3	58.3
	33	GIORGIO GAMBINO REVOCABLE TRUST	3.6	80.4	22.4	0.0	0.0	60.3	60.3
	34	GIORGIO GAMBINO REVOCABLE TRUST	27.4	708.0	25.9	284.3	307.8	560.9	636.0
La Crosse River Sub-Watersheds	35	R & R RANCH LLC	17.9	53.9	3.0	15.1	17.3	40.5	47.3
	36	JOHN C SAUNDERS	34.9	26.8	0.8	7.5	8.6	20.1	23.5
	37	BRIAN M LORD	7.2	15.0	2.1	4.2	4.8	11.3	13.2
	38	BESSIE KMIECIK	9.7	4.6	0.5	1.3	1.5	3.5	4.1
	39	ARTHUR D BUDZINSKI	16.8	13.8	0.8	3.9	4.4	10.4	12.1
	40	JOAN SPATAFORA DECLARATION OF TRU	7.2	9.3	1.3	0.0	0.0	6.9	6.9
	41	ANTONINO PITRELLO TRUST	13.3	11.9	0.9	3.3	3.8	8.9	10.5
	42	JOAN SPATAFORA DECLARATION OF TRU	8.7	9.8	1.1	0.0	0.0	7.4	7.4
	43	JOAN SPATAFORA DECLARATION OF TRU	30.8	35.1	1.1	19.3	20.2	26.4	30.8
	44	MICHAEL L MILLER	15.2	28.8	1.9	8.1	9.2	21.6	25.3
	45	CLAIRE L FROST	14.6	6.9	0.5	0.0	2.2	5.2	4.9
	46	ARTHUR D. & LINDA S. BUDZINSKI	12.1	13.4	1.1	3.8	4.3	10.1	11.8
	47	ARTHUR D BUDZINSKI	21.4	14.9	0.7	4.2	4.8	11.2	13.1
	48	JOHN M BATTISTA	2.5	4.8	1.9	1.4	1.5	3.6	4.2
	49	KATHLEEN A HORNAK	8.9	12.5	1.4	3.5	4.0	9.4	11.0
	50	DENNIS A FROST	6.0	17.4	2.9	4.9	5.6	13.0	15.3
	51	NORITA E KORTBEIN	37.4	41.1	1.1	11.5	13.1	30.8	36.0
	52	TIMOTHY D KORTBEIN	1.1	1.5	1.4	0.4	0.5	1.1	1.3
	53	LANCE CONRAD KACHIKIS	40.2	60.0	1.5	16.8	19.2	45.0	52.7
	54	SHIRLEY A KEENE REVOCABLE TRUST	7.3	9.7	1.3	2.7	3.1	7.3	8.5
	55	JOSEPH B LORD	9.5	3.4	0.4	1.0	1.1	2.6	3.0
	56	JOSEPH B LORD	64.7	123.9	1.9	34.7	39.7	92.9	108.8
	57	DIANE JOHNS FAMILY TRUST	5.8	10.2	1.8	2.9	3.3	7.6	8.9
	58	DIANE JOHNS FAMILY TRUST	6.0	16.4	2.7	4.6	5.3	12.3	14.4

Table 4-5 Estimated TP Loading Reductions from BMP's in Watersheds 56 to 63

Watershed	Existing P Load (lb/yr)	P Load with BMP (lb/yr)	P Reduction (lb/yr)
56-Infiltr./Strips	604	437	300
57-Infiltr./Strips	813	690	245
58 (non-ag)-Strips	684	657	27
58 (ag) – NMP/CC/Strips	545	70	475
59 (non-ag)-Infiltr.	644	474	170
59 (ag) – NMP/CC/Strips	1,791	223	1,568
60-Infiltr.	109	30	79
61 (ag) - NMP/CC/Strips	6,972	922	6,050
62-Infiltr.	515	419	96
63-Infiltr.	651	498	153
Total	**13,328**	**4,420**	**9,163**

Table 4-6 - Adaptive Management Monitoring Program Plan

Monitoring Location					
Sample Point	**Sample Point Description**	**Latitude**	**Longitude**	**Parameters to be collected**	**Sampling Frequency**
01	Point of Compliance (La Crosse River at CTH BB)	44.000278	-90.724444	TP, TSS	Monthly, May-Oct
02	Tarr Creek above Confluence with La Crosse River	44.008728	-90.716302	TP, TSS	Monthly, May-Oct
03	Stillwell Creek at Yard Rd	44.000671	-90.681367	TP, TSS	Monthly, May-Oct
04	Sparta Creek above Sparta Pond	44.010842	-90.642529	TP, TSS	Monthly, May-Oct
05	Suukjap Sep Creek at W N St above Lake	44.034377	-90.695812	TP, TSS	Monthly, May-Oct
06	Ash Run at W 13th Avenue	44.021165	-90.701208	TP, TSS	Monthly, May-Oct
07	La Crosse River at W J Street	44.035198	-90.712375	TP, TSS	Monthly, May-Oct
08	Tarr Creek at Fort McCoy East Boundary	44.015696	-90.627272	TP, TSS	Monthly, May-Oct

Sampling Methodology				
Who will collect samples?	Colorado State University - Center for Environmental Management of Military Lands			
Lab Information	**Name:**	University of Wisconsin - Stevens Point Water and Environmental Analysis Lab (WEAL)		
	Lab ID:	750040280		
	Address	800 Reserve Street, Stevens Point, WI 54481, Daniel O. Trainer Natural Resources Building, Room 200		
Phosphorus Analysis	**Methodology used:**	SM 4500-P.E		
	LOD:	0.006		
	LOQ:	0.053		
Other Lab Analyses for Adaptive Management	**Pollutant 1 Name: TSS**	**Pollutant 2 Name: Turbidity**	**Pollutant 2 Name:**	
	Methodology used:	**Methodology used:**	**Methodology used:**	
	LOD:	LOD:	LOD:	
	LOQ:	LOQ:	LOQ:	

Table 4-7 - Capital Costs and Order of Implementation - Agricultural Projects

ID	Owner	Operator	Sub-Watershed	Area (acres)	Existing Conditions		Alternative A - Nutrient Management Plan			Alternative B - Cover Crop Only			Alternative C - Filter Strips Only					Alternative D - Nutrient Management Plan, Cover Crop, and Filter Strips			Alt. D - P Reduction Sum (lbs/yr)	Permit Term Implem-entation
					P (lbs/yr)	P (lbs/acre/yr)	P Reduction (lbs/yr)	Total Annualized Cost	Cost /lb of P/yr	P Reduction (lbs/yr)	Total Annualized Cost	Cost /lb of P/yr	P Reduction (lbs/yr)	Initial Cost	Annual Cost	Total Annualized Cost	Cost /lb of P/yr	P Reduction (lbs/yr)	Total Annualized Cost	Cost /lb of P/yr		
8	DOROTHY SHUTTER	Don & Dave Hall	Tarr Creek	140.7	1381.3	9.8	386.8	$2,461	$2.47	442.0	$12,757	$28.86	1036.0	77210.2	5197.1	$15,015	$14.49	1212.3	$30,232	$24.94	1,212	1
11	DONALD L DE VOE	Don & Dave Hall	Tarr Creek	27.9	342.9	12.3	96.0	$809	$3.28	109.7	$3,171	$28.90	257.2	30386.1	2482.1	$6,346	$24.67	301.0	$10,326	$34.31	1,513	1
10	DONALD J HALL LIVING TRUST	Don & Dave Hall	Tarr Creek	17.2	238.2	13.8	66.7	$652	$3.80	76.2	$2,262	$29.68	178.6	20055.4	1883.1	$4,433	$24.82	209.0	$7,347	$35.15	1,722	1
12	GARY E SHUTTER	Don & Dave Hall	Tarr Creek	16.0	207.1	13.0	58.0	$634	$4.25	66.3	$2,158	$32.55	155.4	18093.6	1769.3	$4,070	$26.20	181.8	$6,862	$37.75	1,904	1
14	DAVID O HALL	Don & Dave Hall	Tarr Creek	33.1	201.5	6.1	56.4	$884	$6.10	64.5	$3,610	$56.00	151.1	23862.3	2103.8	$5,138	$34.01	176.8	$9,632	$54.48	2,081	1
9	DONALD J HALL	Don & Dave Hall	Tarr Creek	19.1	141.9	7.4	39.7	$679	$6.65	45.4	$2,421	$53.31	106.4	17809.8	1752.8	$4,017	$37.74	124.6	$7,118	$57.15	2,205	1
3	HALL TRUST	Don & Dave Hall	Tarr Creek	97.8	420.3	4.3	117.7	$1,833	$6.06	134.5	$9,115	$67.76	315.3	51292.2	3694.3	$10,216	$32.41	368.9	$21,164	$57.37	2,574	1
15	DONALD J HALL	Don & Dave Hall	Tarr Creek	22.6	148.7	6.6	41.6	$732	$6.83	47.6	$2,724	$57.25	111.5	39573.4	3014.8	$8,047	$72.16	130.5	$11,502	$88.15	2,705	2
13	DORIS M HALL	Don & Dave Hall	Tarr Creek	66.3	207.9	3.1	58.2	$1,371	$9.16	66.5	$6,435	$96.72	155.9	49543.2	3592.9	$9,893	$63.44	182.5	$17,699	$97.00	2,887	2
28	HALL TRUST	Don & Dave Hall	Tarr Creek	19.6	87.0	4.4	24.4	$688	$10.98	27.8	$2,470	$88.74	65.2	25674.7	2208.9	$5,474	$83.91	76.3	$8,631	$113.08	2,964	2
1	HALL TRUST	Don & Dave Hall	Tarr Creek	58.2	130.6	2.2	36.6	$1,252	$13.32	41.8	$5,744	$137.46	97.9	40963.5	3095.4	$8,304	$84.79	114.6	$15,301	$133.51	3,078	2
7	HALL TRUST	Don & Dave Hall	Tarr Creek	72.1	117.3	1.6	32.9	$1,457	$17.24	37.5	$6,932	$184.60	88.0	42414.4	3179.5	$8,573	$97.41	103.0	$16,961	$164.71	3,181	2
5	HALL TRUST	Don & Dave Hall	Tarr Creek	104.3	182.0	1.7	51.0	$1,927	$14.71	58.2	$9,662	$165.91	128.3	124733.5	7952.7	$23,813	$185.60	155.7	$35,403	$227.37	3,337	2
34	GIORGIO GAMBINO REVOCABLE TRUST	To Be Determined	Suuk Jak Sep Creek	27.4	708.0	25.9	284.3	$664	$1.57	307.8	$2,330	$7.57	560.9	21121.9	1944.9	$4,631	$8.26	636.0	$7,624	$11.99	3,973	2
2	LARRY F HALL	To Be Determined	Tarr Creek	72.7	1092.3	15.0	305.8	$1,466	$1.86	349.5	$6,984	$19.98	819.2	56043.8	3969.8	$11,096	$13.54	958.6	$19,546	$20.39	4,931	2
30	DEAN D GRIFFIN	To Be Determined	Suuk Jak Sep Creek	54.0	655.7	12.1	194.9	$1,061	$2.30	220.5	$4,634	$21.01	495.7	42484.3	3183.6	$8,586	$17.32	577.4	$14,280	$24.73	5,509	-
17	LARRY F HALL	To Be Determined	Tarr Creek	55.1	577.1	10.5	161.6	$1,208	$2.91	184.7	$5,487	$29.71	432.8	41273.0	3113.3	$8,361	$19.32	506.4	$15,056	$29.73	6,015	-
20	RED QUEEN LLC	To Be Determined	Tarr Creek	25.4	267.9	10.5	75.0	$773	$4.01	85.7	$2,963	$34.56	200.9	27564.3	2318.5	$5,823	$28.98	235.1	$9,559	$40.66	6,250	-
29	GIORGIO GAMBINO REVOCABLE TRUST	To Be Determined	Suuk Jak Sep Creek	8.5	138.7	16.2	38.8	$525	$5.26	44.4	$1,526	$34.40	104.0	16294.8	1665.0	$3,737	$35.93	121.7	$5,789	$47.57	6,372	-
23	RICKY L KENNEDY	To Be Determined	Tarr Creek	5.4	61.8	11.4	17.3	$480	$10.78	19.8	$1,262	$63.83	46.3	N/A	N/A	N/A	N/A	31.5	$1,741	$55.28	6,404	-
32	GIORGIO GAMBINO REVOCABLE TRUST	To Be Determined	Suuk Jak Sep Creek	5.3	77.7	14.8	0.0	N/A	N/A	0.0	N/A	N/A	58.3	13506.5	1503.3	$3,221	$55.29	58.3	$3,221	$55.29	6,462	-
31	GIORGIO GAMBINO REVOCABLE TRUST	To Be Determined	Suuk Jak Sep Creek	9.4	130.6	13.9	36.6	$538	$5.72	41.8	$1,600	$38.30	97.9	22724.5	2037.8	$4,927	$50.31	114.6	$7,066	$61.65	6,576	-
22	LARRY F HALL	To Be Determined	Tarr Creek	27.8	213.5	7.7	59.8	$807	$5.25	68.3	$3,161	$46.27	160.1	37780.6	2910.8	$7,715	$48.18	187.4	$11,683	$62.35	6,764	-
18	Ricky L Kennedy	To Be Determined	Tarr Creek	53.0	348.5	6.6	97.6	$1,176	$4.69	111.5	$5,302	$47.54	196.0	56034.8	3969.3	$11,094	$56.59	273.9	$17,572	$64.16	7,038	-
33	GIORGIO GAMBINO REVOCABLE TRUST	To Be Determined	Suuk Jak Sep Creek	3.6	80.4	22.4	0.0	N/A	N/A	0.0	N/A	N/A	60.3	17144.9	1714.3	$3,894	$64.58	60.3	$3,894	$64.58	7,098	-
16	R & R RANCH LLC	To Be Determined	Tarr Creek	35.7	188.7	5.3	52.8	$923	$6.80	60.4	$3,836	$63.53	141.5	28964.4	2399.6	$6,083	$42.98	165.6	$10,842	$65.47	7,264	-
19	LARRY F HALL	To Be Determined	Tarr Creek	7.5	65.6	8.7	18.4	$511	$10.81	21.0	$1,441	$68.67	49.2	14159.6	1541.2	$3,342	$67.94	57.6	$5,293	$91.97	7,321	-
24	RICK M CARLSON	To Be Determined	Tarr Creek	5.9	69.7	11.9	19.5	$486	$9.68	22.3	$1,298	$58.17	52.3	21669.6	1976.7	$4,732	$90.50	61.2	$6,516	$106.49	7,382	-
25	KRISTI L CARLSON	To Be Determined	Tarr Creek	10.6	63.6	6.0	17.8	$555	$12.13	20.3	$1,701	$83.61	47.7	16386.8	1670.3	$3,754	$78.73	55.8	$6,010	$107.72	7,438	-
35	R & R RANCH LLC	To Be Determined	La Crosse River	17.9	53.9	3.0	15.1	$662	$17.04	17.3	$2,318	$134.30	40.5	11886.7	1409.4	$2,921	$72.20	47.3	$5,900	$124.65	7,485	-
6	R & R RANCH LLC	To Be Determined	Tarr Creek	100.8	174.1	1.7	48.8	$1,877	$14.97	55.7	$9,371	$168.20	130.6	54034.6	3853.3	$10,724	$82.12	152.8	$21,973	$143.80	7,638	-
56	JOSEPH B LORD	To Be Determined	La Crosse River	64.7	123.9	1.9	34.7	$1,347	$15.10	39.7	$6,297	$158.79	92.9	43657.0	3251.6	$8,803	$94.71	108.8	$16,448	$151.23	7,747	-
53	LANCE CONRAD KACHIKIS	To Be Determined	La Crosse River	40.2	60.0	1.5	16.8	$989	$22.88	19.2	$4,217	$219.56	45.0	21315.0	1956.1	$4,666	$103.66	52.7	$9,872	$187.42	7,800	-
43	JOAN SPATAFORA DECLARATION OF TRUS	To Be Determined	La Crosse River	30.8	35.1	1.1	19.3	$226	$14.25	20.2	$2,110	$104.56	26.4	15436.2	1615.2	$3,578	$135.78	30.8	$5,913	$191.77	7,830	-
44	MICHAEL L MILLER	To Be Determined	La Crosse River	15.2	28.8	1.9	8.1	$623	$30.00	9.2	$2,093	$226.82	21.6	15977.3	1646.6	$3,678	$170.09	25.3	$6,394	$252.68	7,856	-
27	RAYMOND E HABELMAN	To Be Determined	Tarr Creek	4.0	26.1	6.5	7.3	$459	$24.42	8.4	$1,144	$136.82	9.8	13153.3	1482.8	$3,155	$322.18	18.1	$4,758	$262.51	7,874	-
51	NORITA E KORTBEIN	To Be Determined	La Crosse River	37.4	41.1	1.1	11.5	$948	$32.05	13.1	$3,977	$302.62	30.8	28818.4	2391.2	$6,056	$196.59	36.0	$10,980	$304.64	7,910	-
50	DENNIS A FROST	To Be Determined	La Crosse River	6.0	17.4	2.9	4.9	$488	$38.97	5.6	$1,309	$235.35	13.0	12971.9	1472.3	$3,122	$239.44	15.3	$4,919	$322.42	7,925	-
58	DIANE JOHNS FAMILY TRUST	To Be Determined	La Crosse River	6.0	16.4	2.7	4.6	$488	$41.20	5.3	$1,308	$248.73	12.3	12792.4	1461.9	$3,089	$250.56	14.4	$4,884	$338.63	7,940	-
36	JOHN C SAUNDERS	To Be Determined	La Crosse River	34.9	26.8	0.8	7.5	$911	$47.22	8.6	$3,764	$439.08	20.1	19010.3	1822.5	$4,240	$211.02	23.5	$8,914	$379.19	7,963	-
40	JOAN SPATAFORA DECLARATION OF TRUS	To Be Determined	La Crosse River	7.2	9.3	1.3	0.0	N/A	N/A	0.0	N/A	N/A	6.9	11427.9	1382.8	$2,836	$408.39	6.9	$2,836	$408.39	7,970	-
37	BRIAN M LORD	To Be Determined	La Crosse River	7.2	15.0	2.1	4.2	$505	$46.63	4.8	$1,410	$292.92	11.3	15162.7	1599.4	$3,527	$312.58	13.2	$5,443	$412.20	7,983	-
41	ANTONINO PITRELLO TRUST	To Be Determined	La Crosse River	13.3	11.9	0.9	3.3	$594	$69.24	3.8	$1,128	$295.65	8.9	11665.3	1396.6	$2,880	$322.06	10.5	$4,602	$439.84	7,994	-
49	KATHLEEN A HORNAK	To Be Determined	La Crosse River	8.9	12.5	1.4	3.5	$530	$58.94	4.0	$1,554	$388.87	9.4	12814.8	1463.2	$3,093	$330.23	11.0	$5,177	$472.36	8,005	-
47	ARTHUR D BUDZINSKI	To Be Determined	La Crosse River	21.4	14.9	0.7	4.2	$714	$66.55	4.8	$2,623	$549.89	11.2	12008.7	1416.5	$2,943	$263.32	13.1	$6,280	$480.14	8,018	-
57	DIANE JOHNS FAMILY TRUST	To Be Determined	La Crosse River	5.8	10.2	1.8	2.9	$484	$66.05	3.3	$1,289	$395.63	7.6	10000.0	1300.0	$2,572	$336.66	8.9	$4,345	$486.16	8,027	-
42	JOAN SPATAFORA DECLARATION OF TRUS	To Be Determined	La Crosse River	8.7	9.8	1.1	0.0	N/A	N/A	0.0	N/A	N/A	7.4	15953.1	1645.2	$3,674	$499.02	7.4	$3,674	$499.02	8,034	-
46	ARTHUR D. & LINDA S. BUDZINSKI	To Be Determined	La Crosse River	12.1	13.4	1.1	3.8	$578	$59.72	4.3	$1,832	$425.99	10.1	15854.9	1639.5	$3,656	$362.67	11.8	$6,065	$514.26	8,046	-
39	ARTHUR D BUDZINSKI	To Be Determined	La Crosse River	16.8	13.8	0.8	3.9	$646	$64.96	4.4	$2,224	$503.70	10.4	15092.9	1595.3	$3,514	$339.55	12.1	$6,384	$527.14	8,058	-
54	SHIRLEY A KEENE REVOCABLE TRUST	To Be Determined	La Crosse River	7.3	9.7	1.3	2.7	$507	$72.68	3.1	$1,418	$457.84	7.3	12059.7	1419.4	$2,953	$406.74	8.5	$4,878	$574.17	8,066	-
26	RICK M CARLSON	To Be Determined	Tarr Creek	1.0	6.0	6.0	1.7	$415	$96.62	1.9	$885	$464.01	4.5	N/A	N/A	N/A	N/A	1.8	$1,300	$726.83	8,068	-
21	WADE E LASISTER	To Be Determined	Tarr Creek	2.2	3.5	1.6	1.0	$432	$173.63	1.1	$985	$890.81	2.6	N/A	N/A	N/A	N/A	1.8	$1,416	$804.07	8,070	-
4	KERMIT E GASPER	To Be Determined	Tarr Creek	4.7	7.0	1.5	2.0	$469	$92.68	2.2	$1,201	$533.94	5.3	17406.6	1729.5	$3,943	$747.79	6.2	$5,613	$909.79	8,076	-
48	JOHN M BATTISTA	To Be Determined	La Crosse River	2.5	4.8	1.9	1.4	$437	$0.20	1.5	$1,013	$654.35	3.6	12882.3	1467.1	$3,105	$855.83	4.2	$4,555	$1,072.85	8,080	-
45	CLAIRE L FROST	To Be Determined	La Crosse River	14.6	6.9	0.5	0.0	N/A	N/A	2.2	N/A	N/A	5.2	25522.5	2200.1	$5,445	$1,050.30	4.9	$5,445	$1,115.94	8,085	-
38	BESSIE KMIECIK	To Be Determined	La Crosse River	9.7	4.6	0.5	1.3	$543	$163.19	1.5	$1,628	$1,101.56	3.5	13258.5	1488.9	$3,175	$916.33	4.1	$5,346	$1,318.64	8,089	-
55	JOSEPH B LORD	To Be Determined	La Crosse River	9.5	3.4	0.4	1.0	$539	$217.78	1.1	$1,607	$1,460.65	2.6	17353.2	1726.4	$3,933	$1,525.27	3.0	$6,079	$2,014.77	8,092	-
52	TIMOTHY D KORTBEIN	To Be Determined	La Crosse River	1.1	1.5	1.4	0.4	$415	$378.70	0.5	$889	$1,824.40	1.1	11253.9	1372.7	$2,804	$2,453.61	1.3	$4,109	$3,072.79	8,094	-

Table 4-8 - Capital Costs and Order of Implementation - Non-agricultural Projects

Sub Watershed	BMP Practice	Initial Total Cost	Initial Total Cost Annualized	Annual O&M Costs	O&M PV (10 yrs)[1]	*Estimated* Total Annual Cost	P Reduction (lb/year)	Annual Cost per lb P removed
56-W3	Filter Strips	$55,200	$7,019	$2,709	$21,302	$9,728	133	**$73**
57-W1	Infiltration Basin/Swales	$91,000	$11,571	$1,145	$9,004	$12,716	123	**$103**
59-W1	Infiltration Basin/Swales	$142,700	$18,145	$1,213	$9,543	$19,359	170	**$114**
58-W1	Filter Strips	$14,700	$1,869	$1,680	$13,212	$3,549	27	**$134**
63-W1	Infiltration Basin/Swale	$144,800	$18,412	$2,510	$19,739	$20,922	153	**$137**
62-W2	Infiltration Basin	$42,500	$5,404	$2,250	$17,695	$7,654	53	**$144**
57-W3	Filter Strips	$107,100	$13,618	$4,603	$36,197	$18,221	122	**$150**
60-W1	Infiltration Basin/Swales	$121,300	$15,424	$1,074	$8,448	$16,498	79	**$209**
56-W1	Infiltration Basin/Swales	$196,300	$24,961	$2,380	$18,717	$27,341	117	**$234**
56-W2	Infiltration Basin/Swales	$76,900	$9,778	$2,160	$16,987	$11,938	50	**$239**
62-W1	Infiltration Basin/Swales	$82,700	$10,516	$1,200	$9,435	$11,716	42	**$276**

1) Interest rate of 4.625% was assumed.

Table 4-9 Alternative Cost and Phosphorus Reduction Summary

Sub-Watersheds	Alternative	Maximum P Reduction (lb/yr)	Average Cost per lb of P/yr
58-59, 61	Agriculture - A	2,662	$16
58-59, 61	Agriculture - B	3,021	$57
58-59, 61	Agriculture - C	6,932	$45
58-59, 61	Agriculture - D	8,094	$65
56-60, 62-63	Non-Agricultural Projects	1,069	$149

Figures

Figure 2-1 - Influent Flow Summary

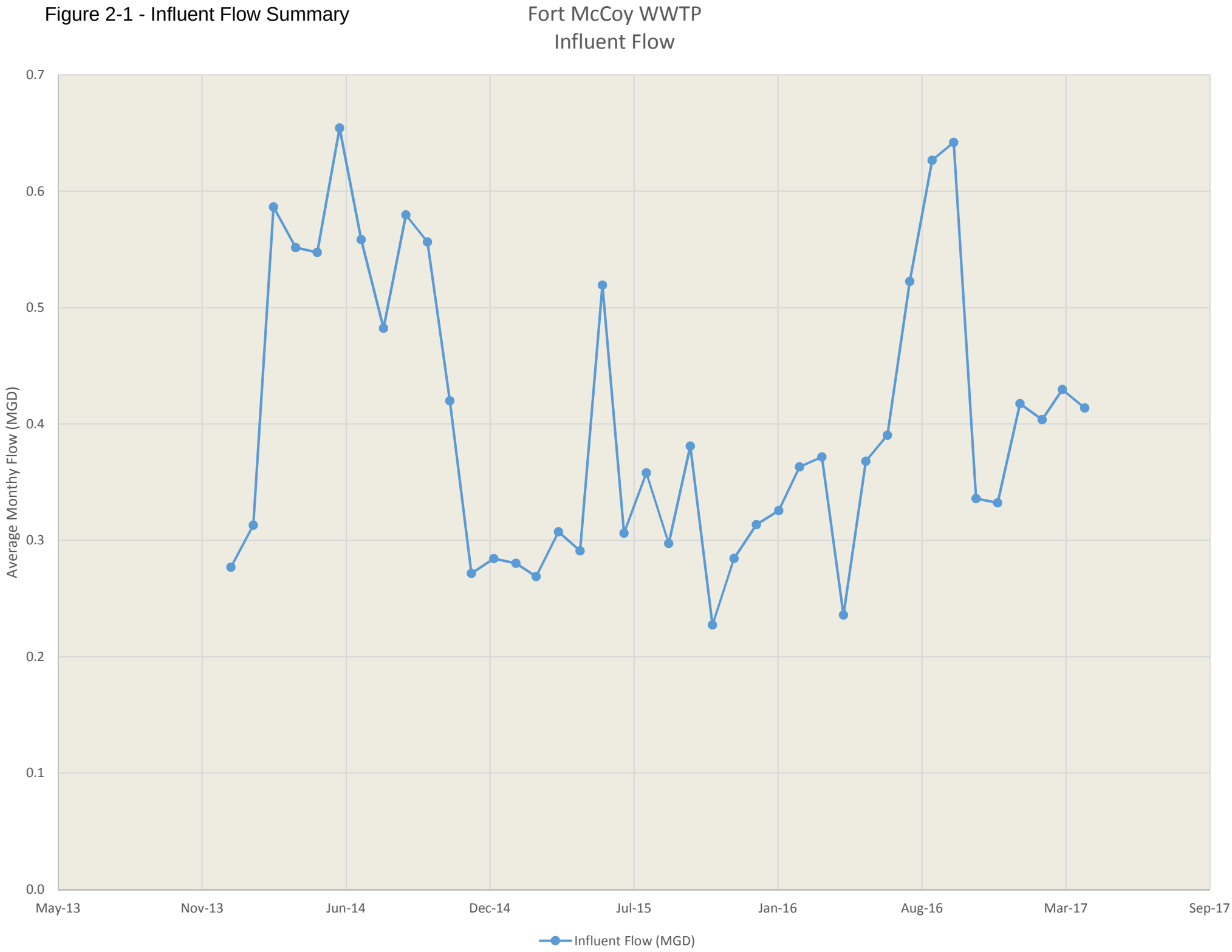


Figure 2-2 - Influent BOD & TSS Loading

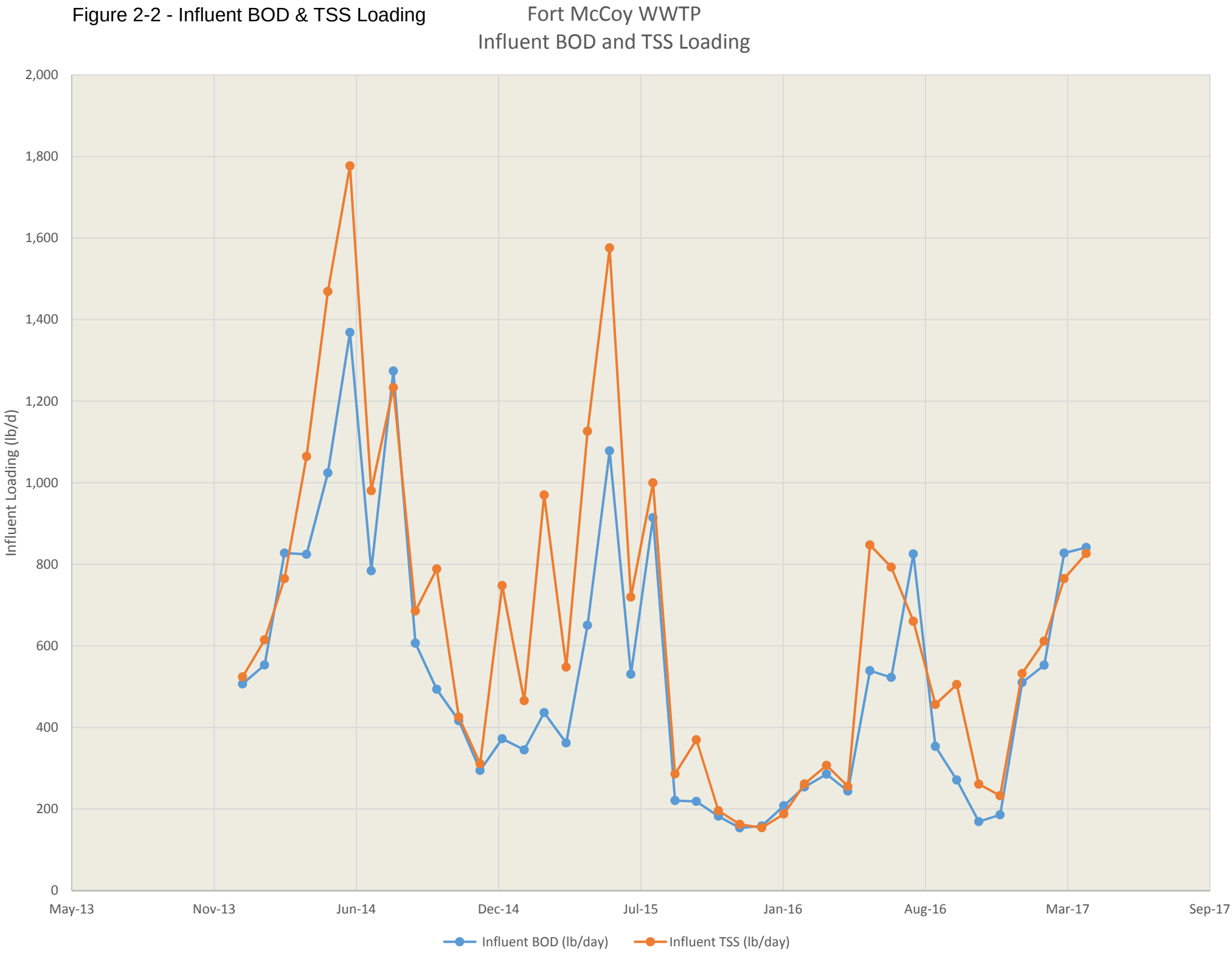
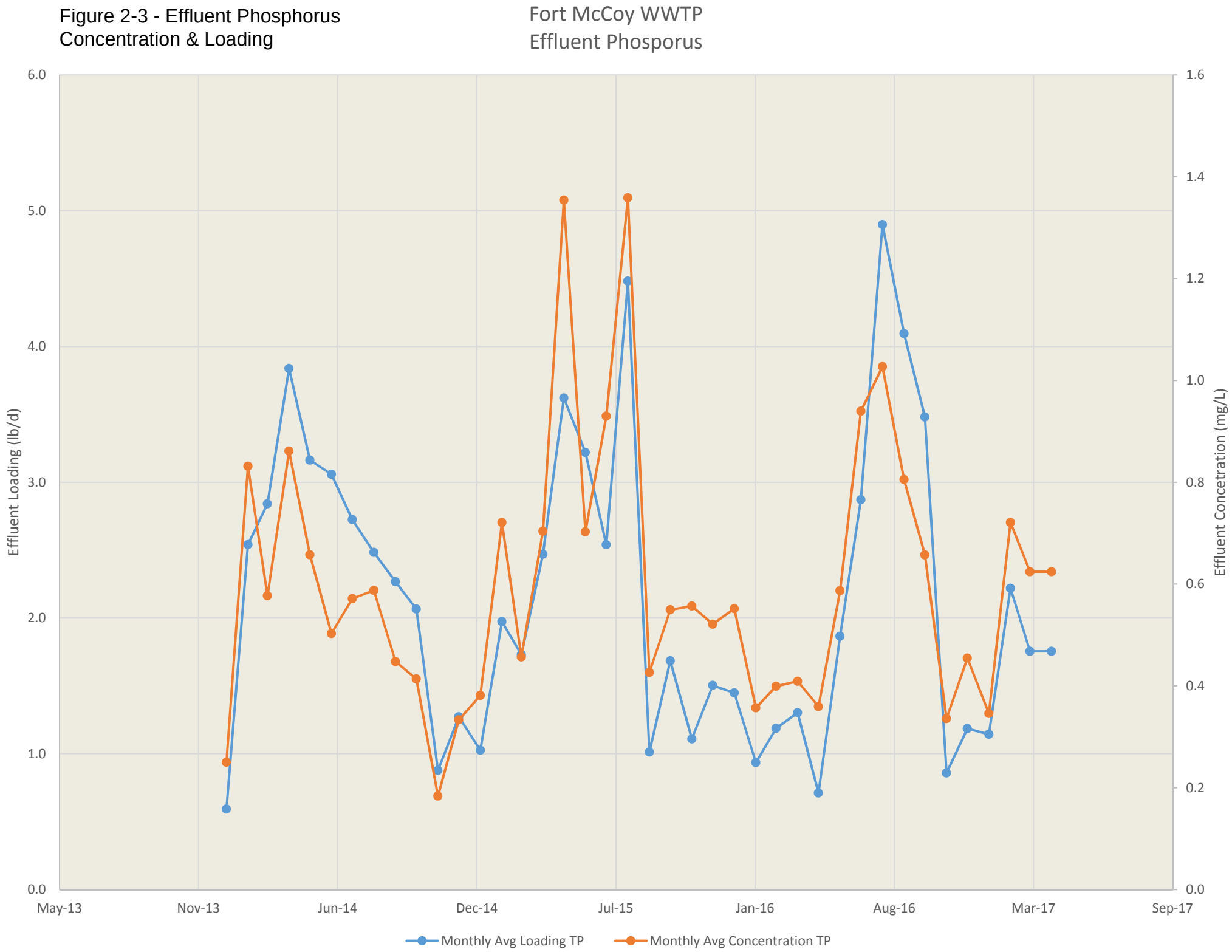
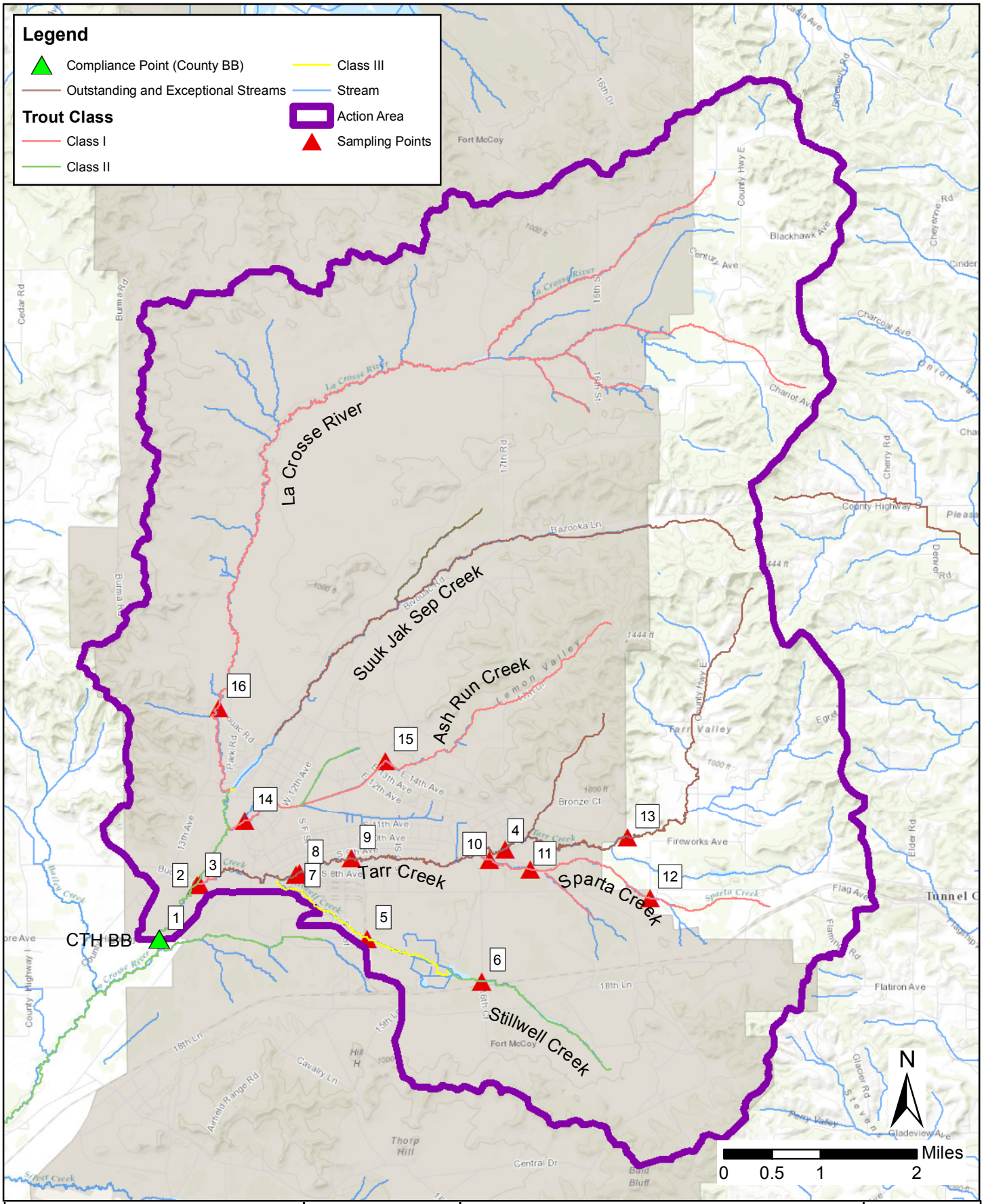


Figure 2-3 - Effluent Phosphorus Concentration & Loading





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ACTION AREA

Fort McCoy Adaptive Management Plan

Figure 4-1

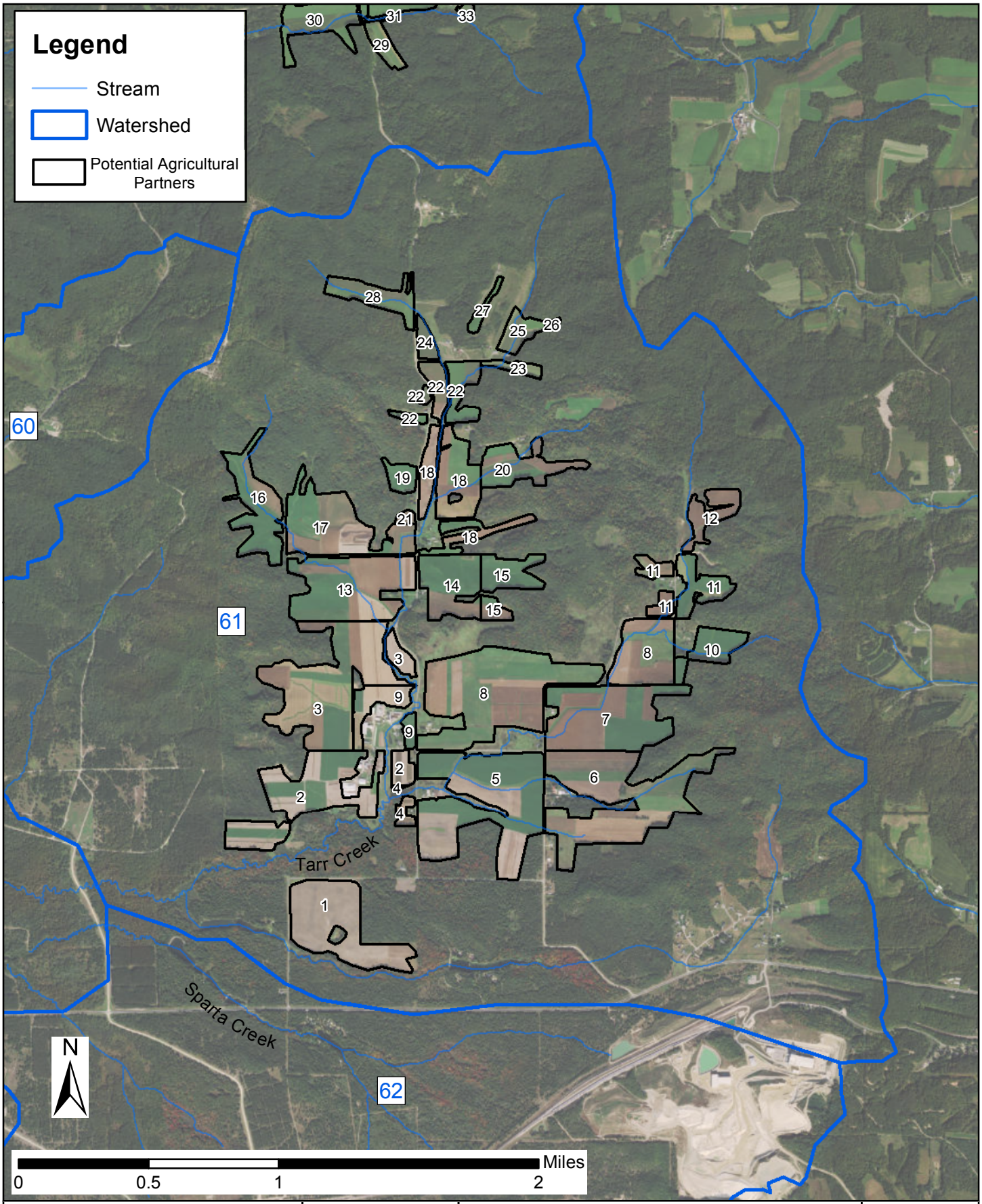

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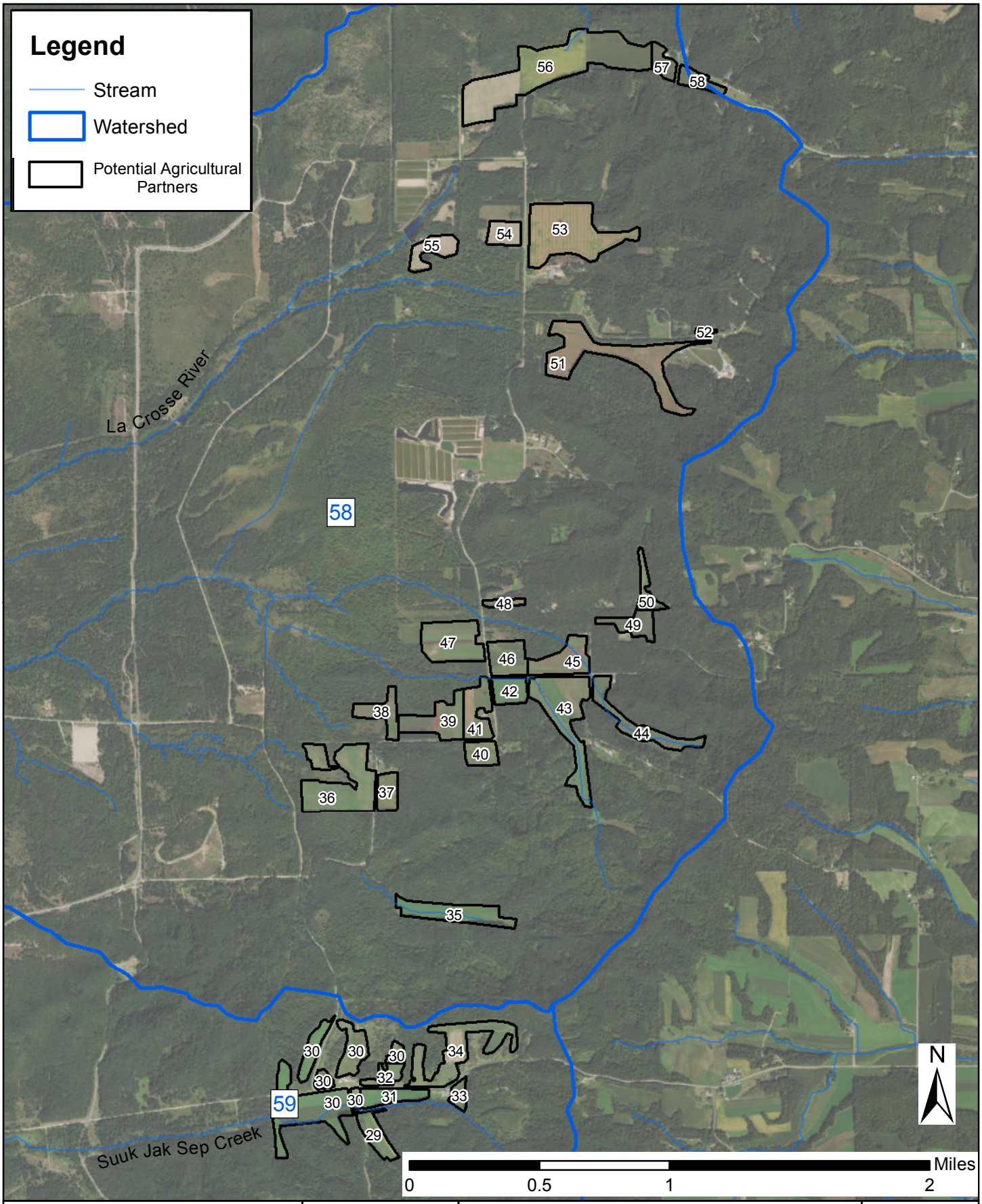
Figure 4-2a



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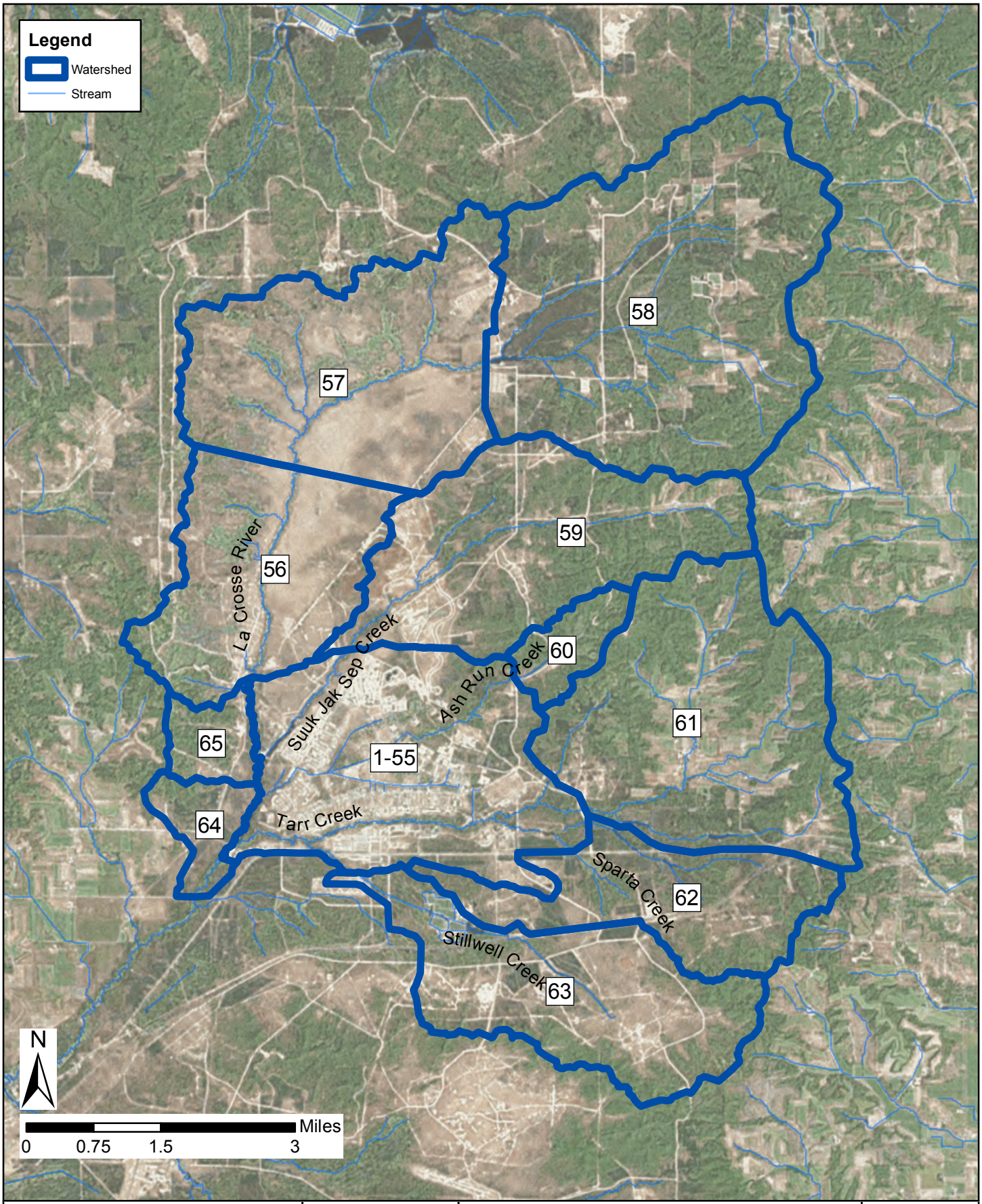
Fort McCoy Adaptive Management Plan

Figure 4-2b



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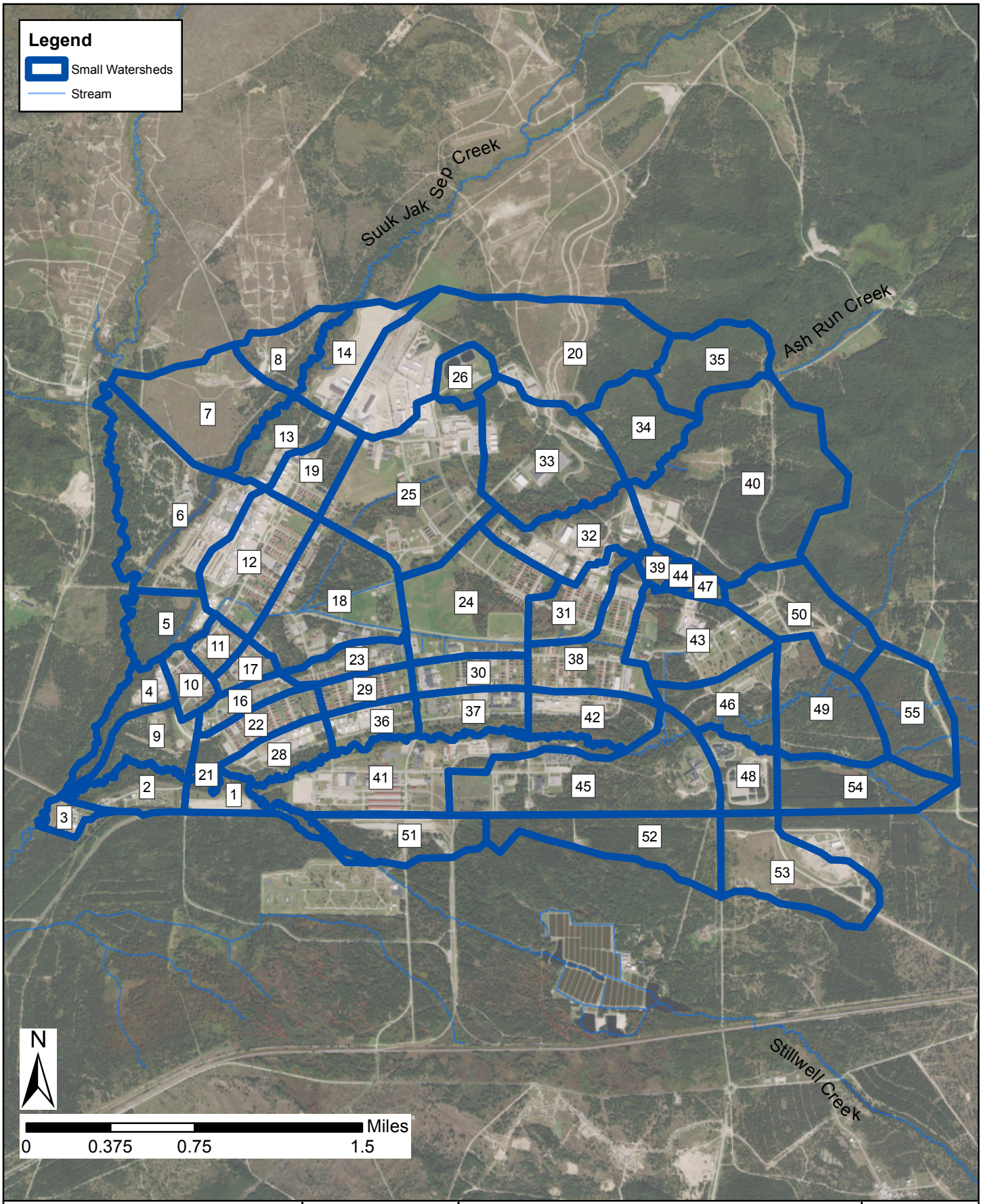
SUBWATERSHEDS

Fort McCoy Adaptive Management Plan

Figure 4-3a



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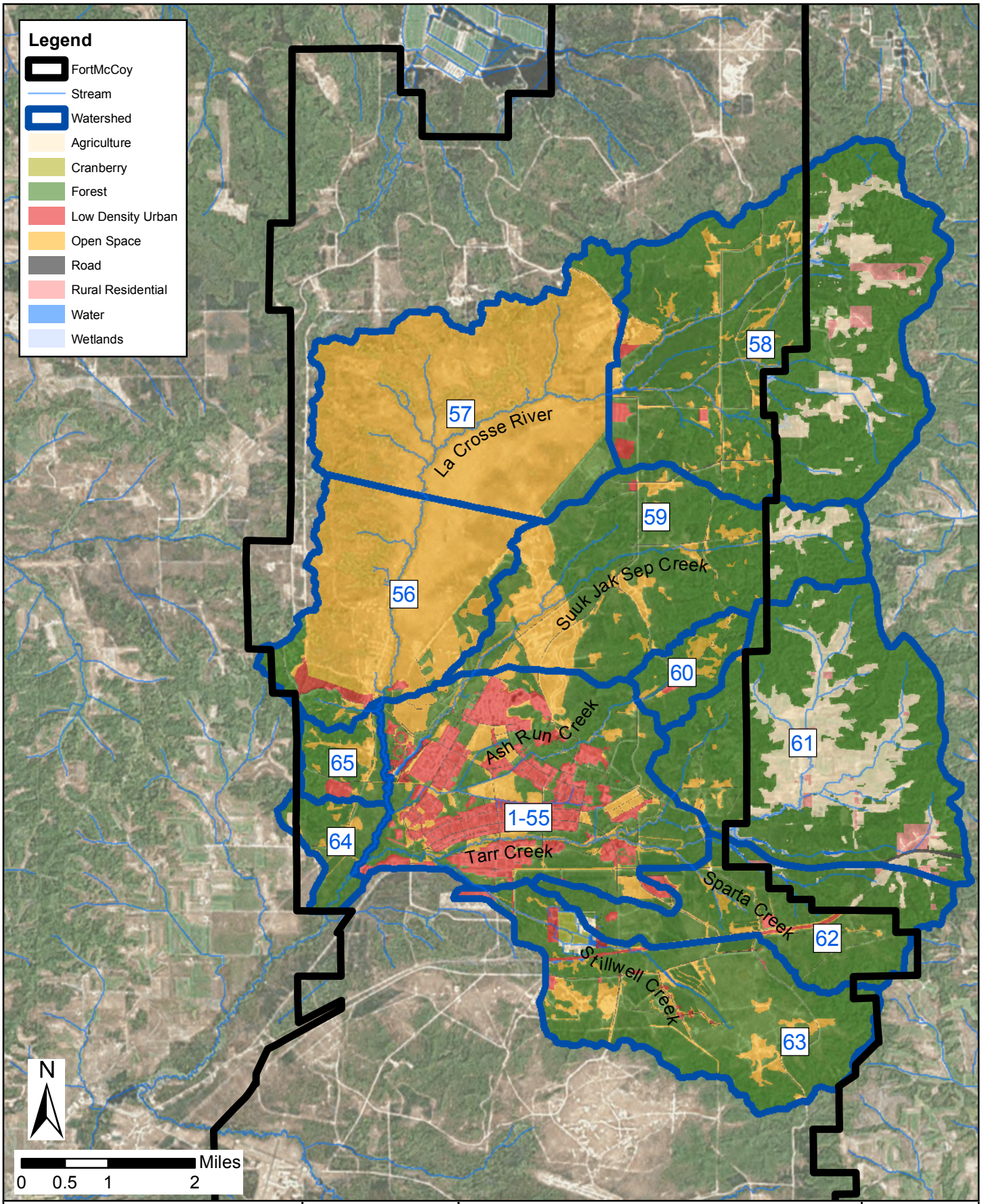
SUBWATERSHEDS

Fort McCoy Adaptive Management Plan

Figure 4-3b



Path: C:\Projects\UZ\U\Usamc\141425\3-env-stdy-regs\Figure 4-4 Land Use.mxd

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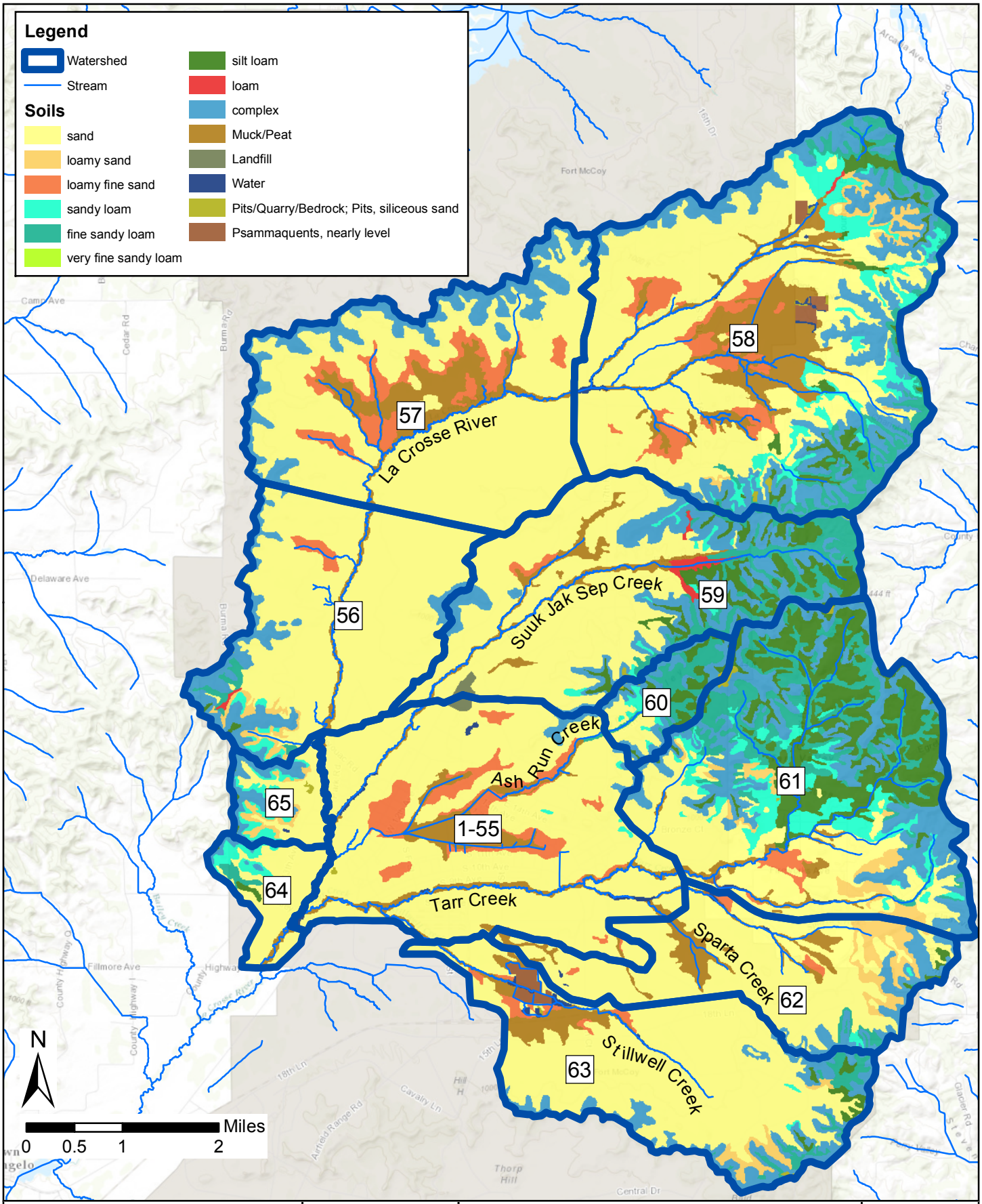
Print Date: 6/29/2017

Map by: alombardino
Projection: NAD_1983_HARN_WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

LAND USE

Fort McCoy Adaptive Management Plan

Figure 4-4



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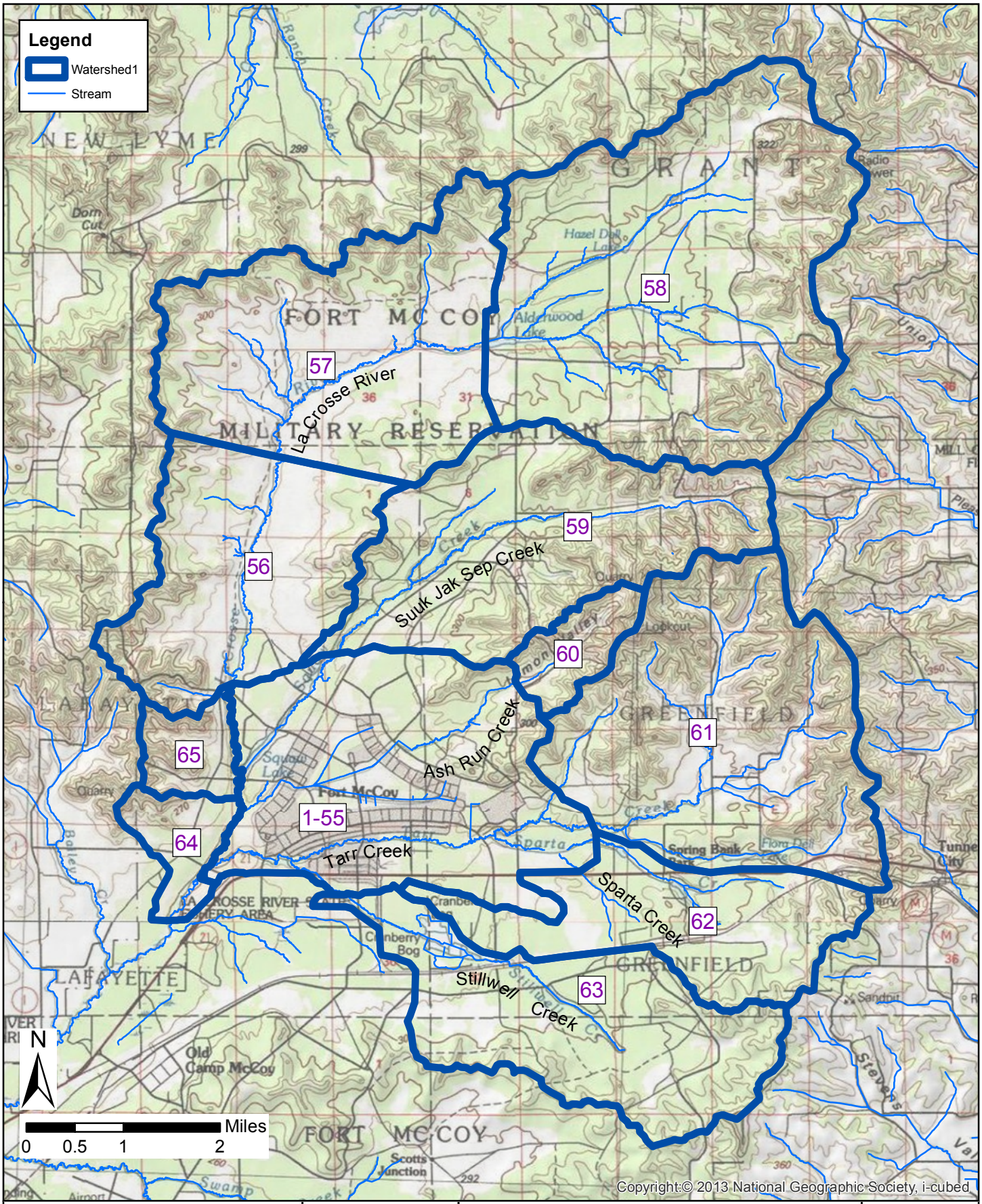
Projection: NAD_1983_HARN_WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

SOIL TEXTURES

Fort McCoy Adaptive Management Plan

Figure 4-5



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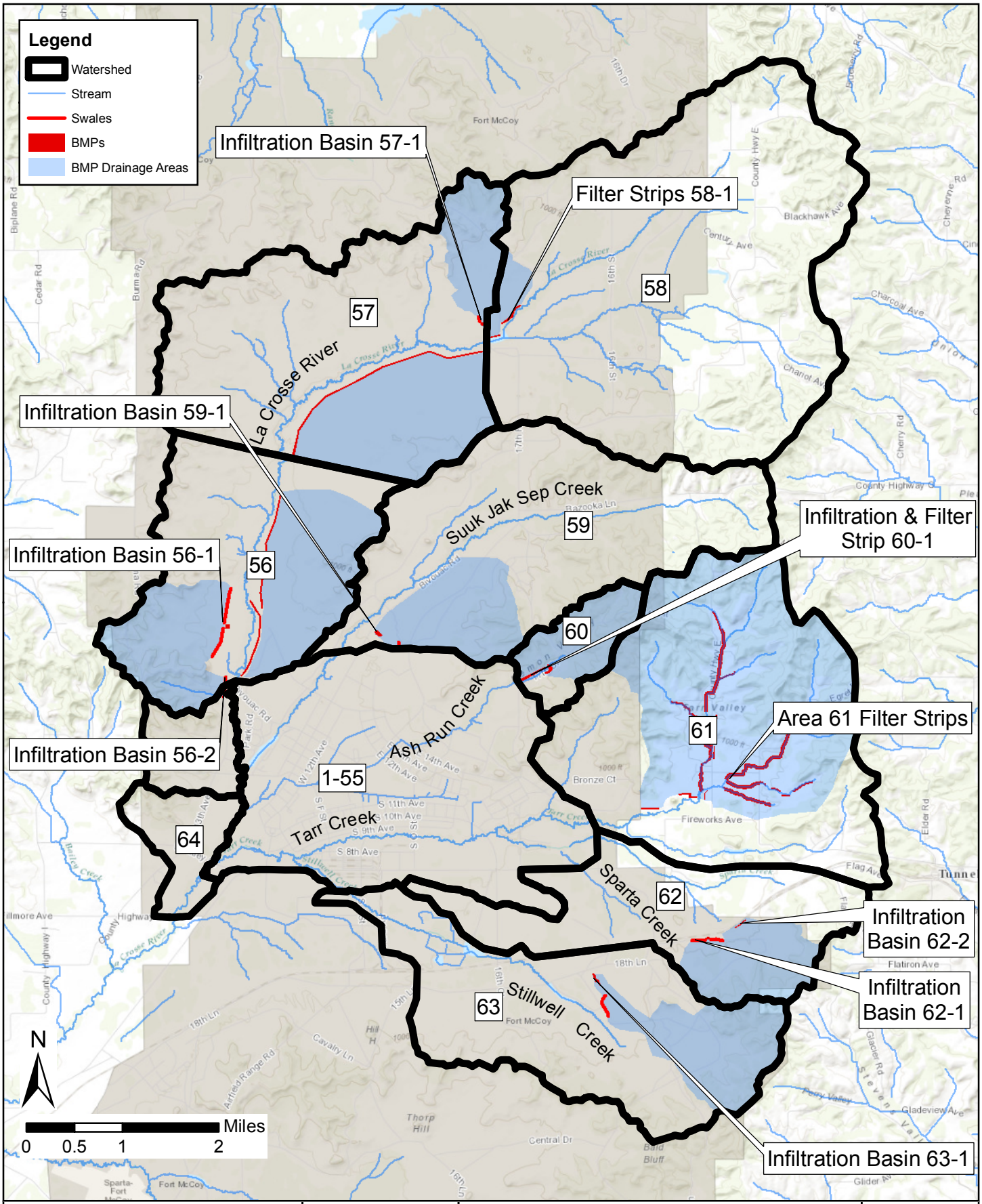
Map by: alombardino
Projection: NAD_1983_HARN_WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

TOPOGRAPHY

Fort McCoy Adaptive Management Plan

Figure 4-6



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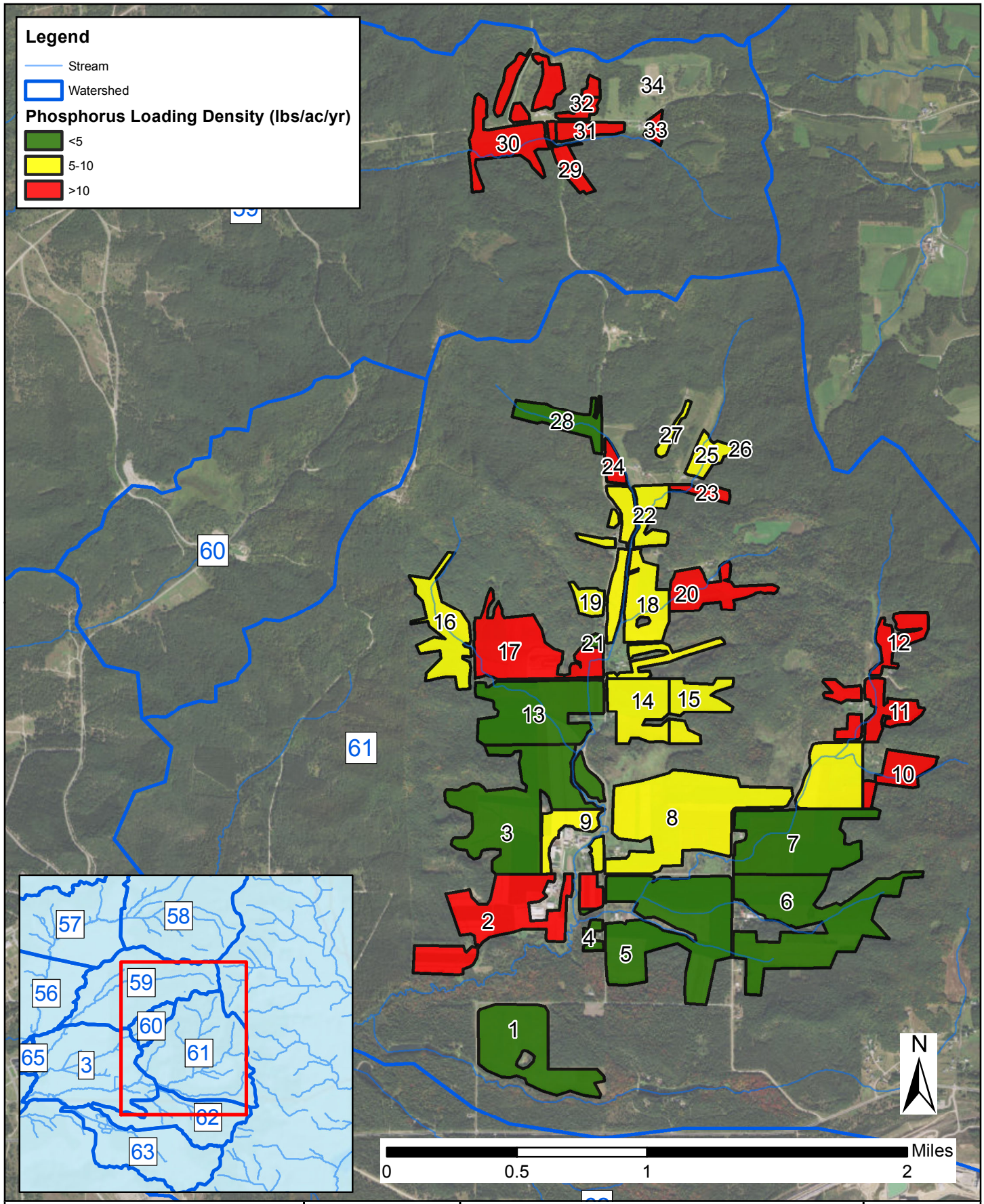
Map by: alombardino
Projection: NAD_1983_HARN_WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

BMPs

Fort McCoy Adaptive Management Plan

Figure 4-7



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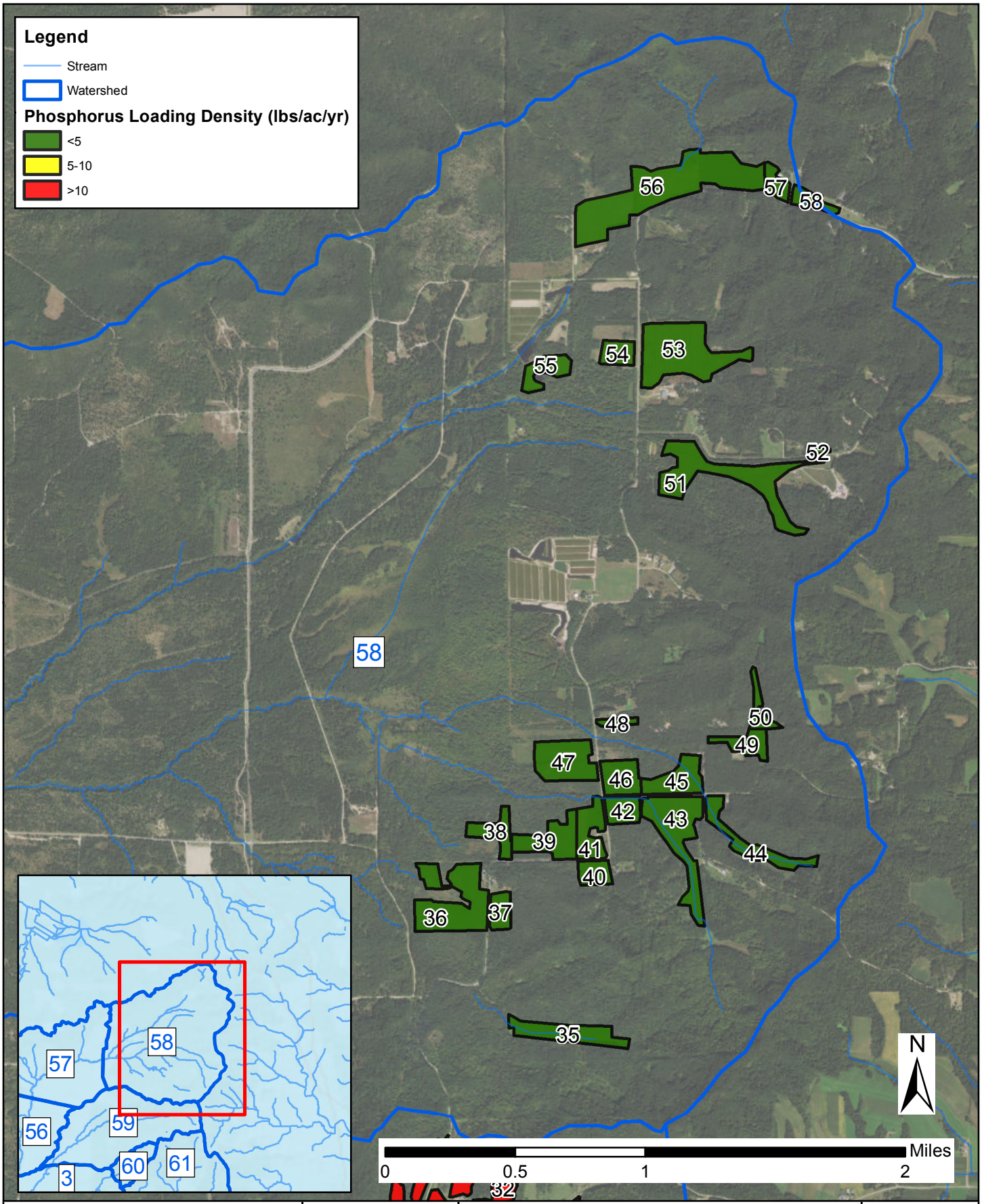
Project: USAMC 141425
Print Date: 7/24/2017

Map by: bkasch
Projection: NAD_1983_HARN_ WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

PHOSPHORUS LOADING DENSITY

Fort McCoy Adaptive Management Plan

Figure 4-8a



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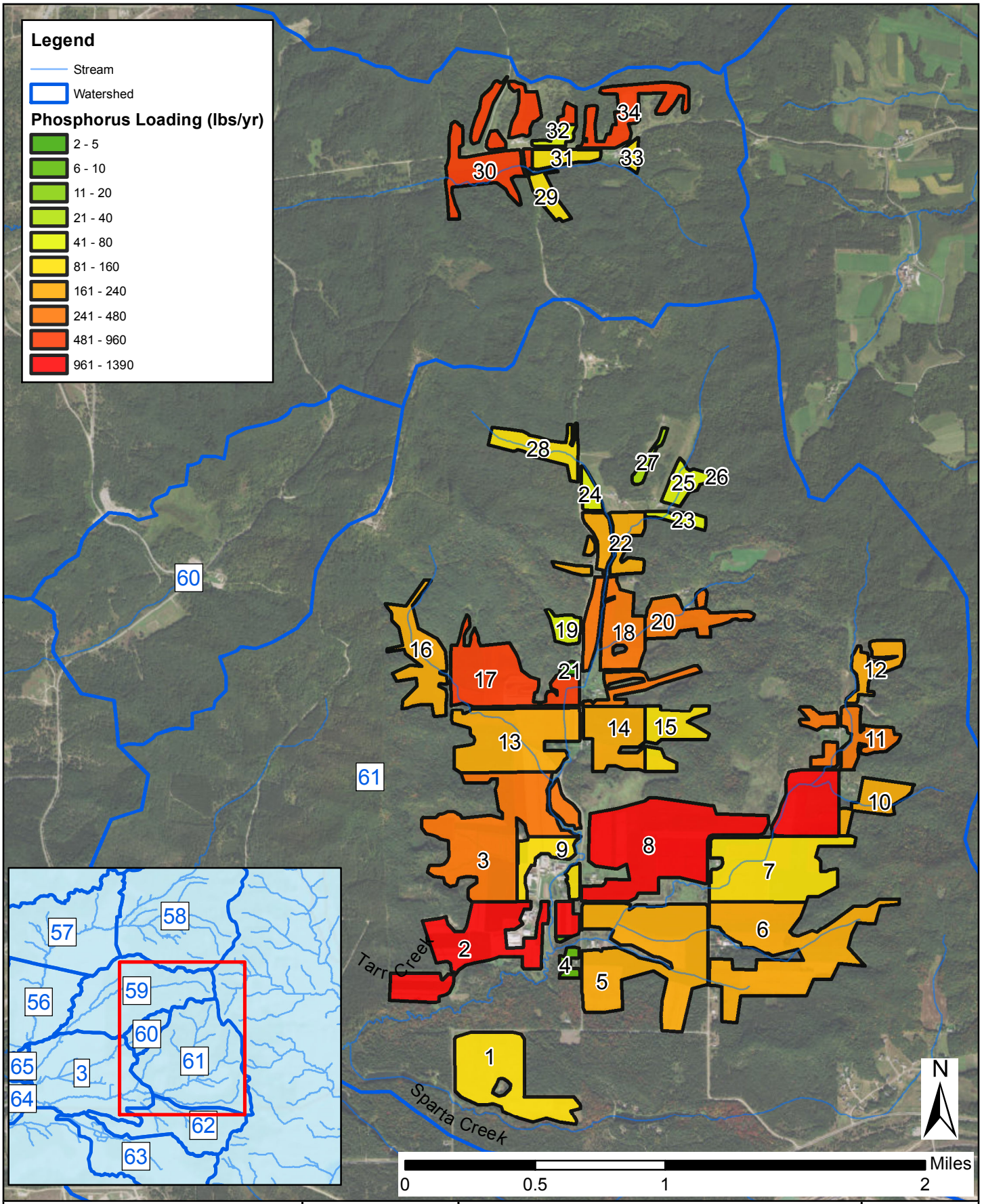
Map by: bkasch
Projection: NAD_1983_HARN_ WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

PHOSPHORUS LOADING DENSITY

Fort McCoy Adaptive Management Plan

Figure 4-8b



Path: C:\Projects\UZ\U\USAMC\141425\3-env-stdy-regs\Figure 4-9a Phosphorus Pounds.mxd

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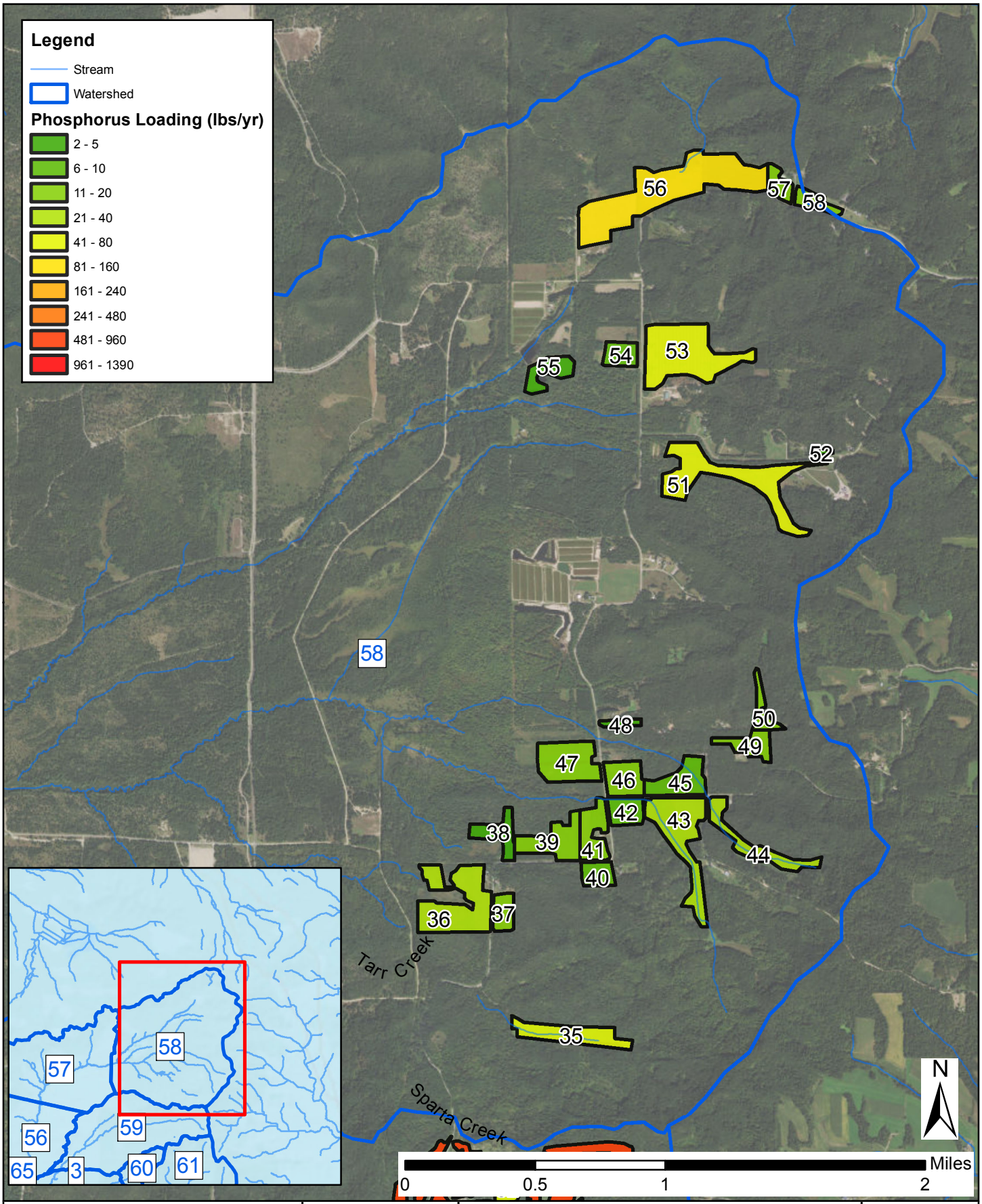
Project: USAMC 141425
Print Date: 7/25/2017

Map by: bkasch
Projection: NAD_1983_HARN_ WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

TOTAL PHOSPHORUS LOADING

Fort McCoy Adaptive Management Plan

Figure 4-9a



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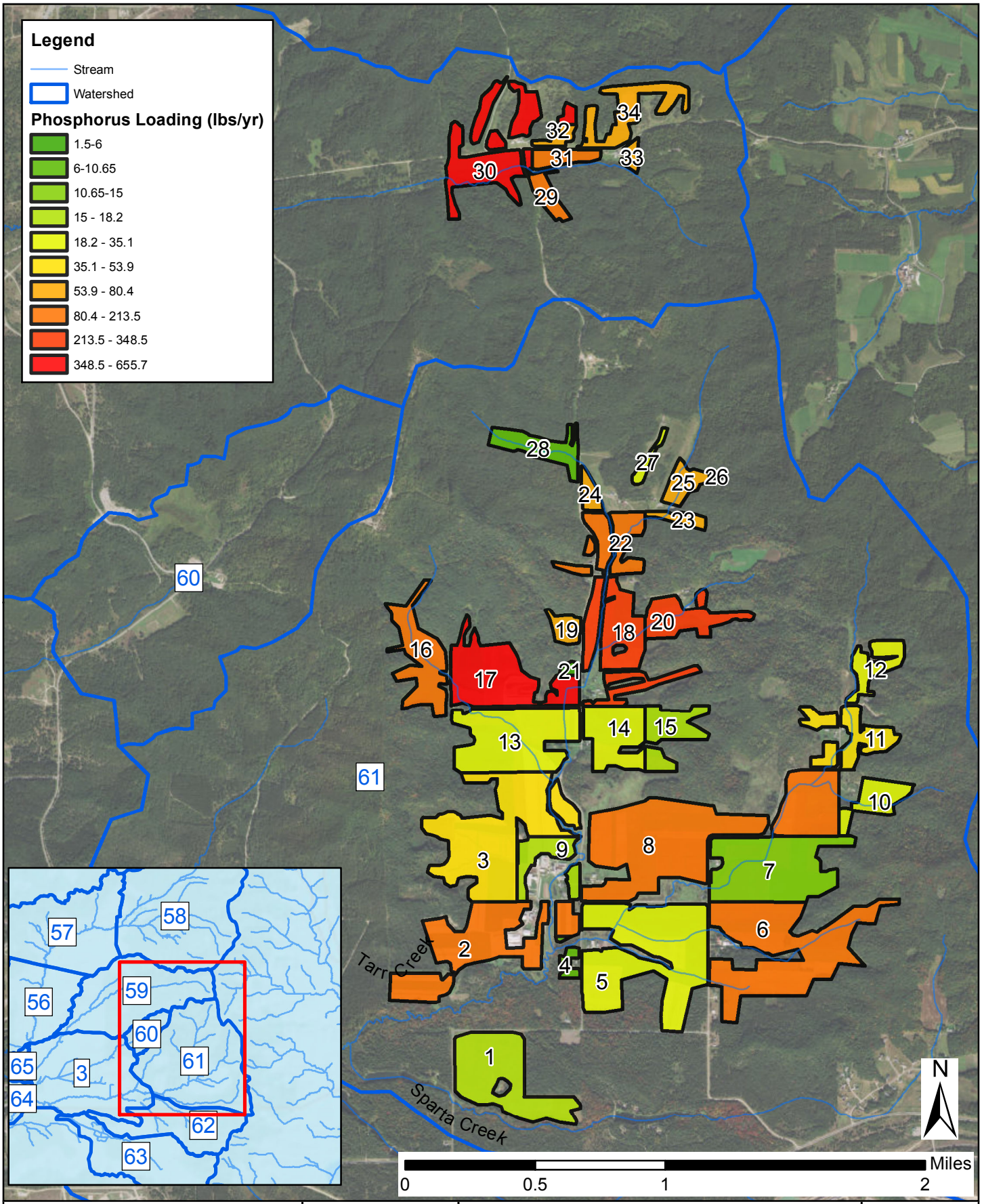
Projection: NAD_1983_HARN_ WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

TOTAL PHOSPHORUS LOADING

Fort McCoy Adaptive Management Plan

Figure 4-9b



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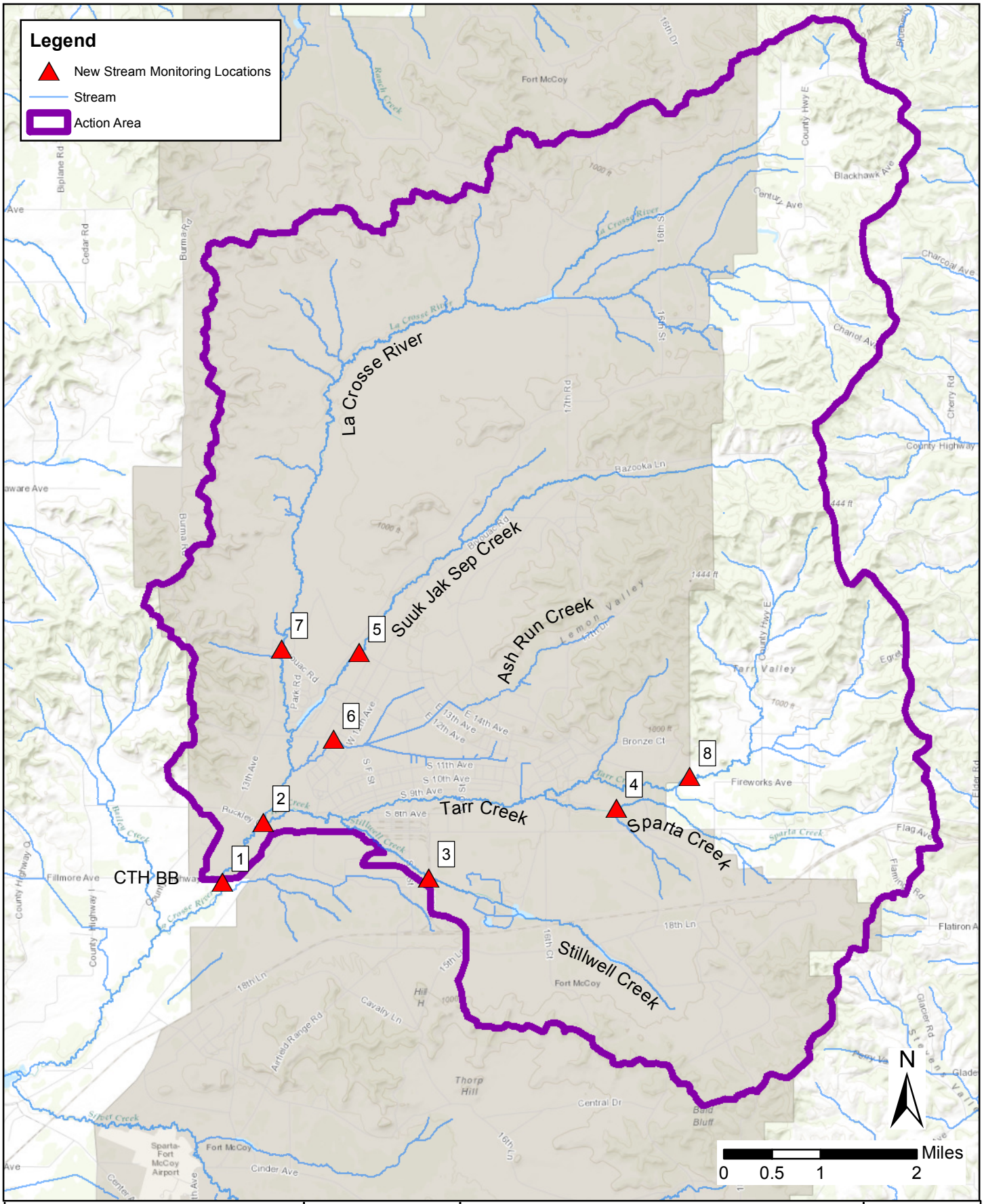
Project: USAMC 141425
Print Date: 7/27/2017

Map by: bkasch
Projection: NAD_1983_HARN_ WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

TOTAL PHOSPHORUS LOADING POST PROJECT

Fort McCoy Adaptive Management Plan

Figure 4-9c



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Project: USAMC 141425
Print Date: 7/20/2017

Map by: alombardino
Projection: NAD_1983_HARN_WISCRS_Monroe_County_Feet
Source: Fort McCoy GIS

PROPOSED STREAM SAMPLING LOCATIONS

Fort McCoy Adaptive Management Plan

Figure 4-10

Appendix A

WPDES Permit

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES

NOTICE OF FINAL DETERMINATION TO REISSUE

WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM (WPDES) PERMIT No. WI-0022420-07-0

COPY

Permittee: US Army Headquarters, Fort McCoy, 2171 S 8th Ave, Fort McCoy, WI, 54656-5000

Facility Where Discharge Occurs: US Army Headquarters, Fort McCoy WWTP, 2280 Treatment Drive, Fort McCoy, WI

Receiving Water And Location: the La Crosse River in the Upper La Crosse River Watershed of the Bad Axe-La Crosse River Basin in Monroe County

Brief Facility Description: The US Army at Fort McCoy operates a wastewater treatment system with a design flow of 2.26 million gallons per day (MGD). The actual annual average flow in 2012 was 0.2213 MGD. Preliminary treatment consists of a grit removal and screening via a comminutor. Two circular clarifiers provide primary clarification. Secondary treatment is provided by two trickling filters and an activated sludge system that is used for polishing. Final clarification is accomplished by two circular clarifiers. Phosphorus removal is performed by the addition of ferric chloride. After final clarification effluent is disinfected seasonally using ultraviolet (UV) light prior to discharge to the La Crosse River. Primary sludge is treated by anaerobic digestion. Activated sludge is thickened using a dissolved air flotation (DAF) system prior to treatment in the anaerobic digesters. Sludge is stored in drying beds and then land applied on Department approved fields. No major operational changes occurred during the last permit term. Significant effluent monitoring or limit changes for this permit term are as follows: 1) a reduction in the phosphorus limit during the next permit term and inclusion of an associated compliance schedule, 2) a shortening of the disinfection season from March-September of each year, to May-September of each year, and 3) an increase in the monitoring frequency for sludge due to an increase in sludge production.

Permit Drafter's Name, Address and Phone: Holly Heldstab, DNR, WCR Headquarters, 1300 W. Clairemont Ave, , Eau Claire, WI, 54701, (715) 839-1634

Basin Engineer's Name, Address, and Phone: Julia Stephenson, 3550 Mormon Coulee Road, , La Crosse, WI 54601, (608) 785-9981

Date Permit Signed/Issued: 6/25/2012
Date of Effectiveness: July 1, 2013
Date of Expiration: June 30, 2018

Following the public notice period the Department has made a final determination to reissue the WPDES permit for the above-named permittee for this existing discharge. The permit application information from the WPDES permit file, comments received on the proposed permit and applicable Wis. Adm. Codes were used as a basis for this final determination. The Department has the authority to issue, modify, suspend, or revoke WPDES permits and to establish effluent limitations and permit conditions under ch. 283, Stats.

Following is a summary of significant comments and any significant changes which have been made in the terms and conditions set forth in the draft permit:

Comments Received from the Applicant, Individuals or Groups and Any Permit Changes as Applicable
No comments received.

Comments Received from EPA or Other Government Agencies and Any Permit Changes as Applicable
No comments received.

As provided by s. 283.63, Stats., and ch. 203, Wis. Adm. Code, persons desiring further adjudicative review of this final determination may request a public adjudicatory hearing. A request shall be made by filing a verified petition for review with the Secretary of the Department of Natural Resources within 60 days of the date the permit was signed (see permit signature date above). Further information regarding the conduct and nature of public adjudicatory hearings may be obtained by contacting the Department of Natural Resources, Bureau of Watershed Management, WPDES Permits, Box 7921, Madison, Wisconsin 53707 and by review of ch. NR 203, Wis. Adm. Code, s. 283.63 Stats., and applicable code law.

Information on file for this permit action may be inspected and copied at either the above named permit drafter's address or the above named basin engineer's address, Monday through Friday (except holidays), between 9:00 a.m. and 3:30 p.m. Information on this permit action may also be obtained by calling the permit drafter at (715) 839-1634 or by writing to the Department. Reasonable costs (usually 20 cents per page) will be charged for copies of information in the file other than the public notice and fact sheet. Pursuant to the Americans with Disabilities Act, reasonable accommodation, including the provision of informational material in an alternative format, will be made to qualified individuals upon request.

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Scott Walker, Governor
Cathy Stepp, Secretary
Dan Baumann, Regional Director

West Central Region Headquarters
1300 W. Clairemont Ave.
Eau Claire, WI 54701
Telephone (715) 839-3700
FAX (715) 839-6076
TTY Access via relay - 711

COPY

Alan Balliett
Chief- Environmental Division
US Army Headquarters, Fort McCoy
Directorate of Support Srvs
2171 S 8th Ave
Fort McCoy, WI 54656-5136

SUBJECT: WPDES Permit Reissuance No. WI-0022420-07-0
US Army Headquarters, Fort McCoy WWTP, 2280 Treatment Drive, Fort McCoy, WI

Dear Permittee:

Your Wisconsin Pollutant Discharge Elimination System (WPDES) Permit is enclosed. The conditions of the enclosed permit reissuance were determined using the permit application, information from your WPDES permit file, other information available to the Department, comments received during the public notice period, and applicable Wisconsin Administrative Codes. All discharges from this facility and actions or reports relating thereto shall be in accordance with the terms and conditions of the enclosed permit.

This enclosed permit requires you to submit monitoring results to the Department on a periodic basis. Monitoring forms, which must be submitted electronically, are available on the Department's web page. Go to the DNR Switchboard page at http://dnr.wi.gov/topic/switchboard/ to log in and access your monitoring forms.

The WPDES permit program has been approved by the Administrator of the U.S. Environmental Protection Agency pursuant to Section 402(b) of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. Section 1342 (b)). The terms and conditions of the enclosed permit are accordingly subject to enforcement under ss. 283.89 and 283.91, Stats., and Section 309 of the Federal Act (33 U.S.C. Section 1319).

The Department has the authority under chs. 160 and 283, Stats., to establish effluent limitations, monitoring requirements, and other permit conditions for discharges to groundwater and surface waters of the State. The Department also has the authority to issue, reissue, modify, suspend, or revoke WPDES permits under ch. 283, Stats.

The enclosed permit contains water quality-based effluent limitations that are necessary to ensure the water quality standards for the La Crosse River are met. You may apply for a variance from the water quality standard used to derive the limitations pursuant to s. 283.15, Stats., by submitting an application to the Director of the Bureau of Water Quality, P.O. Box 7921, Madison, Wisconsin 53707 within 60 days of the date the permit was issued (see "Date Permit Signed/Issued" after the signature on the front page of the enclosed permit). Subchapter III of ch. NR 200, Wis. Adm. Code, specifies the procedures that must be followed and the information that must be included when submitting an application for a variance.

If your permit contains a stringent Water Quality Based Effluent Limit for Phosphorus, there is a Compliance Schedule requirement to complete a Phosphorus Operational Evaluation and Optimization Report. To streamline the Report preparation and review process the Department has prepared a Worksheet which should be used to develop the report. The worksheet may be found at : http://dnr.wi.gov/topic/surfacewater/phosphorus.html.

To challenge the reasonableness of or necessity for any term or condition of the enclosed permit, s. 283.63, Stats., and ch. NR 203, Wis. Adm. Code, require that you file a verified petition for review with the Secretary of the Department of Natural Resources within 60 days of the date the permit was issued (see "Date Permit Signed/Issued" after the signature on the front page of the enclosed permit). For permit-related decisions that are not reviewable pursuant to s. 283.63, Stats., it may be possible for permittees or other persons to obtain an administrative review pursuant to s. 227.42, Stats., and s. NR 2.05(5), Wis. Adm. Code, or a judicial review pursuant to s. 227.52, Stats. If you choose to pursue one of these options, you should know that Wisconsin Statutes and Administrative Code establish time periods within which requests to review Department decisions must be filed.

Sincerely,

Paul LaLiberte
Wastewater Field Supervisor

Dated: 6-25-13

cc: Cyndi Barr, WT/3
U.S. Fish and Wildlife Service (Electronic Copy via Email)
Julia Stephenson – LAX
Leanne Hinke – LAX

WISCONSIN
DEPT. OF NATURAL RESOURCES

COPY

WPDES PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

US Army Headquarters, Fort McCoy

is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility located at
2280 Treatment Drive., Fort McCoy, WI
to
the La Crosse River in the Upper La Crosse River Watershed of the Bad Axe-La Crosse River Basin in Monroe County

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By Paul LaLiberte
Paul LaLiberte
Wastewater Field Supervisor

6-25-13
Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - July 01, 2013 **EXPIRATION DATE - June 30, 2018**

TABLE OF CONTENTS

1 Influent Requirements

1.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
701	Representative influent samples shall be collected after the fine screen and prior to the Parshall Flume.

1.2 Monitoring Requirements

The permittee shall comply with the following monitoring requirements.

1.2.1 Sampling Point 701 - INFLUENT AFTER FINE SCREEN

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD_5, Total		mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	3/Week	24-Hr Flow Prop Comp	

2 Surface Water Requirements

2.1 Sampling Point(s)

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
001	Representative composite effluent samples shall be collected prior to UV disinfection; grab samples shall be collected at the Parshall flume after UV disinfection.

2.2 Monitoring Requirements and Effluent Limitations

The permittee shall comply with the following monitoring requirements and limitations.

2.2.1 Sampling Point (Outfall) 001 - EFFLUENT TO LA CROSSE RIVER

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Continuous	Continuous	
BOD_5, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD_5, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
BOD_5, Total	Weekly Avg	438 lbs/day	3/Week	Calculated	Limit applies May-October
BOD_5, Total	Weekly Avg	855 lbs/day	3/Week	Calculated	Limit applies November-April
Suspended Solids, Total	Monthly Avg	30 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	45 mg/L	3/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Weekly Avg	438 lbs/day	3/Week	Calculated	Limit applies May-October
Suspended Solids, Total	Weekly Avg	855 lbs/day	3/Week	Calculated	Limit applies November-April
pH Field	Daily Max	9.0 su	Daily	Grab	
pH Field	Daily Min	6.0 su	Daily	Grab	

Monitoring Requirements and Effluent Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total	Monthly Avg	1.0 mg/L	3/Week	24-Hr Flow Prop Comp	Interim limit applies throughout this permit term. Final phosphorus limits of 0.075 mg/L & 0.83 lbs/day (6 month average) and 0.225 mg/L (monthly average) become effective during the next permit term. See footnote 2.2.1.2 below.
Fecal Coliform	Geometric Mean	400 #/100 ml	2/Week	Grab	Limit & monitoring apply May-September
Nitrogen, Ammonia (NH_3-N) Total		mg/L	Monthly	24-Hr Flow Prop Comp	Monitoring required November-April
Dissolved Oxygen	Daily Min	7.0 mg/L	Daily	Grab	
Temperature Maximum		deg F	3/Week	Continuous	Monitoring required in 2016 only. See footnote 2.2.1.3 below.

2.2.1.1 Average Annual Design Flow

The average annual design flow of the permittee's wastewater treatment facility is 2.26 MGD.

2.2.1.2 Phosphorus Water Quality Based Effluent Limitations

See the Schedules section of this permit for more information on phosphorus effluent limitations.

The final water quality based effluent limits for phosphorus are 0.075 mg/L and 0.83 lbs/day 6-Month Average and 0.225 mg/L Monthly Average unless:

(A.) As part of the application for the next reissuance, or prior to filing the application, the permittee submits either: 1.) a watershed adaptive management plan and a completed Watershed Adaptive Management Request Form 3200-139; or 2.) an application for water quality trading; or 3.) an application for a variance; or 4.) new information or additional data that supports a recalculation of the numeric limitation; and

(B) The Department modifies, revokes and reissues, or reissues the permit to incorporate a revised limitation before the expiration of the compliance schedule*.

If Adaptive Management or Water Quality Trading is approved as part of the permit application for the next reissuance or as part of an application for a modification or revocation and reissuance, the plan and specification submittal, construction, and final effective dates for compliance with the total phosphorus WQBEL may change in the reissued or modified permit. In addition, the numeric value of the water quality based effluent limit may change based on new information (e.g. a TMDL) or additional data. If a variance is approved for the next reissuance, interim limits and conditions will be imposed in the reissued permit in accordance with s. 283.15, Stats., and applicable regulations. A permittee may apply for a variance to the phosphorus WQBEL at the next reissuance even if the permittee did not apply for a phosphorus variance as part of this permit reissuance.

If a water quality based effluent limit has taken effect in a permit, any increase in the limit is subject to s. NR 102.05(1) and ch. NR 207 Wis. Adm. Code.

When a six-month average effluent limit is specified for Total Phosphorus the applicable averaging periods are May through October and November through April.

*Note: The Department will prioritize reissuances and revocations, modifications, and reissuances of permits to allow permittees the opportunity to implement adaptive management or nutrient trading in a timely and effective manner.

2.2.1.3 Effluent Temperature Monitoring- Required in 2016

For manually measuring effluent temperature, grab samples should be collected at 6 evenly spaced intervals during the 24-hour period. Alternative sampling intervals may be approved if the permittee can show that the maximum effluent temperature is captured during the sampling interval. For monitoring temperature continuously, collect measurements in accordance with s. NR 218.04(13). This means that discrete measurements shall be recorded at intervals of not more than 15 minutes during the 24-hour period. In either case, report the maximum temperature measured during the day on the DMR. For seasonal discharges collect measurements either manually or continuously during the period of operation and report the daily maximum effluent temperature on the DMR.

3 Land Application Requirements

3.1 Sampling Point(s)

The discharge(s) shall be limited to land application of the waste type(s) designated for the listed sampling point(s) on Department approved land spreading sites or by hauling to another facility.

Sampling Point Designation	
Sampling Point Number	**Sampling Point Location, WasteType/Sample Contents and Treatment Description (as applicable)**
002	Representative samples of cake sludge shall be collected quarterly and monitored for Lists 1, 2, 3, & 4 and once in 2014 for PCBs.
003	Representative samples of liquid sludge shall be monitored for Lists 1, 2, 3 and 4 each time it is removed from the digester.

3.2 Monitoring Requirements and Limitations

The permittee shall comply with the following monitoring requirements and limitations.

3.2.1 Sampling Point (Outfall) 002 - CAKE SLUDGE and Sampling Point (Outfall) 003 – LIQUID SLUDGE from Digester

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Quarterly	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Quarterly	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Quarterly	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Quarterly	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Quarterly	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Quarterly	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Quarterly	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Quarterly	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Quarterly	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Quarterly	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Quarterly	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Quarterly	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Quarterly	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Quarterly	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Quarterly	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Quarterly	Composite	
Nitrogen, Total Kjeldahl		Percent	Quarterly	Composite	
Nitrogen, Ammonium (NH_4-N) Total		Percent	Quarterly	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Phosphorus, Total		Percent	Quarterly	Composite	
Phosphorus, Water Extractable		% of Tot P	Quarterly	Composite	
Potassium, Total Recoverable		Percent	Quarterly	Composite	
PCB Total Dry Wt	Ceiling	50 mg/kg	Quarterly	Composite	Required once in 2014 at Outfall 002
PCB Total Dry Wt	High Quality	10 mg/kg	Quarterly	Composite	Required once in 2014 at Outfall 002

Other Sludge Requirements	
Sludge Requirements	**Sample Frequency**
List 3 Requirements – Pathogen Control: The requirements in List 3 shall be met prior to land application of sludge.	**Quarterly**
List 4 Requirements – Vector Attraction Reduction: The vector attraction reduction shall be satisfied prior to, or at the time of land application as specified in List 4.	**Quarterly**

3.2.1.1 List 2 Analysis

If the monitoring frequency for List 2 parameters is more frequent than "Annual" then the sludge may be analyzed for the List 2 parameters just prior to each land application season rather than at the more frequent interval specified.

3.2.1.2 Changes in Feed Sludge Characteristics

If a change in feed sludge characteristics, treatment process, or operational procedures occurs which may result in a significant shift in sludge characteristics, the permittee shall reanalyze the sludge for List 1, 2, 3 and 4 parameters each time such change occurs.

3.2.1.3 Multiple Sludge Sample Points (Outfalls)

If there are multiple sludge sample points (outfalls), but the sludges are not subject to different sludge treatment processes, then a separate List 2 analysis shall be conducted for each sludge type which is land applied, just prior to land application, and the application rate shall be calculated for each sludge type. In this case, List 1, 3, and 4 and PCBs need only be analyzed on a single sludge type, at the specified frequency. If there are multiple sludge sample points (outfalls), due to multiple treatment processes, List 1, 2, 3 and 4 and PCBs shall be analyzed for each sludge type at the specified frequency.

3.2.1.4 Sludge Which Exceeds the High Quality Limit

Cumulative pollutant loading records shall be kept for all bulk land application of sludge which does not meet the high quality limit for any parameter. This requirement applies for the entire calendar year in which any exceedance of Table 3 of s. NR 204.07(5)(c), is experienced. Such loading records shall be kept for all List 1 parameters for each site land applied in that calendar year. The formula to be used for calculating cumulative loading is as follows:

[(Pollutant concentration (mg/kg) x dry tons applied/ac) ÷ 500] + previous loading (lbs/acre) = cumulative lbs pollutant per acre

When a site reaches 90% of the allowable cumulative loading for any metal established in Table 2 of s. NR 204.07(5)(b), the Department shall be so notified through letter or in the comment section of the annual land application report (3400-55).

3.2.1.5 Sludge Analysis for PCBs

The permittee shall analyze the sludge for Total PCBs one time during **2014 at Outfall 002**. The results shall be reported as "PCB Total Dry Wt". Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with Table EM in s. NR 219.04, Wis. Adm. Code and the conditions specified in Standard Requirements of this permit. PCB results shall be submitted by January 31, following the specified year of analysis.

3.2.1.6 Lists 1, 2, 3, and 4

List 1 **TOTAL SOLIDS AND METALS** See the Monitoring Requirements and Limitations table above for monitoring frequency and limitations for the List 1 parameters
Solids, Total (percent)
Arsenic, mg/kg (dry weight)
Cadmium, mg/kg (dry weight)
Copper, mg/kg (dry weight)
Lead, mg/kg (dry weight)
Mercury, mg/kg (dry weight)
Molybdenum, mg/kg (dry weight)
Nickel, mg/kg (dry weight)
Selenium, mg/kg (dry weight)
Zinc, mg/kg (dry weight)

List 2 **NUTRIENTS** See the Monitoring Requirements and Limitations table above for monitoring frequency for the List 2 parameters
Solids, Total (percent)
Nitrogen Total Kjeldahl (percent)
Nitrogen Ammonium (NH4-N) Total (percent)
Phosphorus Total as P (percent)
Phosphorus, Water Extractable (as percent of Total P)
Potassium Total Recoverable (percent)

List 3
PATHOGEN CONTROL FOR CLASS B SLUDGE

The permittee shall implement pathogen control as listed in List 3. The Department shall be notified of the pathogen control utilized and shall be notified when the permittee decides to utilize alternative pathogen control.

The following requirements shall be met prior to land application of sludge.

Parameter	Unit	Limit
Fecal Coliform*	MPN/gTS or CFU/gTS	2,000,000
OR, ONE OF THE FOLLOWING PROCESS OPTIONS		
Aerobic Digestion	Air Drying	
Anaerobic Digestion	Composting	
Alkaline Stabilization	PSRP Equivalent Process	

* The Fecal Coliform limit shall be reported as the geometric mean of 7 discrete samples on a dry weight basis.

List 4
VECTOR ATTRACTION REDUCTION

The permittee shall implement any one of the vector attraction reduction options specified in List 4. The Department shall be notified of the option utilized and shall be notified when the permittee decides to utilize an alternative option.

One of the following shall be satisfied prior to, or at the time of land application as specified in List 4.

Option	Limit	Where/When it Shall be Met
Volatile Solids Reduction	≥38%	Across the process
Specific Oxygen Uptake Rate	≤1.5 mg O_2/hr/g TS	On aerobic stabilized sludge
Anaerobic bench-scale test	<17 % VS reduction	On anaerobic digested sludge
Aerobic bench-scale test	<15 % VS reduction	On aerobic digested sludge
Aerobic Process	>14 days, Temp >40°C and Avg. Temp > 45°C	On composted sludge
pH adjustment	>12 S.U. (for 2 hours) and >11.5 (for an additional 22 hours)	During the process
Drying without primary solids	>75 % TS	When applied or bagged
Drying with primary solids	>90 % TS	When applied or bagged
Equivalent Process	Approved by the Department	Varies with process
Injection	-	When applied
Incorporation	-	Within 6 hours of application

3.2.1.7 Daily Land Application Log

Daily Land Application Log		
Discharge Monitoring Requirements and Limitations The permittee shall maintain a daily land application log for biosolids land applied each day when land application occurs. The following minimum records must be kept, in addition to all analytical results for the biosolids land applied. The log book records shall form the basis for the annual land application report requirements.		
Parameters	**Units**	**Sample Frequency**
DNR Site Number(s)	Number	Daily as used
Outfall number applied	Number	Daily as used
Acres applied	Acres	Daily as used
Amount applied	As appropriate * /day	Daily as used
Application rate per acre	unit */acre	Daily as used
Nitrogen applied per acre	lb/acre	Daily as used
Method of Application	Injection, Incorporation, or surface applied	Daily as used

*gallons, cubic yards, dry US Tons or dry Metric Tons

4 Schedules

4.1 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

The permittee shall comply with the WQBELs for Phosphorus as specified. No later than 30 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification requirement.

Required Action	Date Due
Operational Evaluation Report: The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the treatment plant during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by 07/01/2016. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than 07/01/2016 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report. If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBEL by 07/01/2016 and is not required to comply with the milestones identified below for years 3 through 9 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Treatment Plant Upgrade to Meet WQBELs','Final Plans and Specifications, 'Complete Construction, 'Achieve Compliance').	07/01/2014
Study of Feasible Alternatives: If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs sooner than 07/01/2022.	07/01/2014
Compliance Alternatives, Source Reduction, Improvements and Modifications Status: The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus WQBELs.	07/01/2015
Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment facility is necessary to achieve final phosphorus WQBELs, the submittal shall include a preliminary engineering design	07/01/2016

report. If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 without the Adaptive Management Plan. If water quality trading will be undertaken, the plan must state that trading will be pursued.	
Final Compliance Alternatives Plan: The permittee shall submit a final compliance alternatives plan to the Department. If the plan concludes upgrading of the permittee's wastewater treatment is necessary to meet final phosphorus WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code. If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, Wis. Adm. Code. If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	07/01/2017
Progress Report on Plans & Specifications: Submit progress report regarding the progress of preparing final plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	07/01/2018
Final Plans and Specifications: Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.) Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	07/01/2019
Treatment Plant Upgrade to Meet WQBELs: The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	10/01/2019
Construction Upgrade Progress Report #1: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	10/01/2020
Construction Upgrade Progress Report #2: The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	10/01/2021
Complete Construction: The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface	06/01/2022

Water section of this permit.	
Achieve Compliance: The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit.	07/01/2022

5 Standard Requirements

NR 205, Wisconsin Administrative Code: The conditions in ss. NR 205.07(1) and NR 205.07(2), Wis. Adm. Code, are included by reference in this permit, except for s. NR 205.07(1)(v) and (2)(d) regarding bypasses and overflows which are specified below under the subsections titled 'Bypassing' and 'Bypass Due to Essential Construction or Maintenance (Controlled Diversions)'. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(2).

5.1 Reporting and Monitoring Requirements

5.1.1 Monitoring Results

Monitoring results obtained during the previous month shall be summarized and reported on a Department Wastewater Discharge Monitoring Report. The report may require reporting of any or all of the information specified below under 'Recording of Results'. This report is to be returned to the Department no later than the date indicated on the form. A copy of the Wastewater Discharge Monitoring Report Form or an electronic file of the report shall be retained by the permittee.

Monitoring results shall be reported on an electronic discharge monitoring report (eDMR). The eDMR shall be certified electronically by a principal executive officer, a ranking elected official or other duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on the Wastewater Discharge Monitoring Report.

The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

5.1.2 Sampling and Testing Procedures

Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified or registered in accordance with the requirements of ch. NR 149, Wis. Adm. Code. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140, Wis. Adm. Code. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, Wis. Adm. Code, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

5.1.3 Recording of Results

The permittee shall maintain records which provide the following information for each effluent measurement or sample taken:

- the date, exact place, method and time of sampling or measurements;
- the individual who performed the sampling or measurements;
- the date the analysis was performed;
- the individual who performed the analysis;
- the analytical techniques or methods used; and
- the results of the analysis.

5.1.4 Reporting of Monitoring Results

The permittee shall use the following conventions when reporting effluent monitoring results:

- Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 0.1 mg/L, report the pollutant concentration as < 0.1 mg/L.

- Pollutant concentrations equal to or greater than the limit of detection, but less than the limit of quantitation, shall be reported and the limit of quantitation shall be specified.

- For purposes of calculating NR 101 fees, the 2 mg/l lower reporting limits for BOD_5 and Total Suspended Solids shall be considered to be limits of quantitation

- For the purposes of reporting a calculated result, average or a mass discharge value, the permittee may substitute a 0 (zero) for any pollutant concentration that is less than the limit of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

5.1.5 Compliance Maintenance Annual Reports

Compliance Maintenance Annual Reports (CMAR) shall be completed using information obtained over each calendar year regarding the wastewater conveyance and treatment system. The CMAR shall be submitted by the permittee in accordance with ch. NR 208, Wis. Adm. Code, by June 30, each year on an electronic report form provided by the Department.

In the case of a publicly owned treatment works, a resolution shall be passed by the governing body and submitted as part of the CMAR, verifying its review of the report and providing responses as required. Private owners of wastewater treatment works are not required to pass a resolution; but they must provide an Owner Statement and responses as required, as part of the CMAR submittal.

A separate CMAR certification document, that is not part of the electronic report form, shall be mailed to the Department at the time of electronic submittal of the CMAR. The CMAR certification shall be signed and submitted by an authorized representative of the permittee. The certification shall be submitted by mail. The certification shall verify the electronic report is complete, accurate and contains information from the owner's treatment works.

5.1.6 Records Retention

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application. All pertinent sludge information, including permit application information and other documents specified in this permit or s. NR 204.06(9), Wis. Adm. Code shall be retained for a minimum of 5 years.

5.1.7 Other Information

Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or correct information to the Department.

5.2 System Operating Requirements

5.2.1 Noncompliance Notification

- The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance:
  - any noncompliance which may endanger health or the environment;
  - any violation of an effluent limitation resulting from an unanticipated bypass;
  - any violation of an effluent limitation resulting from an upset; and
  - any violation of a maximum discharge limitation for any of the pollutants listed by the Department in the permit, either for effluent or sludge.

- A written report describing the noncompliance shall also be submitted to the Department's regional office within 5 days after the permittee becomes aware of the noncompliance. On a case-by-case basis, the Department may waive the requirement for submittal of a written report within 5 days and instruct the permittee to submit the written report with the next regularly scheduled monitoring report. In either case, the written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

NOTE: Section 292.11(2)(a), Wisconsin Statutes, requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the Department of Natural Resources **immediately** of any discharge not authorized by the permit. The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call DNR's 24-hour HOTLINE at **1-800-943-0003**

5.2.2 Flow Meters

Flow meters shall be calibrated annually, as per s. NR 218.06, Wis. Adm. Code.

5.2.3 Raw Grit and Screenings

All raw grit and screenings shall be disposed of at a properly licensed solid waste facility or picked up by a licensed waste hauler. If the facility or hauler are located in Wisconsin, then they shall be licensed under chs. NR 500-536, Wis. Adm. Code.

5.2.4 Sewer Cleaning Debris and Materials

All debris and material removed from cleaning sanitary sewers shall be managed to prevent nuisances, run-off, ground infiltration or prohibited discharges.

- Debris and solid waste shall be dewatered, dried and then disposed of at a licensed solid waste facility
- Liquid waste from the cleaning and dewatering operations shall be collected and disposed of at a permitted wastewater treatment facility
- Combination waste including liquid waste along with debris and solid waste may be disposed of at a licensed solid waste facility or wastewater treatment facility willing to accept the waste

5.2.5 Sludge Management

All sludge management activities shall be conducted in compliance with ch. NR 204 "Domestic Sewage Sludge Management", Wis. Adm. Code.

5.2.6 Prohibited Wastes

Under no circumstances may the introduction of wastes prohibited by s. NR 211.10, Wis. Adm. Code, be allowed into the waste treatment system. Prohibited wastes include those:

- which create a fire or explosion hazard in the treatment work;
- which will cause corrosive structural damage to the treatment work;
- solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment work;
- wastewaters at a flow rate or pollutant loading which are excessive over relatively short time periods so as to cause a loss of treatment efficiency; and
- changes in discharge volume or composition from contributing industries which overload the treatment works or cause a loss of treatment efficiency.

5.2.7 Bypassing

Except as provided in the subsection below titled 'Bypass Due to Essential Construction or Maintenance (Controlled Diversions)', any bypass of wastewater at the treatment works or overflow from the collection system is prohibited, and the Department may take enforcement action against a permittee for such occurrences under s. 283.89, Wis. Stats., unless all of the following occur:

- The bypass or overflow was unavoidable to prevent loss of life, personal injury, or severe property damage.
- There were no feasible alternatives to the bypass or overflow, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass or overflow which occurred during normal periods of equipment downtime or preventive maintenance.
- The permittee notifies the department of the unscheduled bypass or overflow. The permittee shall notify the department within 24 hours of initiation of the bypass or overflow occurrence by telephone, voicemail, fax or e-mail. Except for an approved blending event, within 5 days of conclusion of the bypass or overflow occurrence, the permittee shall submit to the department in writing, all of the following information:
  - Reason the bypass or overflow occurred, or explanation of other contributing circumstances that resulted in the overflow event. If the overflow or bypass is associated with wet weather, provide data on the amount and duration of the rainfall or snow melt for each separate event.
  - Date the bypass or overflow occurred.
  - Location where the bypass or overflow occurred.
  - Duration of the bypass or overflow and estimated wastewater volume discharged.
  - Steps taken or the proposed corrective action planned to prevent similar future occurrences.
  - Any other information the permittee believes is relevant.

5.2.8 Bypass Due to Essential Construction or Maintenance (Controlled Diversion)

A bypass which occurs due to essential construction or maintenance to assure efficient operation of the treatment works is allowed but only if the bypass complies with all effluent limitations in this permit. For these bypasses, any wastewater that is diverted around a treatment unit or treatment process shall be recombined with wastewater that is not diverted prior to discharge.

Any bypass due to essential maintenance or construction to assure efficient operation of the treatment works shall be documented in writing and the record shall be made available to the Department upon request.

5.2.9 Ammonia Limit Not Needed - Continue to Optimize Removal of Ammonia

Applying the procedures in s. NR 106.05, Wis. Adm. Code, to ammonia data that is representative of the current operations of the wastewater treatment plant resulted in a determination that ammonia effluent limits are not necessary in this permit. Pursuant to NR 106.33, throughout the term of this permit, the wastewater treatment plant shall continue to be operated in a manner that optimizes the removal of ammonia within the design capabilities of the wastewater treatment plant.

5.2.10 Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. The wastewater treatment facility shall be under the direct supervision of a state certified operator as required in s. NR 108.06(2), Wis. Adm. Code. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114, Wis. Adm. Code, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

5.3 Surface Water Requirements

5.3.1 Permittee-Determined Limit of Quantitation Incorporated into this Permit

For pollutants with water quality-based effluent limits below the Limit of Quantitation (LOQ) in this permit, the LOQ calculated by the permittee and reported on the Discharge Monitoring Reports (DMRs) is incorporated by reference into this permit. The LOQ shall be reported on the DMRs, shall be the lowest quantifiable level practicable, and shall be no greater than the minimum level (ML) specified in or approved under 40 CFR Part 136 for the pollutant at the time this permit was issued, unless this permit specifies a higher LOQ.

5.3.2 Appropriate Formulas for Effluent Calculations

The permittee shall use the following formulas for calculating effluent results to determine compliance with average concentration limits and mass limits and total load limits:

Weekly/Monthly/Six-Month/Annual Average Concentration = the sum of all daily results for that week/month/six-month/year, divided by the number of results during that time period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Weekly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the month.

Six-Month Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the six-month period. [Note: When a six-month average effluent limit is specified for Total Phosphorus the applicable periods are May through October and November through April.]

Annual Average Mass Discharge (lbs/day): Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34, then average the daily mass values for the entire year.

Total Monthly Discharge: = monthly average concentration (mg/L) x total flow for the month (MG/month) x 8.34.

Total Annual Discharge: = sum of total monthly discharges for the calendar year.

12-Month Rolling Sum of Total Monthly Discharge: = the sum of the most recent 12 consecutive months of Total Monthly Discharges.

5.3.3 Effluent Temperature Requirements

Weekly Average Temperature – The permittee shall use the following formula for calculating effluent results to determine compliance with the weekly average temperature limit (as applicable): Weekly Average Temperature = the sum of all daily maximum results for that week divided by the number of daily maximum results during that time period.

Cold Shock Standard – Water temperatures of the discharge shall be controlled in a manner as to protect fish and aquatic life uses from the deleterious effects of cold shock. 'Cold Shock' means exposure of aquatic organisms to a rapid decrease in temperature and a sustained exposure to low temperature that induces abnormal behavior or physiological performance and may lead to death.

Rate of Temperature Change Standard – Temperature of a water of the state or discharge to a water of the state may not be artificially raised or lowered at such a rate that it causes detrimental health or reproductive effects to fish or aquatic life of the water of the state.

5.3.4 Visible Foam or Floating Solids

There shall be no discharge of floating solids or visible foam in other than trace amounts.

5.3.5 Percent Removal

During any 30 consecutive days, the average effluent concentrations of BOD_5 and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively. This requirement does not apply to removal of total suspended solids if the permittee operates a lagoon system and has received a variance for suspended solids granted under NR 210.07(2), Wis. Adm. Code.

5.3.6 Fecal Coliforms

The limit for fecal coliforms shall be expressed as a monthly geometric mean.

5.3.7 Seasonal Disinfection

Disinfection shall be provided from May 1 through September 30 of each year. Monitoring requirements and the limitation for fecal coliforms apply only during the period in which disinfection is required. Whenever chlorine is used for disinfection or other uses, the limitations and monitoring requirements for residual chlorine shall apply. A dechlorination process shall be in operation whenever chlorine is used.

5.4 Land Application Requirements

5.4.1 Sludge Management Program Standards And Requirements Based Upon Federally Promulgated Regulations

In the event that new federal sludge standards or regulations are promulgated, the permittee shall comply with the new sludge requirements by the dates established in the regulations, if required by federal law, even if the permit has not yet been modified to incorporate the new federal regulations.

5.4.2 General Sludge Management Information

The General Sludge Management Form 3400-48 shall be completed and submitted prior to any significant sludge management changes.

5.4.3 Sludge Samples

All sludge samples shall be collected at a point and in a manner which will yield sample results which are representative of the sludge being tested, and collected at the time which is appropriate for the specific test.

5.4.4 Land Application Characteristic Report

Each report shall consist of a Characteristic Form 3400-49 and Lab Report. The Characteristic Report Form 3400-49 shall be submitted electronically by January 31 following each year of analysis.

Following submittal of the electronic Characteristic Report Form 3400-49, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report is true, accurate and complete. The Lab Report must be sent directly to the facility's DNR sludge representative or basin engineer unless approval for not submitting the lab reports has been given.

The permittee shall use the following convention when reporting sludge monitoring results: Pollutant concentrations less than the limit of detection shall be reported as < (less than) the value of the limit of detection. For example, if a substance is not detected at a detection limit of 1.0 mg/kg, report the pollutant concentration as < 1.0 mg/kg .

All results shall be reported on a dry weight basis.

5.4.5 Calculation of Water Extractable Phosphorus

When sludge analysis for Water Extractable Phosphorus is required by this permit, the permittee shall use the following formula to calculate and report Water Extractable Phosphorus:
Water Extractable Phosphorus (% of Total P) =
[Water Extractable Phosphorus (mg/kg, dry wt) ÷ Total Phosphorus (mg/kg, dry wt)] x 100

5.4.6 Monitoring and Calculating PCB Concentrations in Sludge

When sludge analysis for "PCB, Total Dry Wt" is required by this permit, the PCB concentration in the sludge shall be determined as follows.

Either congener-specific analysis or Aroclor analysis shall be used to determine the PCB concentration. The permittee may determine whether Aroclor or congener specific analysis is performed. Analyses shall be performed in accordance with the following provisions and Table EM in s. NR 219.04, Wis. Adm. Code.

- EPA Method 1668 may be used to test for all PCB congeners. If this method is employed, all PCB congeners shall be delineated. Non-detects shall be treated as zero. The values that are between the limit of detection and the limit of quantitation shall be used when calculating the total value of all congeners. All results shall be added together and the total PCB concentration by dry weight reported. **Note**: It is recognized that a number of the congeners will co-elute with others, so there will not be 209 results to sum.
- EPA Method 8082A shall be used for PCB-Aroclor analysis and may be used for congener specific analysis as well. If congener specific analysis is performed using Method 8082A, the list of congeners tested shall include at least congener numbers 5, 18, 31, 44, 52, 66, 87, 101, 110, 138, 141, 151, 153, 170, 180, 183, 187, and 206 plus any other additional congeners which might be reasonably expected to occur in the particular sample. For either type of analysis, the sample shall be extracted using the Soxhlet extraction (EPA Method 3540C) (or the Soxhlet Dean-Stark modification) or the pressurized fluid extraction (EPA Method 3545A). If Aroclor analysis is performed using Method 8082A, clean up steps of the extract shall be performed as necessary to remove interference and to achieve as close to a limit of detection of 0.11 mg/kg as possible. Reporting protocol, consistent with s. NR 106.07(6)(e), should be as follows: If all Aroclors are less than the LOD, then the Total PCB Dry Wt result should be reported as less than the highest LOD. If a single Aroclor is detected then that is what should be reported for the Total PCB result. If multiple Aroclors are detected, they should be summed and reported as Total PCBs. If congener specific analysis is done using Method 8082A, clean up steps of the extract shall be

performed as necessary to remove interference and to achieve as close to a limit of detection of 0.003 mg/kg as possible for each congener. If the aforementioned limits of detection cannot be achieved after using the appropriate clean up techniques, a reporting limit that is achievable for the Aroclors or each congener for the sample shall be determined. This reporting limit shall be reported and qualified indicating the presence of an interference. The lab conducting the analysis shall perform as many of the following methods as necessary to remove interference:

3620C – Florisil	3611B - Alumina
3640A - Gel Permeation	3660B - Sulfur Clean Up (using copper shot instead of powder)
3630C - Silica Gel	3665A - Sulfuric Acid Clean Up

5.4.7 Annual Land Application Report

Land Application Report Form 3400-55 shall be submitted electronically by January 31, each year whether or not non-exceptional quality sludge is land applied. Non-exceptional quality sludge is defined in s. NR 204.07(4), Wis. Adm. Code. Following submittal of the electronic Annual Land Application Report Form 3400-55, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

5.4.8 Other Methods of Disposal or Distribution Report

The permittee shall submit electronically the Other Methods of Disposal or Distribution Report Form 3400-52 by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied. Following submittal of the electronic Report Form 3400-52, this form shall be certified electronically via the 'eReport Certify' page by a principal executive officer, ranking elected official or duly authorized representative. The 'eReport Certify' page certifies that the electronic report form is true, accurate and complete.

5.4.9 Approval to Land Apply

Bulk non-exceptional quality sludge as defined in s. NR 204.07(4), Wis. Adm. Code, may not be applied to land without a written approval letter or Form 3400-122 from the Department unless the Permittee has obtained permission from the Department to self approve sites in accordance with s. NR 204.06 (6), Wis. Adm. Code. Analysis of sludge characteristics is required prior to land application. Application on frozen or snow covered ground is restricted to the extent specified in s. NR 204.07(3) (l), Wis. Adm. Code.

5.4.10 Soil Analysis Requirements

Each site requested for approval for land application must have the soil tested prior to use. Each approved site used for land application must subsequently be soil tested such that there is at least one valid soil test in the four years prior to land application. All soil sampling and submittal of information to the testing laboratory shall be done in accordance with UW Extension Bulletin A-2100. The testing shall be done by the UW Soils Lab in Madison or Marshfield, WI or at a lab approved by UW. The test results including the crop recommendations shall be submitted to the DNR contact listed for this permit, as they are available. Application rates shall be determined based on the crop nitrogen recommendations and with consideration for other sources of nitrogen applied to the site.

5.4.11 Land Application Site Evaluation

For non-exceptional quality sludge, as defined in s. NR 204.07(4), Wis. Adm. Code, a Land Application Site Request Form 3400-053 shall be submitted to the Department for the proposed land application site. The Department will evaluate the proposed site for acceptability and will either approve or deny use of the proposed site. The permittee may obtain permission to approve their own sites in accordance with s. NR 204.06(6), Wis. Adm. Code.

5.4.12 Class B Sludge: Fecal Coliform Limitation

Compliance with the fecal coliform limitation for Class B sludge shall be demonstrated by calculating the geometric mean of at least 7 separate samples. (Note that a Total Solids analysis must be done on each sample). The geometric mean shall be less than 2,000,000 MPN or CFU/g TS. Calculation of the geometric mean can be done using one of the following 2 methods.

Method 1:

Geometric Mean = $(X_1 \times X_2 \times X_3 \ldots \times X_n)^{1/n}$

Where X = Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Method 2:

Geometric Mean = $\text{antilog}[(X_1 + X_2 + X_3 \ldots + X_n) \div n]$

Where X = $\log_{10}$ of Coliform Density value of the sludge sample, and where n = number of samples (at least 7)

Example for Method 2

Sample Number	Coliform Density of Sludge Sample	$\log_{10}$
1	6.0×10^5	5.78
2	4.2×10^6	6.62
3	1.6×10^6	6.20
4	9.0×10^5	5.95
5	4.0×10^5	5.60
6	1.0×10^6	6.00
7	5.1×10^5	5.71

The geometric mean for the seven samples is determined by averaging the $\log_{10}$ values of the coliform density and taking the antilog of that value.

$(5.78 + 6.62 + 6.20 + 5.95 + 5.60 + 6.00 + 5.71) \div 7 = 5.98$

The antilog of $5.98 = 9.5 \times 10^5$

5.4.13 Vector Control: Volatile Solids Reduction

The mass of volatile solids in the sludge shall be reduced by a minimum of 38% between the time the sludge enters the digestion process and the time it either exits the digester or a storage facility. For calculation of volatile solids reduction, the permittee shall use the Van Kleeck equation or one of the other methods described in "Determination of Volatile Solids Reduction in Digestion" by J.B. Farrell, which is Appendix C of EPA's *Control of Pathogens in Municipal Wastewater Sludge* (EPA/625/R-92/013). The Van Kleeck equation is:

$$VSR\% = \frac{VS_{IN} - VS_{OUT}}{VS_{IN} - (VS_{OUT} \times VS_{IN})} \times 100$$

Where: VS_{IN} = Volatile Solids in Feed Sludge (g VS/g TS)

VS_{OUT} = Volatile Solids in Final Sludge (g VS/g TS)

VSR% = Volatile Solids Reduction, (Percent)

5.4.14 Vector Control: Drying With Primary Solids

Dry the sludge to 90% total solids when the sludge contains unstabilized solids from primary treatment. This shall be met at the time the sludge is bagged, distributed, land applied or disposed of.

5.4.15 Class B Sludge - Vector Control: Incorporation

Class B sludge shall be incorporated within 6 hours of surface application, or as approved by the Department.

6 Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

Description	Date	Page
Compliance Maintenance Annual Reports (CMAR)	by June 30, each year	14
General Sludge Management Form 3400-48	prior to any significant sludge management changes	18
Characteristic Form 3400-49 and Lab Report	by January 31 following each year of analysis	19
Land Application Report Form 3400-55	by January 31, each year whether or not non-exceptional quality sludge is land applied	20
Report Form 3400-52	by January 31, each year whether or not sludge is hauled, landfilled, incinerated, or exceptional quality sludge is distributed or land applied	20
Wastewater Discharge Monitoring Report	no later than the date indicated on the form	13

Report forms shall be submitted to the address printed on the report form. Any facility plans or plans and specifications for municipal, industrial, industrial pretreatment and non industrial wastewater systems shall be submitted to the Bureau of Water Quality, P.O. Box 7921, Madison, WI 53707-7921. All other submittals required by this permit shall be submitted to: West Central Region - LaCrosse, 3550 Mormon Coulee Road, La Crosse, WI 54601

Appendix B

WWTP Upgrade Influent Parameters (Design & Actual)

Wastewater Treatment Plant Upgrade
Influent Parameters (Design & Actual)
Fort McCoy, WI

PARAMETER	1997 UPGRADE DESIGN VALUES	2011-2015 DATA RESULTS	2016 UPGRADE DESIGN VALUES
Population:			
Average monthly population	*15,000*		*15,000*
Maximum population	*20,000*		*20,000*
Estimated minimum monthly population	*2,500*		*2,500*
Influent Flows:			
Monthly average flow	*1.32 MGD (15,000 pop. x 88 gpcd, based upon summer peak populations)*	*0.34 MGD*	*1.32 MGD*
Monthly maximum flow	*1.875 MGD (15,000 pop. x 125 gpcd)*	*0.654 MGD (June 2014)*	*1.875 MGD*
Daily maximum flow	*2.257 MGD (1.32 MGD x 1.71 peak day factor)*	*1.26 MGD*	*2.257 MGD*
Peak Hourly flowrate	*2.31 MGD*		*2.31 MGD*
Instantaneous peak flow	*3.96 MGD (1.32 MGD x 3.0 peak factor)*		*3.96 MGD*
Estimated minimum monthly flow	*0.300 MGD (based upon existing plant flows)*	*0.124 MGD (November 2012)*	*0.124 MGD*
Influent BOD:			
Monthly Average BOD	*1500 lbs./day (136 mg/l) (based upon 15,000 pop. x 0.10 lb. BOD/pop./day)*	*674 lbs./day (=238 mg/l @ 0.34 MGD)*	*1500 lbs./day (136 mg/l)*
Monthly Maximum BOD	*2000 lbs./day (128 mg/l) (based upon 20,000 pop. x 0.10 lb. BOD/pop./day)*	*1914 lbs./day (June 2011)*	*2000 lbs./day (128 mg/l)*
Daily Maximum BOD	*4400 lbs./day (234 mg/l) (based upon 20,000 pop. x 0.22 lb. BOD/pop./day)*	*2984 lbs./day (16 June 2011, 477 mg/l @ 0.75 MGD)*	*4400 lbs./day (234 mg/l)*
Monthly Minimum BOD		*153 lbs./day (December 2015)*	*153 lbs./day*
Total Suspended Solids (TSS)			
Monthly Average TSS	*1650 lbs./day (150 mg/l) (based upon 15,000 pop. x 0.11 lb. TSS/pop./day)*	*803 lbs./day (=283 mg/l @ 0.34 MGD)*	*1650 lbs./day (150 mg/l)*
Monthly Maximum TSS	*2200 lbs./day (141 mg/l) (based upon 20,000 pop. x 0.11 lb. TSS/pop./day)*	*1830 lbs./day (July 2011)*	*2200 lbs./day (141 mg/l)*
Daily Maximum TSS	*4800 lbs./day (234 mg/l) (based upon 20,000 pop. x 0.24 lb. TSS/pop./day)*	*4837 lbs./day (11 March 2015, 2320 mg/l @ 0.25 MGD)*	*4800 lbs./day (234 mg/l)*
Monthly Minimum TSS		*162 lbs./day (December 2015)*	*162 lbs./day*

Wastewater Treatment Plant Upgrade
Influent Parameters (Design & Actual)
Fort McCoy, WI

PARAMETER	***1997 UPGRADE DESIGN VALUES***	***2011-2015 DATA RESULTS***	***2016 UPGRADE DESIGN VALUES***
Phosphorus			
Monthly Average Phosphorus	*55 lbs./day (5 mg/l)* *(based upon 15,000 pop. x 0.0036 lb. Phosphorus/pop./day, or 5 mg/l @ 1.32 MGD)*	*3.0 mg/l* (April-June 2014 data)	*55 lbs./day (5 mg/l)* *(based upon 15,000 pop. x 0.0036 lb. Phosphorus/pop./day, or 5 mg/l @ 1.32 MGD)*
Monthly Maximum Phosphorus	*78 lbs./day (5 mg/l)* *(based upon 5 mg/l @ 1.875 MGD)*	*3.1 mg/l* (April-June 2014 data)	*78 lbs./day (5 mg/l)* *(based upon 5 mg/l @ 1.875 MGD)*
Daily Maximum Phosphorus	*94 lbs./day (5 mg/l)* *(based upon 5 mg/l @ 2.257 MGD)*		*94 lbs./day (5 mg/l)* *(based upon 5 mg/l @ 2.257 MGD)*

Appendix C

Historical Stream Monitoring Data

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
1	LAX @ BB	4/17/2001	-	0.068
1	LAX @ BB	5/8/2001	-	0.107
1	LAX @ BB	6/12/2001	-	0.259
1	LAX @ BB	7/10/2001	-	0.083
1	LAX @ BB	8/14/2001	-	0.062
1	LAX @ BB	9/11/2001	-	0.091
1	LAX @ BB	10/10/2001	-	0.056
1	LAX @ BB	11/14/2001	-	0.034
1	LAX @ BB	12/11/2001	-	0.099
1	LAX @ BB	1/8/2002	-	0.048
1	LAX @ BB	2/12/2002	-	0.11
1	LAX @ BB	3/12/2002	-	0.009
1	LAX @ BB	4/9/2002	-	0.061
1	LAX @ BB	5/14/2002	-	0.069
1	LAX @ BB	6/11/2002	-	0.122
1	LAX @ BB	7/9/2002	-	0.106
1	LAX @ BB	1/28/2003	-	0.071
1	LAX @ BB	4/8/2003	-	0.098
1	LAX @ BB	4/16/2003	-	0.092
1	LAX @ BB	6/24/2003	-	0.131
1	LAX @ BB	7/8/2003	-	0.083
1	LAX @ BB	10/21/2003	-	0.052
1	LAX @ BB	1/13/2004	-	0.063
1	LAX @ BB	4/20/2004	-	0.098
1	LAX @ BB	7/21/2004	-	0.112
1	LAX @ BB	3/13/2007	-	0.108
1	LAX @ BB	5/18/2007	-	0.075
1	LAX @ BB	1/7/2008	-	0.059
1	LAX @ BB	3/17/2008	-	0.056
1	LAX @ BB	4/1/2008	-	0.099
1	LAX @ BB	7/10/2008	-	0.111
1	LAX @ BB	7/18/2008	-	0.111
1	LAX @ BB	5/11/2010	-	0.1
1	LAX @ BB	5/17/2013	rainfall runoff	0.091
1	LAX @ BB	5/21/2013	rainfall runoff	0.322
1	LAX @ BB	7/4/2013	Baseflow	0.116
1	LAX @ BB	11/19/2013	baseflow	0.05
1	LAX @ BB	3/13/2014	Runoff Event	0.199
1	LAX @ BB	3/28/2014	Runoff Event	0.586
1	LAX @ BB	6/17/2014	Runoff Event	0.119
1	LAX @ BB	6/18/2014	Runoff Event	0.227
1	LAX @ BB	7/2/2014	Baseflow	0.103
1	LAX @ BB	7/8/2014	Runoff Event	0.147
1	LAX @ BB	8/26/2014	Baseflow	0.068

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
1	LAX @ BB	3/10/2015	Snow Melt	0.116
1	LAX @ BB	4/9/2015	Runoff Event	0.214
1	LAX @ BB	5/20/2015	Baseflow	0.093
1	LAX @ BB	6/16/2015	Runoff Event	0.262
1	LAX @ BB	7/10/2015	Baseflow	0.073
1	LAX @ BB	8/7/2015	Runoff Event	0.152
1	LAX @ BB	8/26/2015	Baseflow	0.067
1	LAX @ BB	3/31/2016	Runoff Event	0.123
1	LAX @ BB	5/11/2016	Adaptive Management	0.112
1	LAX @ BB	5/25/2016	Baseflow	0.064
1	LAX @ BB	5/26/2016	Runoff Event	0.114
1	LAX @ BB	6/8/2016	Adaptive Management	0.153
1	LAX @ BB	6/8/2016	Adaptive Management	0.083
1	LAX @ BB	6/30/2016	Baseflow	0.076
1	LAX @ BB	7/13/2016	Adaptive Management	0.077
1	LAX @ BB	8/10/2016	Adaptive Management	0.063
1	LAX @ BB	8/11/2016	Runoff Event	0.08
1	LAX @ BB	8/19/2016	Runoff Event	0.158
2	La Crosse below Tarr Confluence	3/13/2014	Runoff Event	0.26
2	La Crosse below Tarr Confluence	3/28/2014	Runoff Event	0.63
2	La Crosse below Tarr Confluence	6/17/2014	Runoff Event	0.129
2	La Crosse below Tarr Confluence	6/18/2014	Runoff Event	0.358
2	La Crosse below Tarr Confluence	7/2/2014	Baseflow	0.090
2	La Crosse below Tarr Confluence	7/8/2014	Runoff Event	0.184
2	La Crosse below Tarr Confluence	8/26/2014	Baseflow	0.074
3	Tarr @ Confluence with LAX	5/11/2016	Adaptive Management	0.093
3	Tarr @ Confluence with LAX	5/25/2016	Baseflow	0.078
3	Tarr @ Confluence with LAX	5/26/2016	Runoff Event	0.173
3	Tarr @ Confluence with LAX	6/8/2016	Adaptive Management	0.108
3	Tarr @ Confluence with LAX	6/30/2016	Baseflow	0.099
3	Tarr @ Confluence with LAX	7/13/2016	Adaptive Management	0.09
3	Tarr @ Confluence with LAX	8/10/2016	Adaptive Management	0.08
3	Tarr @ Confluence with LAX	8/11/2016	Runoff Event	0.116
3	Tarr @ Confluence with LAX	8/19/2016	Runoff Event	0.169
3	Tarr @ Confluence with LAX	8/24/2016	Runoff Event	0.319
3	Tarr @ Confluence with LAX	3/31/2016	Runoff Event	0.251
3	Tarr @ Confluence with LAX	5/11/2010	-	0.115
3	Tarr @ Confluence with LAX	5/13/2010	-	0.167
3	Tarr @ Confluence with LAX	6/8/2010	-	0.135
3	Tarr @ Confluence with LAX	4/9/2013	rainfall runoff	0.199
3	Tarr @ Confluence with LAX	5/17/2013	rainfall runoff	0.123
3	Tarr @ Confluence with LAX	5/21/2013	rainfall runoff	0.776
3	Tarr @ Confluence with LAX	7/4/2013	Baseflow	0.115
3	Tarr @ Confluence with LAX	11/19/2013	baseflow	0.074
3	Tarr @ Confluence with LAX	3/13/2014	Runoff Event	0.504
3	Tarr @ Confluence with LAX	3/28/2014	Runoff Event	1.19

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
3	Tarr @ Confluence with LAX	6/17/2014	Runoff Event	0.168
3	Tarr @ Confluence with LAX	6/18/2014	Runoff Event	0.2
3	Tarr @ Confluence with LAX	7/2/2014	Baseflow	0.111
3	Tarr @ Confluence with LAX	7/8/2014	Runoff Event	0.229
3	Tarr @ Confluence with LAX	3/10/2015	Snow Melt	0.207
3	Tarr @ Confluence with LAX	4/9/2015	Runoff Event	0.27
3	Tarr @ Confluence with LAX	5/20/2015	Baseflow	0.094
3	Tarr @ Confluence with LAX	7/10/2015	Baseflow	0.087
3	Tarr @ Confluence with LAX	8/7/2015	Runoff Event	0.254
3	Tarr @ Confluence with LAX	8/26/2015	Baseflow	0.086
4	Tarr @ X Road	4/9/2013	rainfall runoff	0.399
4	Tarr @ X Road	5/17/2013	rainfall runoff	0.148
4	Tarr @ X Road	5/21/2013	rainfall runoff	0.935
4	Tarr @ X Road	7/4/2013	Baseflow	0.141
4	Tarr @ X Road	11/19/2013	baseflow	0.118
4	Tarr @ X Road	3/13/2014	Runoff Event	1.15
4	Tarr @ X Road	3/28/2014	Runoff Event	1.3
4	Tarr @ X Road	6/17/2014	Runoff Event	0.198
4	Tarr @ X Road	6/18/2014	Runoff Event	0.99
4	Tarr @ X Road	7/2/2014	Baseflow	0.139
4	Tarr @ X Road	7/8/2014	Runoff Event	0.319
4	Tarr @ X Road	3/10/2015	Snow Melt	0.269
4	Tarr @ X Road	4/9/2015	Runoff Event	0.417
4	Tarr @ X Road	5/20/2015	Baseflow	0.115
4	Tarr @ X Road	6/16/2015	Runoff Event	0.352
4	Tarr @ X Road	7/10/2015	Baseflow	0.109
4	Tarr @ X Road	8/7/2015	Runoff Event	2.11
4	Tarr @ X Road	8/26/2015	Baseflow	0.119
4	Tarr @ X Road	3/31/2016	Runoff Event	0.681
4	Tarr @ X Road	5/25/2016	Baseflow	0.097
4	Tarr @ X Road	5/26/2016	Runoff Event	0.645
4	Tarr @ X Road	6/30/2016	Baseflow	0.142
4	Tarr @ X Road	8/11/2016	Runoff Event	0.193
4	Tarr @ X Road	8/19/2016	Runoff Event	1.52
4	Tarr @ X Road	8/24/2016	Runoff Event	0.943
5	HB	10/15/2009	-	0.109
5	HB	10/21/2009	-	0.37
5	HB	10/22/2009	-	0.183
5	HB	10/23/2009	-	0.427
5	HB	10/23/2009	-	0.386
5	HB	10/24/2009	-	0.176
5	HB	10/24/2009	-	0.17
5	HB	10/30/2009	-	0.151
5	HB	12/24/2009	-	1.858
5	HB	12/24/2009	-	0.22
5	HB	12/25/2009	-	0.159

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
5	HB	12/25/2009	-	0.463
5	HB	12/25/2009	-	0.161
5	HB	12/26/2009	-	0.153
5	HB	1/24/2010	-	0.229
5	HB	1/24/2010	-	0.223
5	HB	1/24/2010	-	0.401
5	HB	1/24/2010	-	0.168
5	HB	1/24/2010	-	0.125
5	HB	1/25/2010	-	0.106
5	HB	3/5/2010	-	0.09
5	HB	3/11/2010	-	0.146
5	HB	3/11/2010	-	0.105
5	HB	3/12/2010	-	0.199
5	HB	3/12/2010	-	0.166
5	HB	3/13/2010	-	0.095
5	HB	3/14/2010	-	0.117
5	HB	5/5/2010	-	0.117
5	HB	5/13/2010	-	0.138
5	HB	5/13/2010	-	0.147
5	HB	5/13/2010	-	0.15
5	HB	5/13/2010	-	0.127
5	HB	5/14/2010	-	0.123
5	HB	6/8/2010	-	0.181
5	HB	6/24/2010	-	0.094
5	HB	7/13/2010	-	0.114
5	HB	7/15/2010	-	0.14
5	HB	8/3/2010	-	0.102
5	HB	9/9/2010	-	0.056
5	HB	5/11/2016	Adaptive Management	0.09
5	HB	5/25/2016	Baseflow	0.073
5	HB	5/26/2016	Runoff Event	0.171
5	HB	6/8/2016	Adaptive Management	0.083
5	HB	6/30/2016	Baseflow	0.059
5	HB	7/13/2016	Adaptive Management	0.08
5	HB	7/13/2016	Adaptive Management	0.072
5	HB	8/10/2016	Adaptive Management	0.05
5	HB	8/11/2016	Runoff Event	0.145
5	HB	8/19/2016	Runoff Event	0.156
5	HB	8/19/2016	Runoff Event	0.231
6	HA	5/11/2016	Adaptive Management	0.076
6	HA	5/25/2016	Baseflow	0.042
6	HA	5/26/2016	Runoff Event	0.47
6	HA	6/8/2016	Adaptive Management	0.075
6	HA	6/30/2016	Baseflow	0.045
6	HA	7/13/2016	Adaptive Management	0.048
6	HA	8/10/2016	Adaptive Management	0.049

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
6	HA	8/11/2016	Runoff Event	0.06
6	HA	8/19/2016	Runoff Event	0.052
7	Tarr Creek @ 8th Ave	4/9/2013	rainfall runoff	0.219
7	Tarr Creek @ 8th Ave	5/17/2013	rainfall runoff	0.133
7	Tarr Creek @ 8th Ave	5/21/2013	rainfall runoff	0.77
7	Tarr Creek @ 8th Ave	7/4/2013	Baseflow	0.12
7	Tarr Creek @ 8th Ave	11/19/2013	baseflow	0.076
7	Tarr Creek @ 8th Ave	3/13/2014	Runoff Event	0.621
7	Tarr Creek @ 8th Ave	3/28/2014	Runoff Event	1.29
7	Tarr Creek @ 8th Ave	6/17/2014	Runoff Event	0.179
7	Tarr Creek @ 8th Ave	6/18/2014	Runoff Event	0.335
7	Tarr Creek @ 8th Ave	7/2/2014	Baseflow	0.118
7	Tarr Creek @ 8th Ave	7/8/2014	Runoff Event	0.245
7	Tarr Creek @ 8th Ave	3/10/2015	Snow Melt	0.19
7	Tarr Creek @ 8th Ave	4/9/2015	Runoff Event	0.235
7	Tarr Creek @ 8th Ave	5/20/2015	Baseflow	0.094
7	Tarr Creek @ 8th Ave	6/16/2015	Runoff Event	0.303
7	Tarr Creek @ 8th Ave	7/10/2015	Baseflow	0.085
7	Tarr Creek @ 8th Ave	8/7/2015	Runoff Event	0.241
7	Tarr Creek @ 8th Ave	8/26/2015	Baseflow	0.081
7	Tarr Creek @ 8th Ave	3/31/2016	Runoff Event	0.482
7	Tarr Creek @ 8th Ave	5/25/2016	Baseflow	0.084
7	Tarr Creek @ 8th Ave	5/26/2016	Runoff Event	0.165
7	Tarr Creek @ 8th Ave	6/30/2016	Baseflow	0.104
7	Tarr Creek @ 8th Ave	8/11/2016	Runoff Event	0.101
7	Tarr Creek @ 8th Ave	8/19/2016	Runoff Event	0.401
7	Tarr Creek @ 8th Ave	8/24/2016	Runoff Event	0.166
7	Tarr Creek @ 8th Ave	4/17/2001	-	0.09
7	Tarr Creek @ 8th Ave	5/8/2001	-	0.116
7	Tarr Creek @ 8th Ave	6/12/2001	-	0.483
7	Tarr Creek @ 8th Ave	7/10/2001	-	0.093
7	Tarr Creek @ 8th Ave	8/14/2001	-	0.07
7	Tarr Creek @ 8th Ave	9/11/2001	-	0.085
7	Tarr Creek @ 8th Ave	10/10/2001	-	0.108
7	Tarr Creek @ 8th Ave	11/14/2001	-	0.038
7	Tarr Creek @ 8th Ave	12/11/2001	-	0.124
7	Tarr Creek @ 8th Ave	1/8/2002	-	0.092
7	Tarr Creek @ 8th Ave	2/12/2002	-	0.071
7	Tarr Creek @ 8th Ave	3/12/2002	-	0.053
7	Tarr Creek @ 8th Ave	4/9/2002	-	0.087
7	Tarr Creek @ 8th Ave	5/14/2002	-	0.085
7	Tarr Creek @ 8th Ave	6/11/2002	-	0.143
7	Tarr Creek @ 8th Ave	7/9/2002	-	0.124
7	Tarr Creek @ 8th Ave	1/28/2003	-	0.074
7	Tarr Creek @ 8th Ave	4/8/2003	-	0.097
7	Tarr Creek @ 8th Ave	4/16/2003	-	0.128

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
7	Tarr Creek @ 8th Ave	6/24/2003	-	0.089
7	Tarr Creek @ 8th Ave	7/8/2003	-	0.081
7	Tarr Creek @ 8th Ave	10/21/2003	-	0.06
7	Tarr Creek @ 8th Ave	1/13/2004	-	0.053
7	Tarr Creek @ 8th Ave	4/20/2004	-	0.058
7	Tarr Creek @ 8th Ave	7/21/2004	-	0.098
7	Tarr Creek @ 8th Ave	3/15/2007	-	0.267
7	Tarr Creek @ 8th Ave	1/7/2008	-	0.079
7	Tarr Creek @ 8th Ave	3/19/2008	-	0.077
7	Tarr Creek @ 8th Ave	7/18/2008	-	0.143
7	Tarr Creek @ 8th Ave	9/19/2008	-	0.073
7	Tarr Creek @ 8th Ave	2/10/2009	-	2.52
7	Tarr Creek @ 8th Ave	5/27/2009	-	0.37
7	Tarr Creek @ 8th Ave	3/10/2010	-	0.328
7	Tarr Creek @ 8th Ave	5/11/2010	-	0.113
7	Tarr Creek @ 8th Ave	5/13/2010	-	0.176
7	Tarr Creek @ 8th Ave	6/8/2010	-	0.131
7	Tarr Creek @ 8th Ave	7/7/2010	-	0.143
7	Tarr Creek @ 8th Ave	7/9/2010	-	0.143
7	Tarr Creek @ 8th Ave	9/16/2010	-	0.137
8	Tarr Storm Drain @ 8th	3/13/2014	Runoff Event	0.616
8	Tarr Storm Drain @ 8th	6/17/2014	Runoff Event	0.169
8	Tarr Storm Drain @ 8th	6/18/2014	Runoff Event	0.349
8	Tarr Storm Drain @ 8th	4/9/2013	rainfall runoff	0.218
8	Tarr Storm Drain @ 8th	5/17/2013	rainfall runoff	0.3
8	Tarr Storm Drain @ 8th	6/17/2014	Runoff Event	0.484
9	Tarr @ J Street	4/9/2013	rainfall runoff	0.181
9	Tarr @ J Street	5/17/2013	rainfall runoff	0.125
9	Tarr @ J Street	5/21/2013	rainfall runoff	0.726
9	Tarr @ J Street	7/4/2013	Baseflow	0.11
9	Tarr @ J Street	11/19/2013	baseflow	0.072
10	Sparta @ Patrol Academy	4/9/2013	rainfall runoff	0.082
10	Sparta @ Patrol Academy	5/17/2013	rainfall runoff	0.082
10	Sparta @ Patrol Academy	5/21/2013	rainfall runoff	0.115
10	Sparta @ Patrol Academy	7/4/2013	Baseflow	0.091
10	Sparta @ Patrol Academy	11/19/2013	baseflow	0.056
10	Sparta @ Patrol Academy	3/28/2014	Runoff Event	0.065
10	Sparta @ Patrol Academy	6/17/2014	Runoff Event	0.102
10	Sparta @ Patrol Academy	6/18/2014	Runoff Event	0.146
10	Sparta @ Patrol Academy	7/2/2014	Baseflow	0.089
10	Sparta @ Patrol Academy	7/8/2014	Runoff Event	0.08
11	Sparta Pond	4/9/2013	rainfall runoff	0.087
11	Sparta Pond	9/16/2015	-	0.086
11	Sparta Pond	7/19/2016	-	0.084
11	Sparta Pond	8/17/2016	-	0.092
12	Sparta @ East Boundary	4/9/2013	rainfall runoff	0.154

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
12	Sparta @ East Boundary	5/17/2013	rainfall runoff	0.12
12	Sparta @ East Boundary	5/21/2013	rainfall runoff	0.135
12	Sparta @ East Boundary	7/4/2013	Baseflow	0.103
12	Sparta @ East Boundary	11/19/2013	baseflow	0.076
13	Tarr Cr. @ East Boundary	4/9/2013	rainfall runoff	1.32
13	Tarr Cr. @ East Boundary	5/17/2013	rainfall runoff	0.183
13	Tarr Cr. @ East Boundary	5/21/2013	rainfall runoff	1.19
13	Tarr Cr. @ East Boundary	7/4/2013	Baseflow	0.131
13	Tarr Cr. @ East Boundary	11/19/2013	baseflow	0.138
13	Tarr Cr. @ East Boundary	3/13/2014	Runoff Event	1.39
13	Tarr Cr. @ East Boundary	3/28/2014	Runoff Event	1.19
13	Tarr Cr. @ East Boundary	6/17/2014	Runoff Event	0.188
13	Tarr Cr. @ East Boundary	6/18/2014	Runoff Event	0.853
13	Tarr Cr. @ East Boundary	7/2/2014	Baseflow	0.152
13	Tarr Cr. @ East Boundary	7/8/2014	Runoff Event	0.272
13	Tarr Cr. @ East Boundary	3/10/2015	Snow Melt	0.623
13	Tarr Cr. @ East Boundary	4/9/2015	Runoff Event	2.88
13	Tarr Cr. @ East Boundary	5/20/2015	Baseflow	0.135
13	Tarr Cr. @ East Boundary	6/16/2015	Runoff Event	0.381
13	Tarr Cr. @ East Boundary	7/10/2015	Baseflow	0.115
13	Tarr Cr. @ East Boundary	8/7/2015	Runoff Event	0.848
13	Tarr Cr. @ East Boundary	8/26/2015	Baseflow	0.133
13	Tarr Cr. @ East Boundary	3/31/2016	Runoff Event	0.574
13	Tarr Cr. @ East Boundary	5/11/2016	Adaptive Management	0.116
13	Tarr Cr. @ East Boundary	5/25/2016	Baseflow	0.112
13	Tarr Cr. @ East Boundary	5/26/2016	Runoff Event	0.552
13	Tarr Cr. @ East Boundary	6/8/2016	Adaptive Management	0.14
13	Tarr Cr. @ East Boundary	6/30/2016	Baseflow	0.144
13	Tarr Cr. @ East Boundary	7/13/2016	Adaptive Management	0.21
13	Tarr Cr. @ East Boundary	8/10/2016	Adaptive Management	0.137
13	Tarr Cr. @ East Boundary	8/11/2016	Runoff Event	0.246
13	Tarr Cr. @ East Boundary	8/19/2016	Runoff Event	1.92
13	Tarr Cr. @ East Boundary	8/24/2016	Runoff Event	0.614
13	Tarr Cr. @ East Boundary	4/17/2001	-	0.129
13	Tarr Cr. @ East Boundary	5/8/2001	-	0.154
13	Tarr Cr. @ East Boundary	6/12/2001	-	0.323
13	Tarr Cr. @ East Boundary	7/10/2001	-	0.224
13	Tarr Cr. @ East Boundary	8/14/2001	-	0.151
13	Tarr Cr. @ East Boundary	9/11/2001	-	0.183
13	Tarr Cr. @ East Boundary	11/14/2001	-	0.121
13	Tarr Cr. @ East Boundary	12/11/2001	-	0.12
13	Tarr Cr. @ East Boundary	1/8/2002	-	0.109
13	Tarr Cr. @ East Boundary	2/12/2002	-	0.104
13	Tarr Cr. @ East Boundary	3/12/2002	-	0.058
13	Tarr Cr. @ East Boundary	4/9/2002	-	0.122
13	Tarr Cr. @ East Boundary	5/14/2002	-	0.08

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
13	Tarr Cr. @ East Boundary	6/11/2002	-	0.264
13	Tarr Cr. @ East Boundary	7/9/2002	-	0.17
13	Tarr Cr. @ East Boundary	1/28/2003	-	0.1
13	Tarr Cr. @ East Boundary	4/8/2003	-	0.1
13	Tarr Cr. @ East Boundary	4/16/2003	-	0.14
13	Tarr Cr. @ East Boundary	6/24/2003	-	0.253
13	Tarr Cr. @ East Boundary	7/8/2003	-	0.144
13	Tarr Cr. @ East Boundary	10/21/2003	-	0.1
13	Tarr Cr. @ East Boundary	1/13/2004	-	0.107
13	Tarr Cr. @ East Boundary	4/20/2004	-	0.069
13	Tarr Cr. @ East Boundary	7/21/2004	-	0.161
13	Tarr Cr. @ East Boundary	3/13/2007	-	0.303
13	Tarr Cr. @ East Boundary	5/17/2007	-	0.105
13	Tarr Cr. @ East Boundary	7/9/2008	-	0.175
13	Tarr Cr. @ East Boundary	7/18/2008	-	0.175
13	Tarr Cr. @ East Boundary	9/19/2008	-	0.123
13	Tarr Cr. @ East Boundary	5/27/2009	-	2.16
13	Tarr Cr. @ East Boundary	8/21/2009	-	0.254
13	Tarr Cr. @ East Boundary	3/10/2010	-	1.893
13	Tarr Cr. @ East Boundary	5/11/2010	-	0.141
13	Tarr Cr. @ East Boundary	5/13/2010	-	0.763
13	Tarr Cr. @ East Boundary	6/8/2010	-	0.198
13	Tarr Cr. @ East Boundary	7/7/2010	-	0.189
13	Tarr Cr. @ East Boundary	9/16/2010	-	0.538
14	Ash1.0	3/31/2016	Runoff Event	0.064
14	ASH1.0	5/11/2016	Adaptive Management	0.042
14	Ash1.0	5/25/2016	Baseflow	0.072
14	Ash1.0	5/26/2016	Runoff Event	0.238
14	ASH1.0	6/8/2016	Adaptive Management	0.068
14	ASH1.0	6/30/2016	Baseflow	0.044
14	ASH1.0	7/13/2016	Adaptive Management	0.061
14	ASH1.0	8/10/2016	Adaptive Management	0.042
14	ASH1.0	8/11/2016	Runoff Event	0.06
14	ASH1.0	8/19/2016	Runoff Event	0.174
15	Ash @ 14	3/31/2016	Runoff Event	0.019
15	Ash @ 14	5/25/2016	Baseflow	0.058
15	Ash @ 14	5/26/2016	Runoff Event	0.124
15	Ash @ 14	6/30/2016	Baseflow	0.083
15	Ash @ 14	8/11/2016	Runoff Event	0.155
15	Ash @ 14	8/19/2016	Runoff Event	0.143
16	LAX below NIA	3/31/2016	Runoff Event	0.036
16	LAX below NIA	5/11/2016	Adaptive Management	0.057
16	LAX below NIA	5/25/2016	Baseflow	0.06
16	LAX below NIA	5/26/2016	Runoff Event	0.094
16	LAX below NIA	6/8/2016	Adaptive Management	0.075
16	LAX below NIA	6/30/2016	Baseflow	0.083

Appendix C - Historical Stream Phosphorus Monitoring Data

ID	Site Description	Sample Date	Type	Total P (mg/l)
16	LAX below NIA	7/13/2016	Adaptive Management	0.065
16	LAX below NIA	8/10/2016	Adaptive Management	0.046
16	LAX below NIA	8/11/2016	Runoff Event	0.076
16	LAX below NIA	8/19/2016	Runoff Event	0.084

Appendix D

Don and David Hall Farm Visit Summary Notes

1) Which properties are operated by Hall Farms? - **See Attached Map**
2) Please identify which fields use one or more of the following management practices:
    a. Crop Rotation **– All of the fields operated by the Hall Farms do crop rotation. Crops are rotated between Hay, Corn, and Beans. Hay will generally be on a field for 3-4 years and then the field will be rotated.**
    b. Reduced Tillage **– "No Till" is practiced on the fields unless corn is planted two years in a row on the same field, then its Hydro tilled.**
    c. Nutrient Management **– The Hall Farm does not currently have an NMP, but are willing to discuss development of one. The Hall Farm is currently working with Monroe County on a CSP (Conservation Stewardship Program)**
    d. Cover Cropping **–Winter Rye is planted on the two fields listed on the attached map.**
    e. Grass Swales **– The fields operated by the Hall Farm leave the "water runs" grassed and mowed as needed.**
    f. Filter Strips (75' width) **– The Hall Farms are willing to discuss options regarding additional Filter Strips. Bob (Monroe County LCD) mentioned that in some instances a municipality involved with Adaptive Management will have an agreement set up to maintain (mow) the filter strips for the farms.**
    g. Manure Storage and Management **– The Hall Farm currently has small manure storage for their milking cows and heifers (see attached map). The Hall Farms are willing to discuss optional manure storage or outlot containment, if funding is available. As a general rule the Hall Farm spread manure weekly.**
3) Which of the above would you be open to implementing? **–See above**

Additional discussion items.

-The onsite meeting was with Dave and Don Hall (brothers), Larry Hall is a cousin.

-The Hall Farm is currently conducting soil sampling (grid sampling) every 4 years with the local co-op (Allied). This helps to determine crop rotation and manure application.

-The Hall Farm is working with Monroe County on a CSP for the facility.

-The Hall Farm is currently implementing GPS on the manure spreaders to document spreading activities.

-The Hall Farm currently has a mix of milking cows and heifers with head numbers approximately 400 at the time of the onsite meeting.

--The Hall's farm approximately 1000 acres, some field are outside of the watershed of concern. They currently plant corn, hay and beans.

-Some items mentioned as possible facility improvements included curbing, roofs and rain gutters at the outlot locations.

-Dave and Don Hall were generally open to discussion regarding additional conservation practices for the facility.

Appendix E

SLAMM Results for Existing Conditions

Appendix E - WINSLAMM Results - Fort McCoy Urbanized Area - Existing Conditions

Catchment Name	Catchment Areas				Average Annual Loads		Percent Phos REMOVED	Wet Basins	Dry Basins	Swales
	Institutional	Commercial	Industrial	Total	Particulate Phos. Yield (lbs) WITHOUT CONTROLS	Particulate Phos. Yield (lbs) WITH CONTROLS				
Area 1	43.87			43.87	25	24	3%			Yes
Area 2	258.80			258.80	7	7	0%			Yes
Area 3	18.60			18.60	3	3	99%			Yes
Area 4	46.00			46.00	2	0	99%			Yes
Area 5	60.90			60.90	0	0	100%			Yes
Area 6	212.90			212.90	34	11	67%	1		Yes
Area 7	151.60			151.60	9	2	75%			Yes
Area 8	56.40			56.40	3	1	80%			Yes
Area 9	66.40			66.40	2	1	55%			Yes
Area 10	29.40			29.40	2	0	90%			Yes
Area 11	25.90			25.90	2	0	95%			Yes
Area 12	123.40			123.40	40	7	82%			Yes
Area 13	59.80			59.80	4	2	60%			Yes
Area 14	79.90			79.90	12	6	45%			Yes
Area 15	49.50			49.50	2	1	70%			Yes
Area 16	33.00			33.00	9	3	65%			Yes
Area 17	22.90			22.90	10	4	59%			Yes
Area 18	181.50			181.50	25	12	50%	1		Yes
Area 19	56.70			56.70	19	4	80%			Yes
Area 20	249.00			249.00	112	69	39%			Yes
Area 21	5.30			5.30	1	0	70%			Yes
Area 22	57.90			57.90	33	6	82%			Yes
Area 23	42.60			42.60	20	6	69%			Yes
Area 24	176.50			176.50	15	3	80%			Yes
Area 25	253.00			253.00	76	27	64%			Yes
Area 26	33.70			33.70	1	1	49%	1		No
Area 27	63.50			63.50	3	2	30%			Yes
Area 28	56.20			56.20	13	1	95%			Yes
Area 29	38.60			38.60	3	0	95%			Yes
Area 30	49.10			49.10	7	0	94%	1		Yes
Area 31	63.50			63.50	29	4	86%			Yes
Area 32	103.40			103.40	9	3	65%			Yes
Area 33	181.30			181.30	19	5	74%	1		Yes
Area 34	91.30			91.30	0	0	0%			No
Area 35	89.00			89.00	0	0	0%			No
Area 36	43.90			43.90	19	3	82%			Yes
Area 37	63.60			63.60	11	2	84%			Yes
Area 38	108.90			108.90	59	9	85%			Yes
Area 39	14.20			14.20	2	1	60%			Yes
Area 40	359.40			359.40	6	3	60%			Yes
Area 41	195.20			195.20	30	3	91%			Yes
Area 42	76.70			76.70	10	2	80%			Yes
Area 43	130.10			130.10	5	1	90%			Yes
Area 44	7.60			7.60	0	0	0%			No
Area 45	223.30			223.30	41	10	76%	1		Yes
Area 46	86.30			86.30	5	1	70%			Yes
Area 47	13.10			13.10	0	0	0%			No
Area 48	58.90			58.90	2	1	75%			Yes
Area 49	123.90			123.90	3	3	0%			No
Area 50	116.10			116.10	5	2	65%			Yes
Area 51	85.50			85.50	3	1	70%			Yes
Area 52	133.20			133.20	4	3	40%			Yes
Area 53	138.40			138.40	31	8	75%			Yes
Area 54	99.40			99.40	3	2	50%			Yes
Area 55	106.20			106.20	2	1	45%			Yes
Totals	**5,315**	**0**	**0**	**5,315**	**792**	**268**	**66%**			

Appendix F

Detailed Costs

FORT McCOY ADAPTIVE MANAGEMENT PLAN

NON-AGRICULTURAL BEST MANAGEMENT PRACTICES

INITIAL COST ESTIMATE (1 of 5)

	Best Management Practice	Units	Quantity	Unit Cost ($)	Initial Cost ($)	Comments
Watershed 56 - W1 Infiltration Basin and Swales						
1	Mobilization	LS	1	3%	$ 3,853.00	
2	Erosion Control for Swales (Seeding and Matting)	Sq. Yard	9,445	$5.00	$ 47,224	Assumed based on similar size projects
3	Seeding in Basins	Sq. Yard	7,744	$0.25	$ 1,936	
4	Common Excavation Including Hauling	Cubic Yard	10,507	$5.00	$ 52,536	
5	Clearing and Grubbing	Acre	5.07	$1,650	$ 8,363	Selective Clearing and Grubbing (medium)
6	Level and Till	Sq. Yard	24,532	$0.75	$ 18,375	
7	Demobilization	LS	1	3%	$ 3,853.00	
	Construction Subtotal				$ 136,139.34	
	20% Construction Contingency				$ 27,227.87	
	20% Engineering (Design & Construction)				$ 32,673.44	
	Update Adaptive Management Model				$ 200.00	
Total					**$ 196,300**	

Watershed 56 - W2 Infiltration Basin and Swales						
1	Mobilization	LS	1	3%	$ 1,505.59	
2	Erosion Control for Swales (Seeding and Matting)	Sq. Yard	4,084	$5.00	$ 20,421	Assumed based on similar size projects
3	Seeding in Basins	Sq. Yard	2,420	$0.25	$ 605	
4	Common Excavation Including Hauling	Cubic Yard	3,924	$5.00	$ 19,622	
5	Clearing and Grubbing	Acre	1.81	$1,650	$ 2,983	Selective Clearing and Grubbing (medium)
6	Level and Till	Sq. Yard	8,751	$0.75	$ 6,555	
7	Demobilization	LS	1	3%	$ 1,505.59	
	Construction Subtotal				$ 53,197.34	
	20% Construction Contingency				$ 10,639.47	
	20% Engineering (Design & Construction)				$ 12,767.36	
	Update Adaptive Management Model				$ 200.00	
Total					**$ 76,900**	

FORT McCOY ADAPTIVE MANAGEMENT PLAN

NON-AGRICULTURAL BEST MANAGEMENT PRACTICES

INITIAL COST ESTIMATE (2 of 5)

	Best Management Practice	Units	Quantity	Unit Cost ($)	Initial Cost ($)	Comments
Watershed 57 - W1 Infiltration Basin and Swales						
1	Mobilization	LS	1	3%	$ 1,783.07	
2	Erosion Control for Swales (Seeding and Matting)	Sq. Yard	2,297	$5.00	$ 11,487	Assumed based on similar size projects
3	Seeding in Basins	Sq. Yard	6,776	$0.25	$ 1,694	
4	Common Excavation Including Hauling	Cubic Yard	5,817	$5.00	$ 29,087	
5	Clearing and Grubbing	Acre	3.25	$1,650	$ 5,370	Selective Clearing and Grubbing (medium)
6	Level and Till	Sq. Yard	15,752	$0.75	$ 11,798	
7	Demobilization	LS	1	3%	$ 1,783.07	
	Construction Subtotal				$ 63,001.89	
	20% Construction Contingency				$ 12,600.38	
	20% Engineering (Design & Construction)				$ 15,120.45	
	Update Adaptive Management Model				$ 200.00	
Total					**$ 91,000**	

	Watershed 59 - W1 Infiltration Basin and Swales					
1	Mobilization	LS	1	3%	$ 2,799.43	
2	Erosion Control for Swales (Seeding and Matting)	Sq. Yard	3,957	$5.00	$ 19,783	Assumed based on similar size projects
3	Seeding in Basins	Sq. Yard	9,680	$0.50	$ 4,840	
4	Common Excavation Including Hauling	Cubic Yard	8,692	$5.00	$ 43,461	
5	Clearing and Grubbing	Acre	4.78	$1,650	$ 7,892	Selective Clearing and Grubbing (medium)
6	Level and Till	Sq. Yard	23,149	$0.75	$ 17,339	
7	Demobilization	LS	1	3%	$ 2,799.43	
	Construction Subtotal				$ 98,913.03	
	20% Construction Contingency				$ 19,782.61	
	20% Engineering (Design & Construction)				$ 23,739.13	
	Update Adaptive Management Model				$ 200.00	
Total Cost					**$ 142,700**	

FORT McCOY ADAPTIVE MANAGEMENT PLAN

NON-AGRICULTURAL BEST MANAGEMENT PRACTICES

INITIAL COST ESTIMATE (3 of 5)

	Best Management Practice	Units	Quantity	Unit Cost ($)	Initial Cost ($)	Comments
Watershed 60 - W1 Infiltration Basin and Swales + FS						
1	Mobilization	LS	1	10%	$ 4,013	
2	Erosion Control for Swales (Seeding and Matting)	Sq. Yard	587	$5.00	$ 2,936	Assumed based on similar size projects
3	Seeding in Basins	Sq. Yard	5,808	$0.50	$ 2,904	
4	Common Excavation Including Hauling	Cubic Yard	4,204	$5.00	$ 21,021	
5	Clearing and Grubbing in Basin/swales	Acre	2.52	$1,650	$ 4,152	Selective Clearing and Grubbing (medium)
6	Level and Till	Sq. Yard	12,178	$0.75	$ 9,121	
7	Clearing and Grubbing for Filter Strip	Acre	3.87	$1,650	$ 6,386	Selective Clearing and Grubbing (medium)
8	Grading for Filter Strip	Sq. Yard	18,731	$0.30	$ 5,619	
9	Filter Strip Site Development (Seeding and Mulch)	Sq. Yard	18,731	$1.80	$ 33,715	
10	Demobilization	LS	1	10%	$ 4,013	
	Construction Subtotal				$ 84,027.83	
	20% Construction Contingency				$ 16,805.57	
	20% Engineering (Design & Construction)				$ 20,166.68	
	Update Adaptive Management Model				$ 200.00	
Total Cost					**$ 121,300**	

Watershed 62 - W1 Infiltration Basin and Swales						
1	Mobilization	LS	1	3%	$ 1,619.70	
2	Erosion Control for Swales (Seeding and Matting)	Sq. Yard	3,625	$5.00	$ 18,124	Assumed based on similar size projects
3	Seeding in Basins	Sq. Yard	3,630	$0.50	$ 1,815	
4	Common Excavation Including Hauling	Cubic Yard	4,471	$5.00	$ 22,356	
5	Clearing and Grubbing	Acre	2.22	$1,650	$ 3,658	Selective Clearing and Grubbing (medium)
6	Level and Till	Sq. Yard	10,731	$0.75	$ 8,038	
7	Demobilization	LS	1	3%	$ 1,619.70	
	Construction Subtotal				$ 57,229.57	
	20% Construction Contingency				$ 11,445.91	
	20% Engineering (Design & Construction)				$ 13,735.10	
	Update Adaptive Management Model				$ 200.00	
Total Cost					**$ 82,700**	

FORT McCOY ADAPTIVE MANAGEMENT PLAN

NON-AGRICULTURAL BEST MANAGEMENT PRACTICES

INITIAL COST ESTIMATE (4 of 5)

	Best Management Practice	Units	Quantity	Unit Cost ($)	Initial Cost ($)	Comments
Watershed 62 - W2 Infiltration Basin						
1	Mobilization	LS	1	3%	$ 829.45	
3	Seeding in Basins	Sq. Yard	4,598	$0.50	$ 2,299	
4	Common Excavation Including Hauling	Cubic Yard	3,065	$5.00	$ 15,327	
5	Clearing and Grubbing	Acre	1.90	$1,650	$ 3,135	Selective Clearing and Grubbing (medium)
6	Level and Till	Sq. Yard	9,196	$0.75	$ 6,888	
7	Demobilization	LS	1	3%	$ 829.45	
	Construction Subtotal				$ 29,307.38	
	20% Construction Contingency				$ 5,861.48	
	20% Engineering (Design & Construction)				$ 7,033.77	
	Update Adaptive Management Model				$ 200.00	
Total Cost					**$ 42,500**	

Watershed 63 - W1 Infiltration Basin and Swales						
1	Mobilization	LS	1	3%	$ 2,841.04	
2	Erosion Control for Swales (Seeding and Matting)	Sq. Yard	3,293	$5.00	$ 16,464	Assumed based on similar size projects
3	Seeding in Basins	Sq. Yard	10,890	$0.50	$ 5,445	
4	Common Excavation Including Hauling	Cubic Yard	9,123	$5.00	$ 45,617	
5	Clearing and Grubbing	Acre	5.15	$1,650	$ 8,500	Selective Clearing and Grubbing (medium)
6	Level and Till	Sq. Yard	24,933	$0.75	$ 18,675	
7	Demobilization	LS	1	3%	$ 2,841.04	
	Construction Subtotal				$ 100,383.27	
	20% Construction Contingency				$ 20,076.65	
	20% Engineering (Design & Construction)				$ 24,091.98	
	Update Adaptive Management Model				$ 200.00	
Total Cost					**$ 144,800**	

FORT McCOY ADAPTIVE MANAGEMENT PLAN

NON-AGRICULTURAL BEST MANAGEMENT PRACTICES

INITIAL COST ESTIMATE (5 of 5)

	Best Management Practice	Units	Quantity	Unit Cost ($)	Initial Cost ($)	Comments
Watershed 56 Filter Strips						
1	Mobilization	LS	1	3%	$ 1,080.49	
2	Clearing and Grubbing for Filter Strip	Acre	10.0	$1,650	$ 16,572	Assume no Clearing needed
3	Grading for Filter Strip	Sq. Yard	24,306	$0.30	$ 7,292	Assume 50% of Area needs grading
4	Filter Strip Site Development (Seeding and Mulch)	Sq. Yard	24,306	$0.50	$ 12,153	Assume 50% of Area needs seeding
5	Demobilization	LS	1	3%	$ 1,080.49	
	Construction Subtotal				$ 38,177.40	
	20% Construction Contingency				$ 7,635.48	
	20% Engineering (Design & Construction)				$ 9,162.58	
	Update Adaptive Management Model				$ 200.00	
Total Cost					**$ 55,200**	

Watershed 57 Filter Strips						
1	Mobilization	LS	1	3%	$ 2,099.24	
2	Clearing and Grubbing for Filter Strip	Acre	20	$1,650	$ 32,197	Assume no Clearing needed
3	Grading for Filter Strip	Sq. Yard	47,222	$0.30	$ 14,167	Assume 50% of Area needs grading
4	Filter Strip Site Development (Seeding and Mulch)	Sq. Yard	47,222	$0.50	$ 23,611	Assume 50% of Area needs seeding
5	Demobilization	LS	1	3%	$ 2,099.24	
	Construction Subtotal				$ 74,173.23	
	20% Construction Contingency				$ 14,834.65	
	20% Engineering (Design & Construction)				$ 17,801.58	
	Update Adaptive Management Model				$ 200.00	
Total Cost					**$ 107,100**	

Watershed 58 - W1 Filter Strips						
1	Mobilization	LS	1	3%	$ 293.13	
2	Clearing and Grubbing for Filter Strip	Acre	0	$1,650	$ -	Assume no Clearing needed
3	Grading for Filter Strip	Sq. Yard	11858.0	$0.30	$ 3,557	Assume 50% of Area needs grading
4	Filter Strip Site Development (Seeding and Mulch)	Sq. Yard	11,858	$0.50	$ 5,929	Assume 50% of Area needs seeding
5	Demobilization	LS	1	3%	$ 284.59	
	Construction Subtotal				$ 10,064.12	
	20% Construction Contingency				$ 2,012.82	
	20% Engineering (Design & Construction)				$ 2,415.39	
	Update Adaptive Management Model				$ 200.00	
Total Cost					**$ 14,700**	

FORT McCOY ADAPTIVE MANAGEMENT PLAN

NON-AGRICULTURAL BEST MANAGEMENT PRACTICES

ANNUAL COST ESTIMATE (1 of 2)

Option to Consider	Factor Description	Unit	Quantity	Price/Unit	Subtotal	Notes/Comments
Infiltration Basin (Each)	Maintenance Vegetation mowing	acre	1	$50.00	**$200**	Assume four times per year
	Total Per Acre Annual Maintenance Costs				**$200**	
	Inspection	hour	4	$100.00	**$400**	Assume quarterly
	Burn plan upkeep and implementation	hour	8	$75.00	**$600**	Assume consulting time once per year
	Burning Maintenance	hour	6	$35.00	**$210**	Assume once every 3 years; 3 people per burn
	Regrading and Re-seeding	each	1	$500.00	**$500**	Assume once per year
	Sediment removal/unclogging	each	1	$350.00	**$350**	Assume once per year
	Total Per Basin Annual Maintenance Costs				**$2,060**	
56-W1	**# of Acres**	1.6	**Total Annual Cost**		**$2,380**	
56-W2	**# of Acres**	0.5	**Total Annual Cost**		**$2,160**	
57-W1	**# of Acres**	1.4	**Total Annual Cost**		**$2,340**	
59-W1	**# of Acres**	2	**Total Annual Cost**		**$2,460**	
60-W1	**# of Acres**	1.2	**Total Annual Cost**		**$2,300**	
62-W1	**# of Acres**	0.75	**Total Annual Cost**		**$2,210**	
62-W2	**# of Acres**	0.95	**Total Annual Cost**		**$2,250**	
63-W1	**# of Acres**	2.25	**Total Annual Cost**		**$2,510**	

FORT McCOY ADAPTIVE MANAGEMENT PLAN

NON-AGRICULTURAL BEST MANAGEMENT PRACTICES

ANNUAL COST ESTIMATE (2 of 2)

Option to Consider	Factor Description	Unit	Quantity	Price/Unit	Subtotal	Notes/Comments
Grassed Swales Unit Costs	Maintenance Vegetation Mowing	acre	1	$50.00	**$200**	Assume four times per year
	Total Per Acre Annual Maintenance Costs				**$200**	
	Inspection	hour	2	$100.00	**$200**	Biannually
	Regrading and Re-seeding	each	1	$500.00	**$500**	Assume once per year
	Sediment removal/unclogging	each	1	$350.00	**$350**	Assume once per year
	Total Per Swale Annual Maintenance Costs				**$1,050**	
56-W1	**# of acres**	1.95	**Total Annual Cost**		**$1,440**	
56W2	**# of acres**	0.84	**Total Annual Cost**		**$1,219**	
57-W1	**# of acres**	0.47	**Total Annual Cost**		**$1,145**	
59-W1	**# of acres**	0.82	**Total Annual Cost**		**$1,213**	
60-W1	**# of acres**	0.12	**Total Annual Cost**		**$1,074**	
62-W1	**# of acres**	0.75	**Total Annual Cost**		**$1,200**	
63-W1	**# of acres**	0.68	**Total Annual Cost**		**$1,186**	
Filter Strip (per acre)	Maintenance Vegetation Mowing	acre	1	$200.00	**$200**	Assume four times per year
	Total Per Acre Annual Maintenance Costs				**$200**	
	Inspection	hour	2	$100.00	**$200**	Assume twice per year
	Regrading and Re-seeding	each	1	$500.00	**$500**	Assume once per year
	Total Per Filter Strip Annual Maintenance Costs				$700	
56	**# of acres**	10.04	**Total Annual Cost**		**$2,709**	
57	**# of acres**	19.51	**Total Annual Cost**		**$4,603**	
58	**# of acres**	4.90	**Total Annual Cost**		**$1,680**	

NOTE: THIS IS A PARTIAL ESTIMATE OF THE COST TO OPERATE AND MAINTAIN THE FACILITIES REQUIRED FOR THIS ALTERNATIVE. THIS ESTIMATE INCLUDES ONLY MAJOR O&M COST ITEMS FOR PURPOSES OF COMPARISON TO OTHER ALTERNATIVES.

FORT McCOY ADAPTIVE MANAGEMENT PLAN

AGRICULTURAL BEST MANAGEMENT PRACTICES
INITIAL COSTS

Item #	Item Description	Unit	Quantity	Price/Unit	Subtotal	Notes/Comments
Alternative C - Filter Strips (ID#1)						
1	Conservation Easement	Each	1	$10,000	$ 10,000	
2	Mobilization	LS	1	3%	$ 750.96	
3	Clearing and Grubbing for Filter Strip	Acre	6	$300	$ 1,800	Minor clearing and grubbing of farm fields
4	Grading for Filter Strip	Sq. Yard	29,040	$0.30	$ 8,712	
5	Seed	Sq. Yard	29,040	$0.50	$ 14,520	
Construction Contingency (20%)					$ 5,156.59	
Total Cost					**$ 40,940**	

FORT McCOY ADAPTIVE MANAGEMENT PLAN

AGRICULTURAL BEST MANAGEMENT PRACTICES
ANNUAL COSTS

Item #	Item Description	Unit	Quantity	Price/Unit	Subtotal	Notes/Comments
Alternative A - Nutrient Management Plan Example (ID #1)						
1	Soil Testing Labor	acre	58	$2.00	$116.32	Assume $8 per acre for 4-year period
2	Soil Testing Samples	acre	58	$0.40	$23.26	Assume $8 per sample, one sample per 5 acres every 4 years
3	Planning Development	acre	58	$12.25	$712.46	Assume 35 hours at $70/hr for 200 acre farm per year.
4	AM Plan Update	hour	2	$100.00	$200.00	
5	Outreach & Education	hour	2	$100.00	$200.00	
Total					**$1,252.04**	
Alternative B - Cover Crop Example (ID #3)						
1	Winter Rye Seed	acre	98	$15.00	$1,467.00	
2	Tillage	acre	98	$15.00	$1,467.00	
3	Planting	acre	98	$15.00	$1,467.00	
4	Fertilizer	acre	98	$40.00	$3,920.00	
5	Compliance Check and AM Model Update	hour	6	$100.00	$600.00	
6	Outreach & Education	hour	2	$100.00	$200.00	
Total					**$9,121.00**	
Alternative C - Filter Strips (ID#1)						
1	Maintenance Vegetation Mowing	acre	6	$200	$ 1,200	Assume $50 per acre and mowed four times per year.
3	Regrading and Re-seeding	each	1	$500.00	$ 500	Minor clearing and grubbing of farm fields
4	Land Rental	acre	4.50	$132	$ 594	Compensation for reduced crop area. Assumed at 75% of total filter strip area.
5	Compliance Check and AM Model Update	hour	6.00	$100	$ 600	
6	Outreach and Education	hour	2.00	$100	$ 200	
Total Annual Costs					**$ 3,094**	

Appendix G

Fort McCoy Adaptive Management Implementation Key Contacts

Fort McCoy Adaptive Management Plan Implementation Contact List

Stakeholder Affiliation	Title	Fort McCoy AM Role	Last name	First name	Street address	City, ST ZIP Code	E-mail address	Work Phone	Cell Phone	Notes
Fort McCoy		Project Management	Gundlach	Dave	2171 South 8th Avenue	Fort McCoy, WI 54656	david.b.gundlach.civ@mail.mil			
	Fisheries Biologist	Project Identification & Coordination	Noble	John	2171 South 8th Avenue	Fort McCoy, WI 54656	john.d.noble10.civ@mail.mil	608-388-5796		
	Director of Public Works		Miller	Mike	2171 South 8th Avenue	Fort McCoy, WI 54656	michael.l.miller1.civ@mail.mil	608-388-6546		
			Hessil	James	2171 South 8th Avenue	Fort McCoy, WI 54656	james.r.hessil.civ@mail.mil	608-388-4776		
	Planner	Funding Development	Harrie	Brian	2171 South 8th Avenue	Fort McCoy, WI 54656	brian.d.harrie.civ@mail.mil	608.388.5490		
WDNR		Area Engineer	Stephenson	Julia	5330 Mormon Coulee Road	La Crosse, WI 54601		608-785-9981		
		Statewide AM Coordinator	Minks	Amanda						
			Oldenburg							
		Regional AM Coordinator	Hillman	Lacey						
Monroe County LWCD	County Conservationist		Micheel	Bob	820 Industrial Drive, Suite 3	Sparta, WI 54656	bmicheel@co.monroe.wi.us	608-269-8973		
SEH (Engineering Consultant)	Senior Professional Engineer	Project Manager	Schaefer	Dan	809 North 8th Street, Suite 205	Sheboygan, WI 53081	dschaefer@sehinc.com	920-287-0829		
	Senior Professional Engineer	BMP Design & Implementation	Mickelson	Mark		Delafield, WI	mmickelson@sehinc.com			
	Graduate Engineer	Watershed Modeling	Kasch	Bill		Delafield, WI	bkasch@sehinc.com			
	Senior Technician	Agricultural BMP Design & Implementation	Hunt	Ryan		Chippewa Falls, WI	rhunt@sehinc.com			
	Professional Engineer	Compliance Checking & Modeling	Josh	Bohnert		La Crosse, WI	jbohnert@sehinc.com			
	Senior Professional Engineer II	Client Service Manager/Outreach & Education	Sanford	Randy		La Crosse, WI	rsanford@sehinc.com			
Colorado State University (CSU)			Rood	Steven						
			Woiak	Zachariah						
University of Wisconsin-Stevens Point (UWSP) Water &		AM Sample Analysis	DeVita	Bill	Daniel O. Trainer Natural Resources Building, Room 200, 800 Reserve Street	Stevens Point, WI 54481	weal@uwsp.edu	715-346-3209		
Monroe County Farm Bureau	President		Herricks	Jack	P.O. Box 5550	Madison, WI 53705		608.487.3094		
Coulee Region Trout Unlimited Chapter	President	Outreach and Education	Rees	Curt			curtrees@gmail.com	608-317-3747		
USDA-NRCS	District Conservationist		Komiskey	Michelle	820 Industrial Drive, Suite 3	Sparta, WI 54656-2207	michelle.komiskey@wi.usda.gov	608-269-8136, EXT 113	608-235-7471	
	Wisconsin CSP Coordinator	Agricultural CSP Development	Gerlich	Ryan			ryan.gerlich@wi.usda.gov	608-662-4422, EXT 227		
	Soil Conservationist		Blount	Veronica	820 Industrial Drive, Suite 3	Sparta, WI 54656-2207	veronica.blount@wi.usda.gov	608-269-8136, EXT 116		
USDA-FSA										
	Monroe County Farm Loan Manager		Laufenberg	Brock	820 Industrial Drive, Suite 1	Sparta, WI 54656-2207	brock.laufenberg@wi.usda.gov	(608) 269-8136		
	Monroe County Executive Director		Mulder	Mark	820 Industrial Drive, Suite 1	Sparta, WI 54656-2207	mark.mulder@wi.usda.gov	(608) 269-8136 ext 2		
USFWS	Private Lands Biologist		Pfost	Mark	N4385 Headquarters Road	Necedah, WI 54646	mark_pfost@fws.gov	608-565-4418		
	WI State Private Lands Office	Private Lands BMP Grants			4511 Helgesen Drive	Madison, WI 53718-6747	wisconsinplo@fws.gov	608-221-1206		
University of Wisconsin Extension	Monroe County Contact	Education & Outreach	Halfman	Bill	14345 County Highway B, Room 1	Sparta, WI 54656-0309	bill.halfman@ces.uwex.edu	608-269-8722		

Appendix H

WDNR Adaptive Management Request Form (3200-139)

State of Wisconsin
Department of Natural Resources
Bureau of Watershed Management
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Watershed Adaptive Management Request

Notice: Pursuant to s. NR 217.18, Wis. Adm. Code, this form must be completed and submitted to the Department at the time of the reissuance of an existing WPDES (Wisconsin pollutant discharge elimination system) permit to request adaptive management for phosphorus water quality based effluent limits (WQBEL).Failure to provide all requested information may result in denial of your request. Personal information collected will be used for administrative purposes and may be provided to requestors to the extent required by Wisconsin Open Records law [ss. 19.31-19.39, Wis. Stats.].

Type of Request:

- [x] This is the formal adaptive management request as required in s. NR 217.18(2)
- [ ] This is a preliminary adaptive management request (to be submitted as part of facility planning.)

Facility and Permit Information

Facility Name			WPDES Permit No.
Fort McCoy WWTP			WI - 0022420
Facility Address	**City**	**State**	**ZIP Code**
2280 Treatment Drive	Fort McCoy	WI	54656

Receiving Water: La Crosse River

Owner Contact Information

Last Name	First Name	MI	Phone No. (incl. area code)
Street Address			**FAX Number**
City	**State**	**ZIP Code**	**Email address**

Facility Information

Provide listed information for each lagoon or pond basin

Required for AM Request	Wis. Administrative Code Reference	Conclusion	Evidence/Source of information (attach as needed)
1. NPS contribute at least 50% of total P contribution	s. NR 217.18(2)(b)	[x] NPS contributes at least 50% [ ] NPS DOES NOT contribute at least 50%	PRESTO result, See AM Plan Section X.X
2. WQBEL Requires Filtration	s. NR 217.18(2)(c)	[x] Filtration required [ ] Filtration NOT required	See OER, Status Update Report, and AM Plan Section X.X
3. AM Plan	s. NR 217.18(2)(d)	[x] Plan is Included – Page 3 [ ] Plan is NOT Included *For a preliminary adaptive management request, AM plan not required*	

Facility Operation and Performance

1. **Current P removal capability** – If the facility is currently required by a WPDES permit to monitor effluent phosphorus (P) provide a summary of the influent and effluent annual average P concentrations for each of the past three (3) years. If permit required P data is not available, the applicant should provide any other P data that may be applicable and available. If no data is available, the Department may estimate the P effluent concentration by based on data from other similar facilities.

   See Section 2.2 for influent TP concentrations and loadings and Section 2.5 for effluent TP concentrations and loadings in Adaptive Management Plan.

2. **Facility Operation** – Provide a summary description of overall facility operation. If not a continuously discharging facility, describe storage procedures and the time periods when effluent discharge occurs.

See Section 2.1 of Adaptive Management Plan for a summary description of the overall facility operation.

3. **Previous Studies** – Reference or attach any facility planning or evaluation study that evaluated facility performance capabilities (Note – Only include studies that are recent, within 5 years, or otherwise applicable for the evaluation of the existing facility and current conditions).

2013 - WW Capacity Evaluation Study, 2014 - OER, 2015 - Status Update Report, 2016 - Preliminary Compliance Alternatives Plan

Adaptive Management Plan (s. NR 217.18(d))

This section should summarize the Adaptive Management Plan for internal and external review. A complete Adaptive Management Plan should be attached. Note: If this is a preliminary adaptive management request, this section is not required.

Watershed	Percent Contribution of Applicant Discharge
Upper La Crosse (HUC 070400060201, 070400060202, 070400060204)	Approximately 6% of annual TP loading at compliance point.

Action Area (include map)

See Figure 4.1 of Adaptive Management Plan for an action area map.

Watershed Characteristics and Timeline Justification

See section 4.1 of Adaptive Management Plan

Key Proposed Actions

See section 4.9 of Adaptive Management Plan

Key Goals and Measures for Determining Effectiveness

See section 4.9 of Adaptive Management Plan

Partner(s)

Monroe County LWCD, SEH, local farmers and landowners, UW-Extension, USDA-NRCS, Trout Unlimited, USDA-FSA, Farm Bureau, CSU, WEAL, USFWS, local agronomists

Funding Sources

Adaptive Management Request and Certification

Based on the information provided, I am requesting the Watershed Adaptive Management option to achieve compliance with phosphorus water quality standards in accordance with s. NR 217.19, Wis. Adm. Code.
I certify that the information provided with this request is true, accurate and complete to the best of my knowledge.

Print or type name of person submitting request*	Title
Signature of Official	Date Signed

*Must be an Authorized Representative for the treatment facility

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