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Texas A&M Transportation Institute

Developing a Performance Evaluation Facility for Sediment Control Devices

Technical Report 0-7100-R1

Cooperative Research Program

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16. Abstract

The U.S. Environmental Protection Agency requires efforts to reduce the amount of sediment generated (i.e., erosion control) and the off-site transport of sediment and construction-related chemicals (i.e., sediment and chemical control) at all construction sites. Sediment from construction sites represents the largest pollutant source among several other pollutants of concern (e.g., oils, gasoline, degreasers, paints, etc.). Eroded sediment from construction sites causes many problems, including adverse impacts on water quality as well as decreased capacities of reservoirs and streams, resulting in possible flooding.

Sediment control devices (SCDs) are used on construction sites to retain sediment and prevent stormwater from adversely affecting adjacent waterways. Such SCDs include silt fences, wattles, sediment logs and basins, filter dams, and inlet protection devices. These products are designed to be installed for specific applications (e.g., curb inlets, drop inlets, perimeter protection, etc.). However, no scientifically sound, repeatable testing methodology currently exists that replicates field conditions to test and determine SCD performance. This project developed a formal testing protocol/apparatus and proposed thresholds for a performance-based sediment control device testing program that will assist designers/engineers in selecting the most effective sediment control device for best management practices.

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DEVELOPING A PERFORMANCE EVALUATION FACILITY FOR SEDIMENT CONTROL DEVICES

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CHAPTER 1: INTRODUCTION

The U.S. Environmental Protection Agency's (2005) guidance document, *National Management Measure to Control Nonpoint Source Pollution from Urban Areas*, requires efforts to reduce the amount of sediment generated (i.e., erosion control) and the off-site transport of sediment and construction-related chemicals (i.e., sediment and chemical control) at all construction sites. While several pollutants are of concern (e.g., oils, gasoline, degreasers, paints, etc.), sediment from construction sites is by far the largest pollutant source (Canning, 1988). Sediment concentrations released from construction sites range from 10 to 20 times higher than concentrations released from agricultural land and 1,000 to 2,000 times higher than concentrations released from naturally forested land. (U.S. Environmental Protection Agency, 2000). Construction activities associated with highway projects involve earthmoving operations that disturb several square miles of previously undisturbed land areas. In April 2023, the Texas Department of Transportation (TxDOT) reported 7,634 active construction sites on their Project Tracker website (Texas Department of Transportation, 2018). The TxDOT is required by state and federal regulations to implement and maintain erosion and sediment control best management practices (BMPs) to protect water quality and minimize the discharge of pollutants from its construction sites.

Eroded sediment from construction sites causes many problems, including adverse impacts on water quality as well as decreased capacities of reservoirs and streams, resulting in possible flooding. Sediment increases the turbidity of the water causing impairment to aquatic life. Heavy metals and hydrocarbons, which are attached to soil particles, are often transported to the receiving waters. To mitigate the problems associated with the transport of construction site sediment to the receiving waters, proper erosion and sediment control measures must be included in all construction plans, both during and after construction.

Sediment control devices (SCDs) are generally designed to be temporary and are used on construction sites to retain sediment and prevent stormwater from leaving a site and adversely affecting adjacent waterways. They are used to either filter sediment from stormwater or detain sediment-laden water, allowing sediment to settle out. They are also often used to dissipate the flow energy of water. This reduction in velocity increases the amount of time it takes flowing water to enter, thus preventing overflow into drains and traps. However, if an SCD reduces flow

too much it can cause the water to back up and flood a roadway. Determining the proper flow rate of an SCD is extremely important.

Sediment control devices can be classified as permanent or temporary. Permanent SCDs include retention/detention ponds, underground vaults, inclined plate separators, and hydrodynamic separators. Temporary SCDs include silt fences, berms, bales, wattles, sediment logs and basins, geosynthetic dikes, filter dams, and inlet protection devices. These products are designed to be installed for specific applications (e.g., curb inlets, drop inlets, perimeter protection, etc.). This study focused on the performance of temporary SCDs.

While the TxDOT has been evaluating the performance of erosion control products since 1990, little information exists on the performance of SCDs. Most of the information regarding the performance of SCDs originates from manufacturer claims or small field observations. No scientifically sound, repeatable testing methodology currently exists that replicates field conditions to test and determine SCD performance.

PROJECT OBJECTIVE

The objective of the research was to develop a performance evaluation testing program for various temporary SCDs using full-scale laboratory experiments. The program included a testing protocol and apparatus for a performance based SCD testing program that will assist designers/engineers in selecting the most effective sediment control for BMPs. This program will quantify the ability of various SCDs to retain eroded sediments caused by sheet-flowing water under full-scale conditions by measuring and comparing the amount of sediment passing through each SCD. The final test results will report each SCD's calculated retention effectiveness. This data could then be used to develop an approved product list (APL) for sediment control devices similar to the current interactive APL for erosion control products, which will assist TxDOT designers/engineers in selecting the most appropriate SCD based on site-specific conditions. As with the erosion control materials, the effectiveness of an SCD is installation dependent. Thus, replicating field installation techniques is an important aspect of this testing program. These full-scale tests allowed the research team to not only quantify each SCD's effectiveness but also identify each SCD's limitations (i.e., installation problems, failure risk, and economic barriers) and probable causes of failure.

PROJECT APPROACH

Researchers conducted the project in four phases over a two-year period as follows:

1. Phase one consisted of an extensive literature review to identify current test methods for evaluating the performance of temporary sediment control technologies used for storm water management. Researchers also developed and sent a survey to various departments of transportation to identify the processes used to select SCDs in their construction projects. This phase was completed in October 2021.
2. Phase two involved an assessment of the existing SCD evaluation protocol and facilities at the Texas A&M Transportation Institute (TTI) Sediment and Erosion Control (SEC) Lab. In 2010, TTI researchers designed and built a system to test the performance of SCDs. This original system (protocol and facilities) was examined to identify its strengths and weaknesses. This phase was completed in February 2022.
3. Phase three included the development and construction of a new, full-scale facility to evaluate the performance of SCDs. Based on the information identified in the first two phases, researchers developed a test protocol and designed a test facility to evaluate the performance of temporary SCDs. The new protocol and facility allowed researchers to quantify the sediment retained by various SCDs and compare their efficiency. This phase was completed in July 2023.
4. Phase four included the conduct of multiple SCD performance tests to determine the ability of the protocol and facility to effectively quantify the performance of SCDs. This phase continued through the completion of the project in August 2023.

CHAPTER 2: LITERATURE AND STATE OF PRACTICE REVIEW

Like most other state departments of transportation (DOTs), the TxDOT utilizes many different roadside SCDs such as silt fences, straw bales, rock check dams, wattles, etc. in its design specifications. Despite the common practice of specifying SCDs, little impartial or nonbiased evidence exists regarding their performance. Because there are no recognized performance test standards for SCDs, end users and specifiers must rely on marketing claims. In the past, SCDs were not regarded as important because of their temporary nature. However, with the increasing emphasis on construction site water quality, as outlined in TxDOT's Environmental Management System, evaluating the performance of different SCDs is becoming increasingly important.

A literature review revealed very limited scientific, repeatable guidance for the selection of SCDs. Select documents indicated how SCDs were installed, while other documents indicated how well an SCD performed. Much of the literature focused on material specifications rather than performance measures and was based on manufacturer claims.

STANDARD TEST METHODS FROM ASTM INTERNATIONAL

The following ASTM International standard test methods have been developed to guide the evaluation of SCD performance:

- The *Standard Test Method for Determination of Sediment Retention Device Effectiveness in Sheet Flow Applications* (ASTM D7351-19) evaluates the ability of an SCD to retain sediment when exposed to sediment-laden water (ASTM International, 2019a).
- The *Standard Test Method for Determining Filtering Efficiency and Flow Rate of the Filtration Component of a Sediment Retention Device* (ASTM D5141) determines the filtering efficiency and flow rate of an SCD's filtration component (ASTM International, 2018b).
- The *Standard Test Method for Determination of Temporary Ditch Check Performance in Protecting Earthen Channels from Storm Induced Erosion* (ASTM D7208) evaluates temporary ditch check performance in reducing soil loss and sediment concentrations in stormwater runoff (ASTM International, 2019b).

In 2010, researchers at the Texas A&M Transportation Institute developed a sediment control device testing program. The objective of this program was to evaluate the performance of SCDs. While effective at evaluating SCD performance, the program was limited in the types of applications available for testing. This current project increased the testing capabilities of the original program to include curb/gutter, soil and nonsoil drop inlet, dewatering bag, and floating turbidity barrier applications. Table 1 compares the methods and capabilities of the TTI SEC Lab and two of the ASTM International standard test methods, ASTM D7351-19, and ASTM D5141.

Table 1. Test Method Comparison.

Test Property	TTI SEC Lab	ASTM D7351-19	ASTM D5141
Scope	Evaluates an SCD's performance related to sediment retention, change in turbidity, and change in flow rate.	Evaluates an SCD's ability to retain sediment when exposed to sediment-laden water sheet flows.	Evaluates the filtering efficiency and flow rate of an SCD's filtration component.
Method	Water and weighed sediment are mixed in a tank. The sediment-laden water is then allowed to flow through an installed SCD.	Sediment-laden water is allowed to sheet flow up to and seep over and/or under an installed SCD.	Sediment-laden water is allowed to flow through an SCD placed vertically across a flume or over a horizontal opening at the end of a flume.
Results	Change in turbidity, change in flow rate, and total suspended solids (TSS) removed by an SCD.	Total soil retained by an SCD using a weighted-interval, average percent solids based on grab samples.	Filtering efficiency (percent) and change in flow rate (gallons per square foot per minute) indicates the percent of sediment removed by an SCD.
Soil/Sediment	Known mass mixture of commercial clay and uniform natural sandy loam mixed with 1,500 gallons of water.	Loam with a target grain size distribution, plasticity index, and water/soil ratio of 4700/300 pounds.	Site-specific soil or soil representative of a target default gradation, at the client's discretion.
Material	Impermeable materials and concrete, TxDOT approved devices.	Impermeable materials.	Marine-grade plywood, plexiglass, aluminum, or other material.
Dimensions	Variable depending on the test method.	Retention area: 5 meters long with a 3:1 slope. Installation zone: 2 meters wide × intended length of SCD. Collector pan: 2–3 meters	48 inches long × 3-7/8 inches high.

Test Property	TTI SEC Lab	ASTM D7351-19	ASTM D5141
Water Source	1,500 gallon tank.	1,100 gallon tank (4,500 kilogram tank).	0.13 gallon sample.
Test Specimens	Variable.		3.3 feet long × 12 inches wide.
Overtopping Allowed	No.	Yes.	
Time	Variable depending on the SCD.	30 minute discharge time. 90 minute cutoff time.	

SURVEY OF STATE DOT PRACTICES

To assess the state of practice, the research team developed a survey to learn how other departments of transportation determine which SCDs are used on their projects. The DOTs chosen for the survey were identified through the literature review as departments that regularly use SCDs as part of their construction projects. The following states completed and returned the survey:

- Virginia (VDOT).
- New Hampshire (NHDOT).
- Michigan (MDOT).
- Indiana (INDOT).
- South Carolina (SCDOT).
- Oklahoma (ODOT).
- Oregon (ODOT).
- Iowa (Iowa DOT).
- Vermont (VTrans).

Table 2 summarizes the results of this survey. Specifically, survey respondents were asked to describe their SCD approval processes including any performance evaluation metrics, test method procedures, test apparatus or equipment requirements, and quality control/recertification procedures.

Table 2. State DOT Survey Results.

State DOT	Does your agency have an established approval process to determine which sediment control devices are used in your state?
Virginia	VDOT maintains the *Road and Bridge Standards and Specifications* in which the SCDs are provided. The Department of Environmental Quality (DEQ) maintains approved nonproprietary erosion and sediment control practices through the *Virginia Erosion and Sediment Control Handbook*.
Virginia (2)	VDOT has standards and specifications for SCDs and an APL from which SCDs can be selected for use.
New Hampshire	Relies on the NH Department of Environmental Services manuals to guide staff and contractor use of erosion and sediment control devices, https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/wd-08-20c.pdf.
Michigan	MDOT requires hydrodynamic separators to be approved for use by the New Jersey Department of Environmental Protection (NJDEP).
Indiana	No.
South Carolina	Requires contractors to use sediment and erosion control products from a qualified products list (QPL). SCDOT has sediment and erosion control standard specifications, standard drawings, and associated QPLs; these standards may not apply to other projects within South Carolina.
Oklahoma	No, but working on creating one.
Oregon	QPL.
Iowa	Bases selection primarily on material requirements.
Vermont	Through an APL, specification book approval process, and standard drawings committee.
State DOT	**Does your agency use performance evaluation results from other testing agencies to determine the sediment control devices approved for use in your state? If yes, please explain.**
Virginia	No, most SCDs are derived from the Virginia DEQ and as established in the *Virginia Erosion and Sediment Control Handbook*, applicable statewide.
Virginia (2)	Requires approved SCDs to meet various ASTM International and National Transportation Product Evaluation Program (NTPEP) testing methods.
New Hampshire	
Michigan	NJDEP.
Indiana	No.
South Carolina	Yes, SCDOT requires ASTM International standard tests conducted by an ASTM International certified third-party laboratory. SCDOT also requires NTPEP participation.
Oklahoma	Currently, products are approved based on written specifications.
Oregon	Relies on manufacturer's specifications meeting ODOT specifications using NTPEP or TxDOT tests.
Iowa	No.
Vermont	Testing standards are included in material specifications (ASTM International, American Association of State Highway and Transportation Officials [AASHTO]).

State DOT	What are the key metrics used to determine approval (turbidity, TSS, etc.)?
Virginia	For proprietary SCDs, criteria are established depending on application type. This includes materials, strength, and efficiency specifications. Nonproprietary SCDs are established through regulatory approval.
Virginia (2)	Various national product/material testing methods (ASTM International, NTPEP, etc.).
New Hampshire	
Michigan	Flow rate through the unit and percent TSS removal.
Indiana	No TSS or turbidity requirements set for temporary SCDs; 80% TSS set for post-construction mechanical BMPs.
South Carolina	Basic standard for all SCDOT best management practices is 80% TSS removal. Tensile strength, longevity, flow-through rate, and toxicity testing requirements are also built into the SCDOT standard specifications.
Oklahoma	N/A
Oregon	Shear stress, tear strength, water retention, and C factor.
Iowa	Material requirements: NTPEP for fabric, product data sheets.
Vermont	For silt fence, a key metric (per specification) is whether it meets AASHTO M288, Table 8.
State DOT	**Can you provide the standard operating procedures (SOPs) for the approval process?**
Virginia	VDOT does not have SOPs for evaluating SCD inclusion in the APL, this task is facilitated through VDOT's Material Division.
Virginia (2)	*2016 Road-Bridge Specifications* (Sections 244 and 600), https://www.virginiadot.org/business/const/spec-default.asp.
New Hampshire	
Michigan	NJDEP testing and certification.
Indiana	N/A
South Carolina	Resident engineer is responsible for ensuring that sediment and erosion control products are provided from approved suppliers on the QPL and are installed per SCDOT standard specifications or in accordance with the approved stormwater pollution prevention plan.
Oklahoma	Submit product and specification. Materials Division Office Engineer approves or denies.
Oregon	Compare manufacturer's listed specifications against ODOT specifications.
Iowa	Information is submitted to Iowa DOT Manufactured Materials Engineer, who reviews data.
Vermont	For APL inclusion, see https://vtrans.vermont.gov/highway/contruct-material/test-cert/certification.
State DOT	**Is specific apparatus/equipment required for the approval process?**
Virginia	No.
Virginia (2)	No. Individuals in various divisions review applications against specifications and list those who pass evaluation.
New Hampshire	
Michigan	N/A
Indiana	N/A
South Carolina	No.
Oklahoma	No.
Oregon	No.

Iowa	No.
Vermont	Rely on independent verification.
State DOT	**What quality control procedures are in place in the approval process?**
Virginia	For erosion and sediment control devices, VDOT does not utilize apparatus.
Virginia (2)	VDOT's Material Division is in charge of this process and manages APLs.
New Hampshire	
Michigan	N/A
Indiana	N/A
South Carolina	N/A
Oklahoma	None currently. We hope to involve our field districts to pilot new products before approval.
Oregon	Best professional judgement of technical resource (agency expert).
Iowa	Issues reported in the field to Construction and Materials Bureau will be investigated.
Vermont	N/A
State DOT	**Can you provide the performance evaluation results of current and past SCD testing?**
Virginia	No performance evaluation results for SCD testing. Through VDOT's research center, select monitoring has been completed (i.e., dewatering bags), but not as part of the approval process.
Virginia (2)	Contact the Materials Division at laura.hisey@vdot.virginia.gov.
New Hampshire	
Michigan	N/A
Indiana	N/A
South Carolina	SCDOT's materials laboratory has third-party laboratory test results and also modeling reports. Please contact for more information.
Oklahoma	N/A
Oregon	No.
Iowa	N/A
Vermont	N/A
State DOT	**Does your agency have a process to reevaluate/recertify an approved SCD after a certain time period?**
Virginia	N/A for nonproprietary.
Virginia (2)	N/A, ask Materials Division.
New Hampshire	
Michigan	No.
Indiana	N/A
South Carolina	Once a product is on a QPL, no recertification is needed unless requirements change. If requirements change, then a new submission is required within a determined time period (usually one year).
Oklahoma	No.
Oregon	No.
Iowa	Typically no, unless we are notified of a change in the manufacturing.
Vermont	APL is certified annually (https://vtrans.vermont.gov/highway/contruct-material/test-cert/certification) and the specification book is updated approximately every five years.

REVIEW OF RELATED STUDIES

A study by Garcia et al. (2015) conducted at the Erosion Control Research and Training Center (ECRTC) at the University of Illinois at Urbana-Champaign developed a testing protocol for evaluating three proprietary products used as ditch checks. This testing protocol used three different flow conditions to evaluate performance both in terms of water quality (i.e., turbidity and sediment concentration) and channel disturbance prior to permanent stabilization, while simulating the conditions typically found during construction activities.

A second study conducted by Bhattarai et al. (2021) at the ECRTC analyzed the ability of various SCDs to prevent sediment from exiting the perimeter of a site via sheet flow runoff. The goal of the project was to compare the products based on how well each reduced sediment leaving the site as sheet flow runoff and how much ponding occurred upstream of the product.

In an early study, Bhattarai et al. (2016) analyzed the effectiveness of curb and gutter inlet protection products for the Illinois Center for Transportation and the Illinois Department of Transportation. The goal of the project was to compare the various products and determine which best prevented sediment from entering the inlets at construction sites.

Wilson (2021), in the Department of Civil and Environmental Engineering at the University of Tennessee-Knoxville, conducted a study to determine a systematic protocol for testing sediment control practices. In this study, researchers built a scaled-down version of AASHTO's National Transportation Product Evaluation Program for erosion control products. A step-by-step methodology for testing sediment control practices was developed using this structure.

CHAPTER 3: BACKGROUND INFORMATION

LAWS AND REGULATIONS

National Pollutant Discharge Elimination System

The U.S. Environmental Protection Agency (EPA) originally introduced the National Pollutant Discharge Elimination System (NPDES) permit program as an amendment to the Clean Water Act (CWA) of 1972. The NPDES made it unlawful to discharge any pollutant into U.S. navigable waters (referred to as *receiving waters*). The initial emphasis of the CWA was *point source* pollution. A point source discharge is easy to identify because, as the name suggests, it comes from a single discernable source or specific point such as a pipe or ditch. However, after years of issuing NPDES permits and regulating point source discharges, it became clear that there was a more serious contributor to the problem of maintaining water quality. Stormwater runoff from impervious areas such as town streets, parking lots, buildings, construction sites, homes, and many other sources, proved to be a major source of pollution.

The NPDES gave state governments the authority to perform the permitting, administrative, and enforcement aspects of the program. The State of Texas assumed the authority to administer the NPDES in Texas on September 14, 1998, with the establishment of the Texas Commission on Environmental Quality's (TCEQ's) Texas Pollutant Discharge Elimination System (TPDES). The U.S. EPA continues to be the sole permitting agency in three states—Massachusetts, New Hampshire, and New Mexico.

Texas Pollution Discharge Elimination System

The Texas Pollution Discharge Elimination System authorizes and regulates the discharge of wastewater and stormwater (including certain allowable non-stormwater sources) originating from point sources. The TxDOT's construction operations are regulated by the construction general permit (CGP) TXR150000, which applies to stormwater discharges from construction projects that disturb 1 acre or more. The CGP requires that effective erosion and sediment controls be designed, installed, and maintained to minimize the discharge of pollutants. The controls must address factors such as the amount, frequency, intensity, and duration of precipitation; the nature of resulting stormwater runoff; and soil characteristics, including the range of soil particle sizes expected to be present on the site.

While the permit requires that erosion and sediment control devices be implemented and maintained, it does identify the technologies or methods to be included. The decision on which erosion and sediment control devices to be implemented for BMPs is left up to the discretion of the operator and should be appropriate for site specific conditions.

Edwards Aquifer Guidance Manual

The Edwards Aquifer is an underground water system that serves the water needs of nearly two million users in south central Texas. Because it is a karst aquifer, fractures, caves, sinking streams, and sinkholes act as conduits to the aquifer from the surface. While this means that the aquifer recharges quickly after a rain event, it also means that any surface pollution from stormwater runoff or spills will directly impact the water quality of the aquifer, possibly impairing drinking water and affecting the sensitive ecosystem. Therefore, it is critical to protect the aquifer and its contributing zone. To aid in this effort, the TCEQ has developed a manual, *Complying with the Edwards Aquifer Rules: Technical Guidance on Best Management Practices*. Unlike the TPDES, the Edwards Aquifer guidance manual is more prescriptive in the erosion and sediment control devices that must be implemented for BMPs for any construction activities in the eight counties where the aquifer is located. The manual offers a list of required temporary sediment control devices and their appropriate siting and maintenance requirements.

EROSION AND SEDIMENTATION PROCESSES

The two most basic categories of temporary control methods for construction generated stormwater pollution are erosion and sediment control. While the two terms are often used interchangeably, they represent two completely different processes with different mitigation techniques. Erosion control is the practice of minimizing soil loss by protecting the soil from rain, wind, and other natural and construction-related processes. Sediment control is the practice of capturing soil particles that have been detached and transported by wind or water. Erosion controls keep soil in place and are the primary means of preventing stormwater pollution, while sediment controls provide a necessary second line of defense. It is far more effective to use erosion controls to prevent sediment movement than to trap or capture it once it has been mobilized.

Soil erosion and sedimentation processes involve the following three steps:

- Detachment.
- Transport.
- Deposition.

Detachment

Soil detachment is defined as the dislodgment of soil particles from the soil mass at a particular soil surface location by erosion agents such as rainfall and stormwater surface flow. This process leads to the formation of rills and gullies. It is typically expressed as the sediment amount detached per unit area per unit time. Soil detachment is influenced by various factors such as flow hydraulics, soil properties, root systems, and land use. Flow hydraulics such as discharge, slope gradient, flow path, and velocity control the process of detachment. Detachment capacity increases with flow discharge and slope gradient.

Transport

Sediment transport is defined as the movement/relocation of soil particles. Detached soil particles suspended in the stormwater are transported and deposited downstream of their point of detachment. The two main factors in sediment transport are the settling rate and the boundary layer shear stress. The settling rate (also called Stokes settling) is the rate at which sediment falls through a liquid. It is controlled by the drag force (keeping a particle suspended) and the gravitational force (a function of the particle size). Understanding this relationship helps to define some of the forces that sediment transport must overcome relative to particle size. Sediment transport is not constant and can be affected by topography and soil particle type/size. The quantity and size of sediment particles increase with increased runoff velocities.

Deposition

Sediment deposition is defined as the settling of detached soil particles. As the velocity decreases, larger soil particles settle, while smaller particles are transported further downslope. While sediment deposition is important for aquatic habitat growth, it can cause environmental issues if the deposition rates are too high.

SEDIMENT CONTROL MECHANISMS

Filtration

Filtration is the process of intercepting and straining suspended soil particles. The primary filtration method involves preventing larger suspended soil particles from being able to pass through smaller filter media. Filtration is often effective for only a short time. Over time, the filter media may clog, causing catastrophic failure of the SCD.

Sedimentation

Sedimentation is the process by which suspended solids are removed from the water column due to settling. The rate of settling is dependent on the size and density of the solids. It is also dependent on whether the water is in a laminar or turbulent flow condition. The solids are retained and must be periodically removed.

Velocity Reduction

Slowing down sediment-laden water allows the settling of the suspended sediment. When the sediment load is greater than its transport capacity, the suspended sediment is deposited. The transport capacity is directly related to the velocity and shear stress. Therefore, decreasing the velocity will decrease the transport capacity and cause sedimentation (settling) to occur.

Coagulation and Flocculation

Suspended particles vary by source, particle size, shape, and charge. Particles suspended in water have a negative charge, repelling each other when they get close together. Therefore, the particles will not group together and remain in suspension unless proper coagulation and flocculation is used. Coagulation chemicals neutralize the negative charges. Once the charges are neutralized, the particles are able to group together. These larger particles are called *microflocs*. When the microflocs are mixed (a process called flocculation), the particle sizes increase from submicroscopic to visible suspended particles. The floc sizes continue to build until the particles are ready for sedimentation.

SEDIMENT CONTROL DEVICE PERFORMANCE FACTORS

Sediment Removal Efficiency

Sediment removal efficiency is defined as the percent decrease in runoff sediment load after passing through an SCD. It is a function of the initial suspended sediment concentration in runoff to be treated as follows:

$$\text{Sediment Removal Efficiency } (\eta) = \frac{(M_{IN} - M_{OUT})}{M_{IN}} \times 100 = \frac{(C_{IN} - C_{OUT})}{C_{IN}} \times 100 \qquad (1)$$

where

M_{IN} is the mass of sediment in the untreated runoff before passing through an SCD.

M_{OUT} is the mass of sediment in the runoff after passing through an SCD.

C_{IN} is the suspended sediment concentration (SSC) in untreated runoff before passing through an SCD.

C_{OUT} is the SSC in runoff after passing through an SCD.

Flow-Through Rate

Flow-through rate is defined as the rate at which sediment-laden water passes through an SCD. Flow-through rate typically decreases with time (the porosity of the SCD decreases due to retained sediment in the SCD). It is a function of the depth of the water retained by the SCD and its wetted area at any given time.

Ponding Volume

Ponding volume is defined as the volume of water retained behind an SCD at any given time. If the rate of water reaching an SCD is greater than the SCD flow-through rate, the ponding volume will increase. Lack of SCD maintenance will also increase ponding volume due to clogging issues. Ponded water that backs up in public use drive lanes creates a safety issue and must be avoided.

Design Capacity

Design capacity is the volume of water that can be retained behind an SCD. The water will overtop the SCD if the ponding volume exceeds the design capacity of the SCD. Many SCDs are

designed to pond water, allowing suspended particles to settle out before discharging the runoff downslope.

SEDIMENT CONTROL DEVICE APPLICATIONS

Sheet Flow Protection

Perimeter controls and inlet protection devices intercept sheet flows and remove sediment and other contaminants through ponding, settling, and physical filtration. They are often the final opportunity to provide stormwater treatment on a construction site and should always be used in conjunction with other SCDs. Perimeter and inlet control SCDs include the following:

- Silt fences.
- Rock/gravel/stone filter berms.
- Fiber rolls/wattles.
- Compost filter socks/berms.
- Curb opening inserts.
- Above/below grate baskets.
- Above grate enclosures.

Concentrated Channel Protection

Channel control SCDs are barriers that protect channels from stormwater concentrated channel flows. This protection is achieved using the same mechanisms as perimeter/inlet controls, along with velocity control. Most vegetated earthen channels can withstand mean channel velocities of 4–6 feet/second. Concentrated channel flow velocities often dramatically exceed that range. Therefore, velocity dissipation is used to slow the stormwater velocity and limit its destructive force. Sediment control devices that can be used to reduce stormwater velocity in channels include the following:

- Check dams.
- Rock berms.
- Sand/gravel bags.
- Hay/straw bales.
- Channel velocity interrupters.

Turbidity Curtains

Floating turbidity barriers, also known as turbidity curtains, are designed to restrict the flow of sediment-laden water, containing it in a limited area where the sediment is allowed to settle out before being carried into adjacent or joining watercourses. Typical construction includes a top flotation device, an impermeable fabric or skirt, and a chain hemmed in along the bottom of the skirt to provide ballast and keep the curtain vertical. The skirt is typically sized to be within 1 foot of the bottom of the waterbody. The skirt can be permeable or impermeable depending on the waterbody as follows:

- Silt curtains with permeable skirts allow water to flow through the skirt while containing the silt or sediment suspended in the water. The permeable skirts are fabricated using geotextile fabric that serves as a filter. Permeable skirts are typically used in applications with fast water, waves, or other demanding conditions.
- Silt curtains with impermeable skirts completely block the flow of water through the skirt. The impermeable skirts are fabricated using a polyvinyl chloride (PVC) fabric that does not allow water to flow through the skirt. Impermeable skirts are more commonly deployed in applications with slower moving or still waters and calmer weather conditions.

The following three types of floating turbidity barriers are generally approved for use by state DOTs:

- Type 1 is the most frequently specified type of barrier. It is recommended for construction sites located in protected areas that are exposed only to light winds and current velocities of less than 1 foot per second. This type of site may include ponds, shallow lakes, small streams, and marshes.
- Type 2 is designed to handle more severe conditions than Type 1. It is recommended for lakes, streams, and intercoastal and tidal areas where current velocities up to 5 feet per second are expected.
- Type 3 is a special adaption of Type 2. Approximately 20 percent of the barrier skirt fabric area is replaced with a polypropylene filter fabric conforming to some state DOT specifications. The filter fabric is intended to reduce the pressure on the curtain while

retaining silt. In practice, a filter fabric that is woven tightly enough to retain silt will not significantly reduce pressure on the curtain.

The TxDOT has established the following material specifications for all floating turbidity barriers approved for use on its construction projects:

- The top section must consist of an 18–22 ounce PVC-coated nylon fabric. It must be a bright yellow or orange color to increase visibility.
- The bottom section must consist of a geosynthetic fabric with filtration. An apparent opening size (AOS) of 0.220 millimeters maximum for nonwoven geotextiles and an AOS of 0.425 millimeters maximum for woven textiles is required when tested in accordance with ASTM D4751-99a (ASTM International, 2017).
- The opening size of the nonwoven or woven material cannot be enlarged under pressure or by being snagged.
- The turbidity barrier/curtain must have a minimum grab strength of 300 pounds per square inch when tested in accordance with ASTM D4632-91 (ASTM International, 2003).

The manufacturer must certify that the product supplied meets the requirements of TxDOT's Special Specification 5129 (14) for floating turbidity barriers (Texas Department of Transportation, 2021).

Dewatering Bags

Dewatering bags, also called filter bags or silt bags, are a type of filtration bag that allows water to pass through while trapping debris, sediment, and other particles. They are made from strong, durable geotextile fabric. Sediment-laden water that is pumped into the bag is slowed and held, allowing for the capture of sediment as the water flows through the bag. Once the process is complete, the dewatering bag can be opened, and the sediment can be emptied and discharged in a safe and responsible manner. Dewatering bag sizing is crucial for success. Peak flow rate generated from the dewatering pump and the total surface area of the project must be determined. Typically, a minimum of two times the peak flow rate generated is used to account for a 50 percent clogging factor.

The TxDOT's Special Specification 4091 establishes requirements for all dewatering bags (Texas Department of Transportation, 2017). Dewatering bags must meet these material specifications to be approved for use on any TxDOT construction projects. Table 3 summarizes the requirements of the TxDOT's Special Specification 4091.

Table 3. Texas Department of Transportation Special Specification 4091.

Property	Test Method	Value
Weight	ASTM D5261-10[a]	10 ounces per square yard
Grab Tensile Strength	ASTM D4632-91[b]	250 pounds
Mullen Burst	ASTM D3786/D3786M-18[c]	350 pounds per square inch
Ultraviolet (UV) Resistance	ASTM D4355/D4355M-21[d]	70% @ 500 hours
Flow Rate	ASTM D4491[e]	70 gallons per square foot per minute
Filtering Efficiency	ASTM D5141[f]	80%

[a]ASTM International (2018c).
[b]ASTM International (2003).
[c]ASTM International (2018a).
[d]ASTM International (2021).
[e]ASTM International (2014).
[f]ASTM International (2018b).

CHAPTER 4: TEST FACILITY DESIGN

The SCD performance test facility was constructed at the Texas A&M Transportation Institute Sediment and Erosion Control Lab. The TTI SEC Lab is a 21 acre research facility located at Texas A&M University's Respect, Excellence, Leadership, Loyalty, Integrity, and Selfless Service (RELLIS) Campus in Bryan, Texas. Since 1990, the TTI SEC Lab has provided the transportation industry with a world-renowned research and testing facility for roadside environmental management.

TEST FACILITY COMPONENTS

The performance evaluation of inlet, curb/gutter, and perimeter protection devices begins with the introduction of sediment-laden water to an SCD. The turbidity and flow rate of the influent is measured and compared to the effluent to determine turbidity reduction and percent flow rate reduction. All SCDs are installed in strict accordance with the manufacturer's published installation guidelines. The SCD test facility consists of six main components: a mixing tank, a delivery/monitoring system, a device installation area, a collection/monitoring system, monitoring instrumentation, and test sediment. The mixing tank, delivery/monitoring system, monitoring instrumentation, and test sediment components are described more fully below.

Mixing Tank

An elevated mixing tank mixes and delivers the sediment-laden water to the test systems. The mixing tank is a 1,600 gallon cylindrical polypropylene tank with a conical hopper bottom and a 6 inch butterfly valve (Figure 1). A three-phase electric motor and double mixing paddles ensure proper mixing of the sediment-laden test water. The mixing tank is used for evaluating all SCDs.

Figure 1. Mixing Tank.

Delivery/Monitoring System

The delivery/monitoring system consists of a series of 6 inch interior diameter pipes (Figure 2). A reduced T-joint was inserted in the piping to provide an access point for the inlet turbidity probe. The contact point between the probe and the reduced T-joint was sealed with an aluminum retaining ring. The piping also includes two 90 degree elbows downstream of the reduced T-joint to prevent light interference to the turbidity probe. The flow meter's bubbler tube was secured inside the pipe about 18 inches from the release point . The delivery/monitoring system is used for evaluating all SCDs.

Figure 2. Delivery/Monitoring System.

Monitoring Instrumentation

Turbidity Meter

Two turbidity sensors (Hach Solitax® ts-line sc), installed at the inlet and outlet, continuously measure (in 5 second intervals) and record the turbidity of the water entering and leaving the channel. Both sensors are connected to a controller system (Hach sc100). Datacom software, available on the Hach website, facilitates the retrieval of the turbidity data from the controller system to a field laptop.

Flow Meter

Two bubbler flow meters (ISCO® 4230) are used to monitor the flow at the inlet and outlet of the channel.

Test Sediment

The TTI researchers examined a variety of both commercially available and on-site sands and clays for use in the testing program. Researchers aimed to use a soil type that was readily available with a uniform particle size distribution (PSD). On-site sands and clays were used in the initial calibration attempts; however, these soils proved to have too many variations in particle size distribution and composition from batch to batch. The on-site soils also often contained small gravel and occasional large rocks that could potentially cause damage to the

testing system and monitoring equipment. Because of this, the researchers decided to use commercially available sediment that was uniform in composition and graded to have a uniform PSD. The first test runs were performed using only ground silica, Sil-Co-Sil, as the sediment additive. Figure 3 shows the PSDs for four different silica sediment combinations.

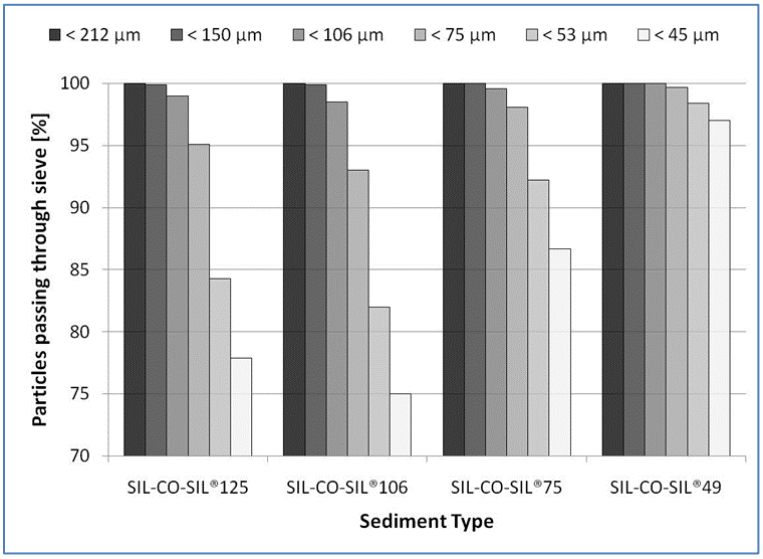

Figure 3. Particle Size Distributions.

During the initial tests, researchers found that the use of only silica presented a problem for many commercially available SCDs that use anionic polyacrylamide (PAM) as a flocculating agent. These SCDs target the smallest soil particles, fine silts, clays, and colloidal materials (5–10 microns in size). Because these flocculating agents are routinely used, a fine particulate clay additive was required in the sediment mix. The TTI researchers chose to use a commercially available ball clay (due to its uniform PSD and uniform electrostatic charge) in conjunction with the ground silica as the sediment additives for the testing facility. Figure 4 shows the PSD for the ball clay.

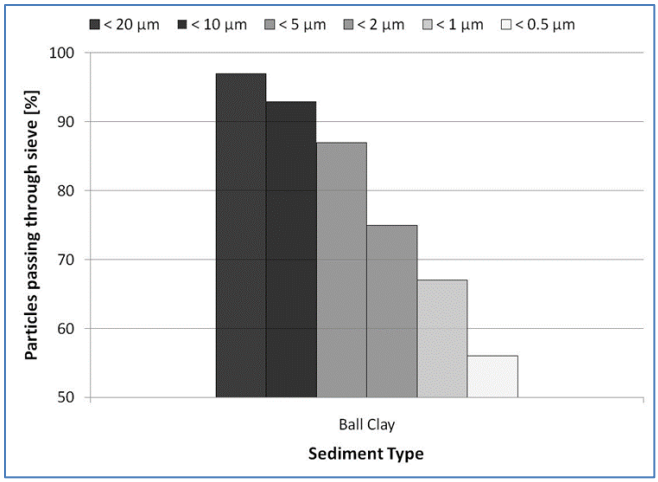

Figure 4. Ball Clay PSD.

After examining the particle size distribution of each of the silica sands and performing laboratory standardization tests of the turbidity probes with each of the silica grades, SIL-CO-SIL® 49 was found to be the most accurate potential sediment for use in testing. Because the silica could not be used alone, a 50-50 mixture (by weight) of SIL-CO-SIL®49 and ball clay was also examined as a potential sediment for use in testing.

During this research project, the original 50-50 silica/ball clay mix was found to be too fine for the testing of new more permeable SCDs. To increase the texture of the test sediment, researchers examined nine types of local commercially available sands. The sand selected for use in evaluating SCDs is a medium to fine sand classified by the U.S. Department of Agriculture's soil triangle as a sandy loam. Figure 5 shows the test results for the selected sand.

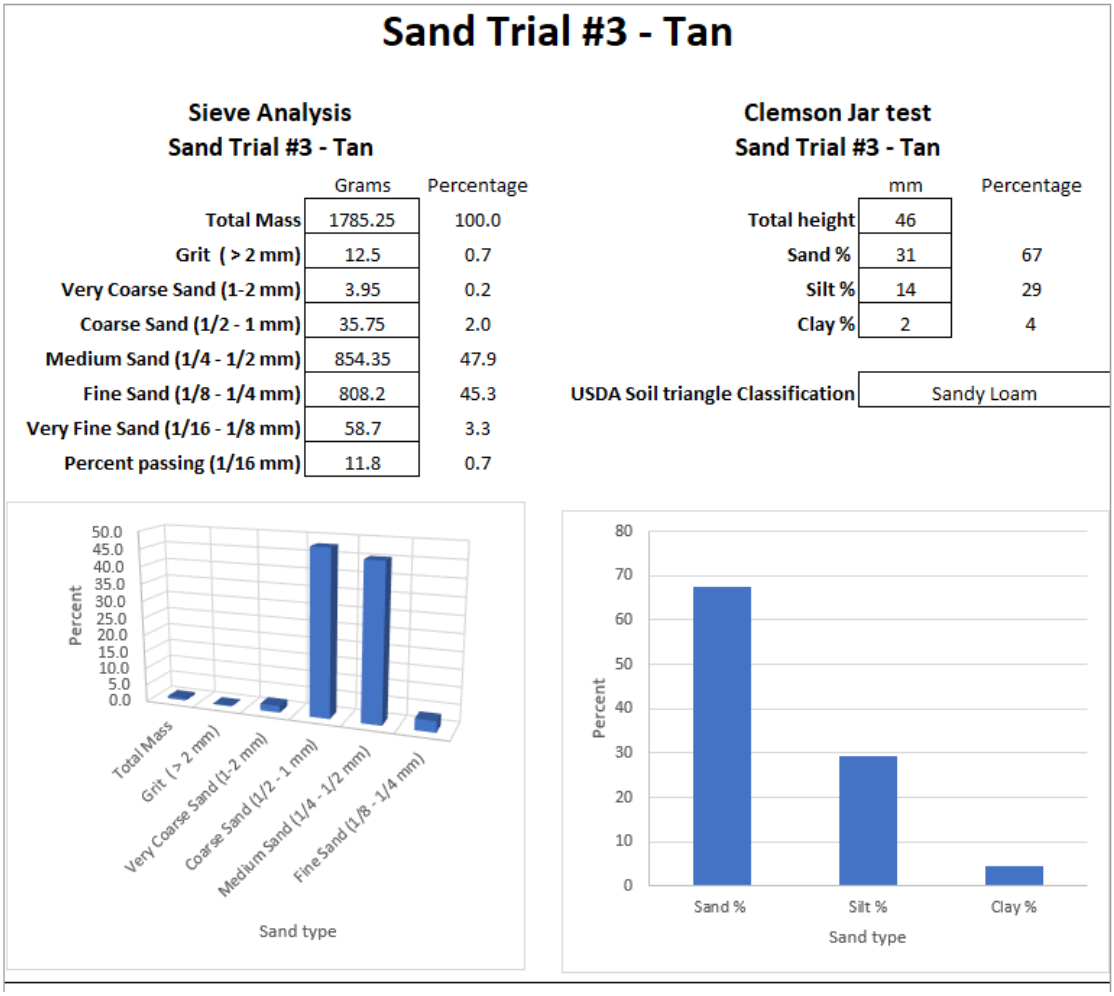

Figure 5. Test Results for Selected Sand (Sand Trial #3-Tan).

SEDIMENT CONTROL DEVICE EVALUATION SYSTEMS

The research team aimed to design a test system that would allow for the real-world installation and accurate performance measurement of diverse types of sediment control devices. To accomplish this, precast concrete type sediment collection systems that are specified directly for TxDOT construction sites were deemed to be the most feasible, because these precast systems are routinely built and installed on various construction sites throughout the state and are built according to detailed blueprints and standard TxDOT specifications. Obtaining devices that are actually installed to provide stormwater collection on streets and roads allowed the TTI researchers to install the various SCDs exactly as specified by manufacturers and in accordance with their installation on an actual jobsite. It was important that the test systems designed and built to evaluate the performance of SCDs were built to full-scale dimensions and followed

TxDOT specifications. Full-scale models allowed the true field installation procedures to be followed and recorded. The TxDOT and the Texas Concrete Pipe Association have worked together to establish a Standard Inlet and Manhole Program to assist TxDOT designers/engineers in the use of best practices for the layout, installation, and inspection of precast concrete inlets, junction boxes, and manholes. Through this program, design standards and specifications have been developed in accordance with the AASHTO bridge design specifications (American Association of State Highway and Transportation Officials, 2017). These standards and specifications for precast products are based on product height, thickness, width, length, inside/outside dimensions, orientation, and overall design. All precast concrete products in the new test facility meet TxDOT standards and specifications requirements.

Curb/Gutter Protection

To evaluate SCDs designed for curb/gutter protection, researchers designed and built a full-scale concrete curb and gutter section (Figure 6) in accordance with the TxDOT Design Division standards (Texas Department of Transportation, 2022). In this test system, sediment-laden water is released from the elevated mixing tank and allowed to flow along the curb until it reaches the opening. Turbidity and flow rate of the influent and effluent are measured to determine turbidity and flow rate reductions.

Figure 6. Curb/Gutter Protection Evaluation Test System.

Drop Inlet Protection

To evaluate SCDs designed to protect drop inlets, the researchers designed and built two types of full-scale concrete test systems: a concrete drop inlet and a soil surface drop inlet.

Concrete Drop Inlet

A concrete drop inlet test system measuring 12 feet × 12 feet with a cast iron grate measuring 3 feet × 3 feet was constructed to evaluate SCDs designed to protect drop inlets located in concrete areas such as roadways and parking lots (Figure 7). Sediment-laden water is delivered through a perforated 4 inch PVC pipe system that distributes water 360 degrees around the SCD to mimic actual field conditions. Turbidity and flow rate of the influent and effluent are measured to determine turbidity and flow rate reductions.

Figure 7. Concrete Drop Inlet Evaluation Test System.

Soil Surface Drop Inlet

A soil surface drop inlet test system measuring 12 feet × 12 feet with a cast iron grate measuring 3 feet × 3 feet was constructed to replicate drop inlets located in roadway medians (Figure 8). Sediment-laden water is delivered through the same 4 inch PVC pipe system used in the concrete drop inlet test system. Turbidity and flow rate of the influent and effluent are measured to determine turbidity and flow rate reductions.

Figure 8. Soil Surface Drop Inlet Evaluation Test System.

Instream and Perimeter Flume

To evaluate the performance of perimeter protection devices, a half pipe/half cylinder shaped concrete test channel measuring 18 feet long × 15 feet wide × 2.5 feet deep was constructed in 2010 (Figure 9). The test channel is made up of three distinct zones: a retention zone, an installation zone, and a collection zone.

Figure 9. Channel/Perimeter Protection Evaluation Test System.

Retention Zone

The retention zone is a longitudinal cylindrical section with a diameter of 25 feet . The channel is 12 feet long and 15 feet wide with a maximum depth of 2.5 feet. The channel maintains a constant 3 percent slope. The channel was constructed of concrete and surfaced with waterproofing grout.

Installation Zone

The installation zone is a gap of 4 feet between the retention zone and collection zone with metal sliding gates on either side. The installation zone can be filled with any type of test soil. The proposed soil for testing SCDs is a high plasticity index (PI) clay. The surface of the clay in the installation zone was shaped to match the profile of the channel.

Collection Zone

The collection zone mimics the shape and dimensions of the retention zone (a longitudinal cylindrical section measuring 25 feet in diameter, 12 feet in length, 15 feet in width, and

maximum 2.5 feet in depth) except it is significantly shorter in length (only 2 feet long). The collection zone provides an area to channel the flow toward the collection/monitoring system.

Geotextile Dewatering Devices

Construction projects that require excavation often require dewatering. Dewatering is the process of removing groundwater from the construction site so equipment and workers have a more stable, safe work zone. Dewatering bags, also known as filter bags, are made of durable woven or nonwoven geotextile materials and are available in a variety of sizes. As sediment-laden water is pumped into the bag, the geotextile fabric filters the water as it passes through the material. Once the process is complete, the dewatering bag can be opened, and the sediment can be discharged safely.

To evaluate their performance, researchers placed a dewatering bag on the concrete pad used for evaluating drop inlet devices (Figure 10). This allowed for evaluation of dewatering bags and dewatering devices in a closed impervious system in which all water flowing out of the device is captured and monitored. Once in place, a discharge pipe is inserted on the supply end of the bag and sediment-laden water is pumped into the bag. The turbidity of the influent and effluent is measured to determine the turbidity reduction.

Figure 10. Geotextile Dewatering Device Evaluation Test System.

Floating Turbidity Barriers

To evaluate the performance of floating turbidity barriers, an open-top vertical sidewall flume measuring 80 feet long × 12 feet wide × 5.5 feet deep was constructed (Figure 11). This test system holds one acre-inch of water when filled to the overflow weir wall. This test system includes a premix tank for premixing sediment prior to ponding and is designed to pool water. This test system is used for installing and evaluating the performance of floating turbidity barriers and curtains.

Figure 11. Floating Turbidity Barrier Evaluation Test System.

CHAPTER 5: SEDIMENT CONTROL DEVICE TEST RESULTS

DATA RECORDED

The following data were measured and recorded for evaluating the performance of SCDs:

- Percent turbidity reduction.
- Percent flow rate reduction.
- Percent solids removal.

Percent Turbidity Reduction

Turbidity is a measure of suspended materials in water that affects water clarity. It indicates a liquid's clear or translucent properties based on its light-scattering properties. Testing turbidity reveals suspended solids, organic matter, and any other particles that cause the water to become cloudy. Nephelometric turbidity units (NTU) are used to describe the level of turbidity. Low NTU readings indicate clear water while high readings indicate cloudy water.

To determine the percent turbidity reduction, researchers compared the influent turbidity and the effluent turbidity using two methods. For some tests, turbidity was determined by taking readings every minute using real-time data from the Hach Solitax® ts-line sc turbidity meters that were located directly in the influent and effluent pipes. For other tests, ½ pint grab samples were taken, and turbidity was determined by evaluating each sample using the Hach 2100N benchtop lab model turbidimeter located in the TTI SEC Lab. Turbidity measurements were taken in these two different ways so that researchers could evaluate which of the two trial methods showed the most accurate and repeatable data readings.

Texas Commission on Environmental Quality Turbidity Requirements

The 2022 CGP requires turbidity benchmark monitoring for sites discharging dewatering water to sensitive waters (sediment-impaired or designated high quality waters). The turbidity benchmark threshold for the 2022 CGP is 50 NTUs unless an alternative benchmark is approved by the U.S. EPA.

Percent Flow Rate Reduction

Flow-through rate is defined as the rate at which sediment-laden water passes through an SCD. Flow-through rate typically decreases over time (retained sediment decreases the porosity of the SCD). It is a function of the depth of the water retained by the SCD and its wetted area at any given time.

To determine the percent change in flow rate, two ISCO® 4230 bubbler flow meters were connected to the inflow and outflow pipes, and readings were taken each minute. The total time for the sediment-laden water to empty from the tank and for the outflow to pass through the SCD and exit the test system were carefully recorded. This flow rate/time relationship is important for two reasons. First, it can be used to determine how much volume a particular sediment control device can handle without overtopping. Second, it can be used to determine how long it takes water to flow through a sediment control device. Sediment control devices vary significantly. Some are designed to have a slow flow-through rate and high ponding characteristics, which can potentially be highly effective for removing sediment but can also be dangerous and lead to slow discharge and flooding issues if used in the wrong type of setting. Reporting the percent change in flow rate for each SCD will allow designers and installers to properly match device flow characteristics with site specific stormwater runoff flow data and requirements.

Percent Solids Removal

To determine the percent solids removal, ½ pint SSC grab samples of both the inflow sediment-laden water and the outflow water from the pipe were taken at identical and regular intervals during the test. The full volume of each inflow and outflow sample was then placed in a drying oven and dried until all water had evaporated, leaving only the sediment. The difference in mass was calculated, and the average percent solids reduction for each device was determined.

PERFORMANCE THRESHOLDS

Performance thresholds for SCD approval will be developed when the test result dataset is statistically large enough to establish.

TYPES OF SEDIMENT CONTROL DEVICES EVALUATED

Once the construction of the stormwater collection system was completed, the TTI researchers reached out to multiple manufacturers to obtain sediment control devices for use in the research testing trials. The goal was to obtain a range of diverse products that could be installed and monitored in the various test systems. The response of the product manufacturers was positive; over 10 different companies provided and donated products for use in the research process.

Table 4 shows the 23 different products that were obtained and tested in each of the various SCD test systems previously described. Each of the products were given anonymous descriptive names in this research project. This project was designed to develop an accurate and repeatable test method; it was not designed to approve individual products. These anonymous products do, however, represent the many diverse manufactured products that are commercially available from well-known manufacturers and are produced under product and trade names that are commonly and currently marketed and used within the industry for erosion and sediment control.

Table 4. Products Evaluated.

Instream and Perimeter Devices	Concrete Drop Inlet	Soil Drop Inlet	Curb Inlet	Dewatering Bags	Floating Turbidity Barriers
Recycled Fiber Logs	No Device Calibration Test #1	No Device Calibration Test	No Device Calibration Test	Sediment Dewatering Bag	Floating Turbidity Barrier
Wood Fiber Bales	No Device Calibration Test #2	Fiber Log	Wood Wattle	-	-
Compost Socks	Above Ground Sediment Filter	Sediment Dome	Fiber Log	-	-
Wood Chip Log	Sediment Dome	Inlet Sediment Bag	Wire Backed Poly	-	-
Pine Wattles	Sediment Dome (Three Replications)	Sediment Dome and Inlet Bag	Wood Wattle Tandem	-	-
Milled Wood Sediment Control Logs	-	-	-	-	-

TEST RESULTS OVERVIEW

The test results from this project are described below. Summary data charts for each of the test trials are also included for each of the various sediment control device types. Detailed raw data for each of the 23 different test trials are included in Appendix A–F at the end of this report.

Concrete Drop Inlet Test Results

For the concrete drop inlet, two no device calibration runs, and three product test trials were performed. With no device installed, the turbidity reduction was very small. Even with no device present, a small reduction in turbidity still occurs because some suspended solids drop out of the flow as the water travels through the collection devices and pipes. The data summary in Figure 12 shows that the turbidity reduction was much higher when sediment control devices were installed. The sediment dome produced the highest reduction in turbidity in the concrete drop inlet trials.

As expected, almost no reductions in flow occurred when no devices were installed; the water was not restricted and flowed freely through the system. All sediment control devices evaluated in the concrete drop inlet produced similar percent flow reductions of 14.3–15.4 percent when tested.

Suspended solids reductions were also similar for all evaluated devices in this category. The above ground sediment filter had the best performance with a 51.84 percent removal efficiency.

Concrete Drop Inlet (SCD) Turbidity Reduction

Device	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)	Turbidity Reduction (%)
No Device Calibration Test #1	3180.29	2980.28	6.29
No Device Calibration Test #2	3055.06	2920.26	4.41
Above Ground Sediment Filter	3382.21	2636.58	22.05
Sediment Dome	4848.41	2518.06	48.06
3 Replicate Sediment Dome	4508.09	2547.45	43.49

Concrete Drop Inlet (SCD) Flowrate Characteristics

Device	Inlet Flowrate (gpm)	Outlet Flowrate (gpm)	Flow Reduction (%)
No Device Calibration Test #1	25.86	25.00	3.33
No Device Calibration Test #2	36.59	34.09	6.82
Above Ground Sediment Filter	51.72	44.12	14.71
Sediment Dome	68.18	57.69	15.38
3 Replicate Sediment Dome	68.28	58.46	14.37

Concrete Drop Inlet (SCD) Suspended Solids Reduction

Device	Inlet Suspended Solids (%)	Outlet Suspended Solids (%)	Suspended Solids Reduction (%)
Above Ground Sediment Filter	0.004003	0.001928	51.84
Sediment Dome	0.004003	0.002133	46.72
3 Replicate Sediment Dome	0.004003	0.002034	49.20

Figure 12. Concrete Drop Inlet Sediment Control Device Data Summary.

Dewatering Bag Test Results

As mentioned in the description of the various test systems, the dewatering bag was placed on top of the concrete drop inlet such that all water flowing out of the bag could be retained, collected, and evaluated. The dewatering bag produced only a 9.18 percent turbidity reduction, capturing only a small amount of the small particulate matter in the sediment-laden water. However, it proved very effective in capturing a significant percentage of the total solids present, removing 41.28 percent of the suspended solids. The dewatering bag also had a significant reduction in flow rate (29.17 percent reduced flow). Figure 13 summarizes these results.

Dewatering Bag (SCD) Turbidity Reduction

Device	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)	Turbidity Reduction (%)
Dewatering Bag	3169.17	2878.33	9.18

Dewatering Bag (SCD) Flowrate Characteristics

Device	Inlet Flowrate (gpm)	Outlet Flowrate (gpm)	Flow Reduction (%)
Dewatering Bag	88.24	62.50	29.17

Dewatering Bag (SCD) Suspended Solids Reduction

Device	Inlet Suspended Solids (%)	Outlet Suspended Solids (%)	Suspended Solids Reduction (%)
Dewatering Bag	0.004003	0.002351	41.28

Figure 13. Dewatering Bag Sediment Control Device Data Summary.

Soil Drop Inlet Test Results

For the soil drop inlet, the soil approach to the drop inlet had a significant effect on the results. During calibration testing with no device installed and when testing the inlet sediment bag, effluent turbidity readings were higher than influent turbidity readings. This unexpected result was caused by the sediment-laden water running over the soil approach—cutting rills and adding both turbidity and additional solids to the inflow. None of the tested devices showed high reductions in turbidity because of this issue. However, devices that were above ground and could filter out more of the added sediment performed best with respect to turbidity in this test system.

As expected, the flow rate reduction was lowest when no device was installed to restrict flow and was comparable for most of the sediment control devices evaluated. A notable exception was the fiber log product, which decreased the flow rate by 30.38 percent.

The suspended solids reduction was highest for the sediment dome, producing a 59.57 percent reduction in total inflow solids. The fiber log and the sediment dome/inlet bag combination reduced suspended solids by 29.10 and 21.04 percent, respectively. The inlet sediment bag performed poorly in this test system, producing an 81.77 percent increase in solids. This poor performance was attributed to the large amount of sediment that was introduced by rills cut in the soil approach. The subterranean inlet bag quickly filled up with sediment from the rills and

additional soil from the bare soil approach, causing water to flow out from the emergency release ports in the bag. At that point, the bag was not filtering anything—added sediment was flowing into and out of the bag without being filtered. The inlet sediment bag could perform differently in a setting where the inflow was controlled with a known and set sediment load. It did not work at all in a setting where the soil surrounding the drop inlet was easily dislodged, quickly overloading the device. This example demonstrates the importance of evaluating these products and installing them in settings that fit their proper use. Figure 14 summarizes the test results.

Soil Drop Inlet (SCD) Turbidity Reduction

Device	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)	Turbidity Reduction (%)
No Device Calibration Test	3414.00	3640.19	−6.63
Fiber Log	3477.26	3184.13	8.43
Sediment Dome	3477.06	3239.39	6.84
Inlet Sediment Bag	3343.27	4231.07	−26.55
Sediment Dome & Inlet Bag	3414.22	3404.56	0.28

Soil Drop Inlet (SCD) Flowrate Characteristics

Device	Inlet Flowrate (gpm)	Outlet Flowrate (gpm)	Flow Reduction (%)
No Device Calibration Test	35.71	33.33	6.67
Fiber Log	27.27	18.99	30.38
Sediment Dome	39.47	34.09	13.64
Inlet Sediment Bag	51.72	45.45	12.12
Sediment Dome & Inlet Bag	46.88	40.54	13.51

Soil Drop Inlet (SCD) Suspended Solids Reduction

Device	Inlet Suspended Solids (%)	Outlet Suspended Solids (%)	Suspended Solids Reduction (%)
Fiber Log	0.004003	0.002838	29.10
Sediment Dome	0.004003	0.001618	59.57
Inlet Sediment Bag	0.004003	0.007276	−81.77
Sediment Dome & Inlet Bag	0.004003	0.003161	21.04

Figure 14. Soil Drop Inlet Sediment Control Device Data Summary.

Curb Inlet Test Results

For the curb inlet, one no device calibration test was conducted, and four product test trials were performed. Figure 15 summarizes these results. Each of the devices tested produced significant turbidity reductions. The wood wattle tandem product had the highest removal efficiency.

Regarding flow rate, the fiber log reduced the flow rate by 71.51 percent. This very low flow-through rate can be desirable for certain applications such as perimeter protection. However, this low flow rate and subsequent ponding caused by this device could be dangerous and limiting in various roadway curb inlet type settings.

Curb Inlet (SCD) Turbidity Reduction

Device	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)	Turbidity Reduction (%)
No Device Calibration Test	4792.29	4635.50	3.27
Curb Inlet Wood Wattle	5597.61	2675.54	52.20
Curb Inlet Fiber Log	4764.08	2108.98	55.73
Curb Inlet Wire Backed Poly	4394.08	2560.54	41.73
Curb Inlet Wood Wattle Tandem	4322.44	1561.28	63.88

Curb Inlet (SCD) Flowrate Characteristics

Device	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)	Turbidity Reduction (%)
No Device Calibration Test	75.00	65.22	13.04
Curb Inlet Wood Wattle	24.59	17.86	27.38
Curb Inlet Fiber Log	28.30	8.06	71.51
Curb Inlet Wire Backed Poly	83.33	68.18	18.18
Curb Inlet Wood Wattle Tandem	36.59	30.00	18.00

Curb Inlet (SCD) Suspended Solids Reduction

Device	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)	Turbidity Reduction (%)
Curb Inlet Wood Wattle	0.004003	0.001142	71.48
Curb Inlet Fiber Log	0.004003	0.001565	60.91
Curb Inlet Wire Backed Poly	0.004003	0.001459	63.56
Curb Inlet Wood Wattle Tandem	0.004003	0.001587	60.36

Figure 15. Curb Inlet Sediment Control Device Data Summary.

Suspended solids reduction was favorable for all tested curb inlet SCD devices. The wood wattle had the highest removal efficiency (71.48 percent).

Instream and Perimeter Protection Test Results

Six products were evaluated in this category. These products were tested after construction of the instream and perimeter flume and were only evaluated for turbidity and flow rate reductions. These products varied in performance based on the individual characteristics of each device.

Table 5 summarizes the test results. Future products evaluated in this category will also be tested for suspended solids reduction.

Table 5. Instream and Perimeter Protection Sediment Control Device Flow Rate and Turbidity Reductions.

Product	Flowrate Reduction (%)	Turbidity Reduction (%)
Wood Fiber Bales	24.02	35.00
Wood Chip Log	6.92	27.27
Recycled Fiber Logs	27.56	18.64
Compost Socks	24.89	16.55
Pine Wattles	13.35	16.40
Milled Wood Sediment Control Logs	7.19	2.51

Floating Turbidity Barrier Test Results

A single floating turbidity barrier was tested. The barrier was placed in the concrete pond flume and water was added to the flume so that the top of the barrier would float. The barrier was designed with weights at the bottom so that 1 ft of open unrestricted horizontal flow could occur in the bottom foot of the water column. It is interesting to note the significantly high turbidity reduction (81.61%) as designed. Visual observations showed the sediment laden water flowing slowly in the open area at the bottom of the device as expected.

Table 6. Floating Turbidity Barrier (SCD) Turbidity Reduction

Device	Pre-Barrier Turbidity (NTU)	Post Barrier Turbidity (NTU)	Turbidity Reduction %
Dewatering Bag	141.72	26.06	81.61%

INTERACTIVE APPROVED PRODUCT LIST (APL)

The TTI SEC Lab has been evaluating the performance of rolled and hydraulically applied erosion control products since 1990. Approval is based on an erosion control product's ability to establish vegetation and limit sediment loss under full-scale test conditions. Originally, the test results were published as an alphabetical listing of all approved products. In 2021, researchers at TTI SEC Lab developed an Interactive Approved Product List (IAPL). This user-friendly, web-based program was designed to identify the most appropriate slope or channel protection erosion control products based on user inputs of site conditions and specific needs. Once user inputs are

complete, the IAPL identifies all approved products that match the site conditions entered. Product descriptions, photos (when available), and manufacturer website links are also provided for each product.

User input options, based on application type (i.e., slope protection, channel protection, or hydromulch), include the following:

- Slope protection.
  - Slope steepness.
    - Steep slope. Products tested at a 2:1 slope (horizontal:vertical) and approved for use on slopes steeper than 3:1.
    - Moderate slope. Products tested at a 3:1 slope and approved for use on slopes 3:1 and flatter. Includes products approved by extension from the steep slope (2:1 slope) test category.
  - Soil type.
    - Clay.
    - Sand.
  - Product type.
    - Rolled.
    - Hydraulically applied.
  - Desired longevity.
    - Ultra short term (up to 3 months).
    - Short term (up to 12 months).
    - Extended term (up to 24 months).
    - Long term (up to 36 months).
    - Permanent (longer than 36 months).
  - Wildlife entrapment risk.
    - Products designed or available with options that minimize wildlife entrapment risks per manufacturer specification.
- Channel protection.
  - Desired longevity.

        - Temporary. Natural and synthetic flexible channel liners with a peak tensile strength less than 50 pounds.
        - Permanent. Natural and synthetic flexible channel liners with a peak tensile strength equal to or greater than 50 pounds.
    - Expected shear stress conditions.
        - Temporary products: 2–4 pound-force per square foot.
        - Permanent products: 6–8 pound-force per square foot.
- Hydromulch. Products tested at a 4:1 slope and approved for hydroseeding on slopes 4:1 or flatter.
    - Soil type.
        - Clay.
        - Sand.

To develop guidance for selecting effective SCDs, the TTI researchers will revise and update the current IAPL for erosion control products to include SCDs that pass recommended thresholds. As the most effective SCD's are approved and subsequently added to the list, this will allow TxDOT's division and district designers/engineers and other personnel to review and select approved SCDs including drop inlet, curb/gutter, dewatering, floating turbidity barrier, and perimeter control devices which best meet their site-specific design criteria and stormwater treatment goals.

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APPENDIX A: CONCRETE DROP INLET RAW TEST DATA

No Device Calibration Test #1

Test Parameters	**Results**
Test Date	6/7/2023
Test Identification	Concrete Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	11:49 AM
Inflow Stop Time	12:48 AM
Outflow Start Time	11:49 AM
Outflow Stop Time	12:50 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	25.86
Average Outlet Flow Rate (GPM)	25.00
Percent Flow Rate Reduction (%)	3.33
Average Inlet Turbidity (NTU)	3180.29
Average Outlet Turbidity (NTU)	2980.28
Percent Turbidity Reduction (%)	6.29

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	24.02	0.00	Startup	Startup
2	37.74	16.54	Startup	Startup
3	44.60	25.21	Startup	Startup
4	35.68	22.85	Startup	Startup
5	24.70	20.48	Startup	Startup
6	24.02	26.39	3401	3122
7	23.33	27.57	2997	3037
8	23.67	26.00	3515	2904
9	45.63	25.21	3803	2049
10	31.56	26.39	3780	2886
11	27.45	24.42	3578	3023
12	34.65	32.30	3840	3020
13	30.19	32.30	3132	2975
14	30.54	30.72	2950	2913
15	32.94	31.51	2683	2925
16	33.28	30.72	2734	2889
17	36.71	29.15	2912	2887
18	40.83	27.97	2913	2884
19	38.77	27.97	2975	2946
20	41.17	29.15	2873	2882
21	59.70	30.72	3176	2920
22	35.68	29.15	2961	2893
23	37.40	27.97	2737	2884
24	22.99	26.39	2986	2917
25	22.30	26.00	3374	2956
26	37.40	25.21	3413	2988
27	40.83	25.21	3774	2885
28	44.60	22.85	3772	3012

No Device Calibration Test #1 (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
29	27.10	24.42	3827	3028
30	22.30	22.06	3814	3055
31	20.93	27.57	3364	3052
32	17.15	31.51	2610	2891
33	15.78	32.30	2640	3026
34	25.05	34.66	2574	3084
35	28.13	35.06	2862	3063
36	24.02	32.30	2767	3074
37	19.90	32.30	2991	3094
38	17.84	34.27	2943	3132
39	20.93	32.30	3104	3138
40	17.84	29.15	2796	3147
41	20.93	31.51	2732	3033
42	17.84	29.94	2621	3091
43	18.53	33.09	2606	3100
44	19.90	32.30	2334	3068
45	20.59	32.30	2732	3063
46	20.93	29.15	2440	3093
47	17.84	29.94	3510	3082
48	20.59	29.94	3887	3066
49	17.84	27.57	4012	3002
50	18.53	26.00	3972	2971
51	19.90	25.21	3751	2947
52	10.64	23.63	3751	3076
53	10.29	22.85	3735	2890
54	11.67	20.48	Reduced or no inflow	Reduced or no inflow
55	14.75	4.33	Reduced or no inflow	Reduced or no inflow
56	9.61	3.55	Reduced or no inflow	Reduced or no inflow
57	4.80	1.97	Reduced or no inflow	Reduced or no inflow
58	5.49	0.39	Reduced or no inflow	Reduced or no inflow
59	0.00	0.79	Reduced or no inflow	Reduced or no inflow
60	0.00	0.79	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

No Device Calibration Test #2

Test Parameters	**Results**
Test Date	6/12/2023
Test Identification	Concrete Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	10:55 AM
Inflow Stop Time	11:37 AM
Outflow Start Time	10:55 AM
Outflow Stop Time	11:39 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	36.59
Average Outlet Flow Rate (GPM)	34.09
Percent Flow Rate Reduction (%)	6.82
Average Inlet Turbidity (NTU)	3055.06
Average Outlet Turbidity (NTU)	2920.26
Percent Turbidity Reduction (%)	4.41

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	28.56	35.91	Startup	Startup
2	28.11	38.61	Startup	Startup
3	28.85	39.71	Startup	Startup
4	29.75	38.61	Startup	Startup
5	26.77	38.00	Startup	Startup
6	26.47	37.63	3911	3812
7	28.56	35.91	2756	2645
8	33.32	35.55	3094	2987
9	33.17	34.93	3359	3122
10	27.07	36.16	3104	3002
11	26.92	36.16	2751	2702
12	26.33	34.93	2916	2873
13	45.96	34.07	2453	2667
14	36.44	32.73	2447	2672
15	34.80	31.75	2732	2658
16	36.59	31.13	2322	2677
17	40.60	30.27	2892	2681
18	33.17	29.05	3699	3245
19	36.44	28.44	3311	3301
20	34.36	29.29	3139	3022
21	30.04	29.05	3120	3112
22	41.05	35.91	3024	3001
23	47.30	39.96	3210	3245
24	47.60	41.06	3235	3134
25	49.68	42.65	2877	2721
26	51.46	42.65	3280	3200
27	53.69	43.14	3447	3345
28	55.03	43.14	2989	2900

No Device Calibration Test #2 (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)*
29	53.40	41.67	2781	2675
30	50.87	41.67	2912	2900
31	44.62	41.67	2310	2300
32	46.41	40.69	3130	3012
33	45.96	39.71	3179	3001
34	45.51	38.61	2903	2804
35	44.32	37.63	3125	3005
36	42.69	36.65	2310	2723
37	40.60	34.56	2487	2711
38	39.27	33.71	4012	2716
39	21.57	31.99	4655	2718
40	3.72	31.75	Reduced or no inflow	Reduced or no inflow
41	2.97	27.21	Reduced or no inflow	Reduced or no inflow
42	0.00	14.22	Reduced or no inflow	Reduced or no inflow
43	0.00	1.64	Reduced or no inflow	Reduced or no inflow
44	0.00	0.20	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Above Ground Sediment Filter Test

Test Parameters	**Results**
Test Date	6/15/2023
Test Identification	Concrete Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	10:10 AM
Inflow Stop Time	10:40 AM
Outflow Start Time	10:12 AM
Outflow Stop Time	10:44 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	51.72
Average Outlet Flow Rate (GPM)	44.12
Percent Flow Rate Reduction (%)	14.71
Average Inlet Turbidity (NTU)	3382.21
Average Outlet Turbidity (NTU)	2636.58
Percent Turbidity Reduction (%)	22.05

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	32.08	0.00	Startup	Startup
2	39.12	0.00	Startup	Startup
3	40.69	40.62	Startup	Startup
4	42.25	42.16	Startup	Startup
5	41.47	39.86	Startup	Startup
6	43.82	39.09	3658	2514
7	45.38	39.86	3203	2537
8	39.91	39.86	3135	2542
9	43.82	34.49	3315	2545
10	40.69	39.86	2933	2548
11	39.12	29.89	2976	2551
12	40.69	29.89	3276	2557
13	39.91	32.19	3416	2563
14	39.12	37.56	3254	2572
15	39.91	39.09	2873	2503
16	43.82	36.79	2781	2600
17	43.82	37.56	3813	2610
18	39.12	34.49	2987	2620
19	39.91	39.09	2995	2630
20	42.25	34.49	3387	2634
21	58.69	73.58	3712	2839
22	64.16	81.25	4093	2838
23	93.11	88.15	4215	2759
24	103.29	107.31	3770	2726
25	101.72	93.51	3663	2714
26	78.25	82.01	3736	2717
27	62.60	64.38	3375	2721
28	66.51	67.45	3817	2736
29	54.77	54.42	2790	2702
30	0.00	45.99	Reduced or no inflow	Reduced or no inflow
31	0.00	30.66	Reduced or no inflow	Reduced or no inflow
32	0.00	29.13	Reduced or no inflow	Reduced or no inflow
33	0.00	13.80	Reduced or no inflow	Reduced or no inflow
34	0.00	1.53	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Sediment Dome Test

Test Parameters	**Results**
Test Date	7/20/2023
Test Identification	Concrete Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	10:10 AM
Inflow Stop Time	10:40 AM
Outflow Start Time	10:12 AM
Outflow Stop Time	10:44 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	68.18
Average Outlet Flow Rate (GPM)	57.69
Percent Flow Rate Reduction (%)	15.38
Average Inlet Turbidity (NTU)	4848.41
Average Outlet Turbidity (NTU)	2518.06
Percent Turbidity Reduction (%)	48.06

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	75.91	38.36	Startup	Startup
2	71.65	36.14	Startup	Startup
3	81.69	81.81	Startup	Startup
4	82.65	82.73	Startup	Startup
5	82.65	80.61	Startup	Startup
6	80.04	77.93	4720	2484
7	78.94	78.85	4842	2481
8	83.07	79.40	4871	2489
9	68.90	68.40	4864	2489
10	68.49	67.57	4830	2489
11	66.15	66.56	4824	2501
12	65.05	64.71	4825	2510
13	71.51	68.40	4832	2505
14	77.01	73.12	4791	2514
15	75.64	71.64	4907	2513
16	72.89	55.74	4870	2522
17	68.76	60.36	4710	2532
18	68.08	65.35	4849	2540
19	67.94	62.86	4797	2570
20	46.76	58.14	4749	2564
21	29.57	52.87	4730	2540
22	16.64	54.17	5412	2564
23	0	42.71	Reduced or no inflow	Reduced or no inflow
24	0	7.58	Reduced or no inflow	Reduced or no inflow
25	0	3.79	Reduced or no inflow	Reduced or no inflow
26	0	0.18	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Sediment Dome Test with Three Replicants

Test Parameters	**Results**
Test Date	7/20/2023
Test Identification	Concrete Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	10:10 AM
Inflow Stop Time	10:40 AM
Outflow Start Time	10:12 AM
Outflow Stop Time	10:44 AM

Measurements	**Results**			
	First Flow Repetition	**Second Flow Repetition**	**Third Flow Repetition**	**Average for All Flow Repetitions**
Inlet Total Volume (gal)	1500	1500	1500	1500
Outlet Total Volume (gal)	1500	1500	1500	1500
Average Inlet Flow Rate (GPM)	68.18	71.43	65.22	68.28
Average Outlet Flow Rate (GPM)	57.69	60.00	57.69	58.46
Percent Flow Rate Reduction (%)	15.38	16.00	11.54	14.37
Average Inlet Turbidity (NTU)	4848.41	4693.24	3982.61	4508.09
Average Outlet Turbidity (NTU)	2518.06	2579.06	2545.22	2547.45
Percent Turbidity Reduction (%)	48.06	45.05	36.09	43.49

Table 7. First Flow Repetition.

First Flow Repetition

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	75.91	38.36	Startup	Startup
2	71.65	36.14	Startup	Startup
3	81.69	81.81	Startup	Startup
4	82.65	82.73	Startup	Startup
5	82.65	80.61	Startup	Startup
6	80.04	77.93	4720	2484
7	78.94	78.85	4842	2481
8	83.07	79.40	4871	2489
9	68.90	68.40	4864	2489
10	68.49	67.57	4830	2489
11	66.15	66.56	4824	2501
12	65.05	64.71	4825	2510
13	71.51	68.40	4832	2505
14	77.01	73.12	4791	2514
15	75.64	71.64	4907	2513
16	72.89	55.74	4870	2522
17	68.76	60.36	4710	2532
18	68.08	65.35	4849	2540
19	67.94	62.86	4797	2570
20	46.76	58.14	4749	2564
21	29.57	52.87	4730	2540
22	16.64	54.17	5412	2564
23	0.00	42.71	Reduced or no inflow	Reduced or no inflow
24	0.00	7.58	Reduced or no inflow	Reduced or no inflow
25	0.00	3.79	Reduced or no inflow	Reduced or no inflow
26	0.00	0.19	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Sediment Dome Test with Three Replicants (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)*
1	72.36	3.44	Startup	Startup
2	73.64	38.76	Startup	Startup
3	82.40	39.62	Startup	Startup
4	83.67	60.29	Startup	Startup
5	86.36	114.26	Startup	Startup
6	80.99	107.66	4825	2576
7	80.70	103.35	4823	2551
8	79.43	101.05	4825	2549
9	70.53	99.90	4829	2556
10	70.39	99.90	4823	2559
11	69.40	90.43	4793	2500
12	66.43	90.43	4814	2502
13	69.11	88.13	4770	2578
14	77.31	81.82	4836	2579
15	77.73	68.04	4982	2592
16	74.34	64.59	4916	2606
17	69.11	54.55	4457	2611
18	68.12	43.06	3722	2632
19	70.10	45.36	4456	2618
20	46.64	43.92	4661	2594
21	31.24	38.18	4836	2579
22	0.00	17.80	4417	2662
23	0.00	4.02	Reduced or no inflow	Reduced or no inflow
24	0.00	0.86	Reduced or no inflow	Reduced or no inflow
25	0.00	0.57	Reduced or no inflow	Reduced or no inflow
26	0.00	0.00	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Sediment Dome Test with Three Replicants (Page 3)

Third Flow Repetition

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)*
1	66.46	7.68	Startup	Startup
2	65.42	44.86	Startup	Startup
3	65.94	75.89	Startup	Startup
4	77.15	77.12	Startup	Startup
5	76.11	74.97	Startup	Startup
6	74.67	72.82	4515	2456
7	73.24	82.04	3993	2468
8	76.63	91.87	3554	2512
9	71.68	86.64	3372	2511
10	70.76	84.49	3570	2515
11	69.46	80.19	4047	2523
12	66.07	78.04	4165	2521
13	66.59	71.28	4282	2524
14	70.37	72.82	4140	2528
15	71.16	71.28	4610	2531
16	69.33	68.21	4376	2537
17	64.77	61.76	3410	2543
18	64.51	55.61	3646	2561
19	62.81	48.55	4121	2577
20	51.61	58.38	3321	2597
21	44.70	57.76	2940	2591
22	40.66	41.48	4106	2680
23	39.88	28.88	5519	2639
24	0.00	6.45	Reduced or no inflow	Reduced or no inflow
25	0.00	0.31	Reduced or no inflow	Reduced or no inflow
26	0.00	0.61	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Above Ground Sediment Filter Suspended Solids Test

Date	6/15/2023
Sediment	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

			Outflow		
	5 min	**10 min**	**15 min**	**20 min**	**25 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	585.50	586.25	586.80	587.55	614.80
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	822.65	850.00	827.25	823.30	798.20
Pan and Dry Soil (g)	586.25	586.80	587.55	587.85	614.80
Wet Soil (g)	237.15	263.75	240.45	235.75	183.40
Dry Soil (g)	0.75	0.55	0.75	0.30	0.00
Percent Sediment (%)	0.003163	0.002085	0.003119	0.001273	0.000000

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Sample	0.001927910	%
Percent Removal	51.84074932	%

Sediment Dome Suspended Solids Test

Date	7/20/2023
Sediment	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

		Outflow	
	5 min	**10 min**	**15 min**
Sample	**1**	**1**	**1**
Pan Tare (g)	613.75	614.25	614.85
Clear Water (g)	0.00	0.00	0.00
Pan and Wet Soil (g)	865.85	867.85	857.85
Pan and Dry Soil (g)	614.25	614.90	615.30
Wet Soil (g)	252.10	253.60	243.00
Dry Soil (g)	0.50	0.65	0.45
Percent Sediment (%)	0.001983	0.002563	0.001852

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Sample	0.001927910	%
Percent Removal	51.84074932	%

Sediment Dome Suspended Solids Test with Three Replicants

Date	7/20/2023
Sediment	CNC Ball Clay + KB Sand
Technician	DF

First Repetition: Outflow Suspended Solids Percentage

		Outflow	
	5 min	**10 min**	**15 min**
Sample	**1**	**1**	**1**
Pan Tare (g)	613.75	614.25	614.85
Clear Water (g)	0.00	0.00	0.00
Pan and Wet Soil (g)	865.85	867.85	857.85
Pan and Dry Soil (g)	614.25	614.90	615.30
Wet Soil (g)	252.10	253.60	243.00
Dry Soil (g)	0.50	0.65	0.45
Percent Sediment (%)	0.001983	0.002563	0.001852

Second Repetition: Outflow Suspended Solids Percentage

		Outflow	
	5 min	**10 min**	**15 min**
Sample	**1**	**1**	**1**
Pan Tare (g)	605.70	606.30	606.85
Clear Water (g)	0.00	0.00	0.00
Pan and Wet Soil (g)	838.60	856.05	842.60
Pan and Dry Soil (g)	606.30	606.85	607.35
Wet Soil (g)	232.90	249.75	235.75
Dry Soil (g)	0.60	0.55	0.50
Percent Sediment (%)	0.00257	0.002202	0.002121

Third Repetition: Outflow Suspended Solids Percentage

		Outflow	
	5 min	**10 min**	**15 min**
Sample	**1**	**1**	**1**
Pan Tare (g)		607.90	608.15
Clear Water (g)	0.00	0.00	0.00
Pan and Wet Soil (g)	848.65	835.30	854.75
Pan and Dry Soil (g)	607.90	608.15	608.50
Wet Soil (g)	241.35	227.40	246.60
Dry Soil (g)	0.60	0.25	0.35
Percent Sediment (%)	0.002486	0.001099	0.001419

Mix Calculations	**First Repetition**	**Second Repetition**	**Third Repetition**	
Total Weight of Sediment Added	50.08	50.08	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	12510.00	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	0.004003197	0.004003197	%
Outlet Sample				
Average Percent Sediment for Outlet Samples	0.002132761	0.002299769	0.001668234	%
Percent Removal	46.72355976	42.5517057	58.3274529	%
Average Percent Removal for All Repetitions		49.20090612		%

APPENDIX B: DEWATERING BAG RAW TEST DATA

Sediment Dewatering Bag Test

Test Parameters	**Results**
Test Date	8/6/2023
Test Identification	Dewatering Bag Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	11:10 AM
Inflow Stop Time	11:27 AM
Outflow Start Time	11:10 AM
Outflow Stop Time	11:34 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	88.24
Average Outlet Flow Rate (GPM)	62.50
Percent Flow Rate Reduction (%)	29.17
Average Inlet Turbidity (NTU)	3169.17
Average Outlet Turbidity (NTU)	2878.33
Percent Turbidity Reduction (%)	9.18

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***			**Outlet Turbidity (NTU)***		
1	40.81	39.27	-	-	-	-	-	-
2	60.33	48.07	-	-	-	-	-	-
3	65.06	80.89	-	-	-	-	-	-
4	79.85	110.20	-	-	-	-	-	-
5	119.48	119.58	3166	3124	3206	2861	2864	2875
6	124.80	121.92	-	-	-	-	-	-
7	112.38	100.23	-	-	-	-	-	-
8	108.83	103.75	-	-	-	-	-	-
9	107.65	106.10	-	-	-	-	-	-
10	105.28	96.13	3148	3166	3205	2886	2888	2896
11	104.10	99.06	-	-	-	-	-	-
12	94.64	87.92	-	-	-	-	-	-
13	90.50	63.89	-	-	-	-	-	-
14	88.72	87.92	-	-	-	-	-	-
15	91.09	89.68	Inlet volume below sample port					
16	70.98	53.93	-	-	-	-	-	-
17	35.49	35.17	-	-	-	-	-	-
18	0.00	20.52	Reduced or no inflow			Reduced or no inflow		
19	0.00	11.72	Reduced or no inflow			Reduced or no inflow		
20	0.00	11.14	Reduced or no inflow			Reduced or no inflow		
21	0.00	7.03	Reduced or no inflow			Reduced or no inflow		
22	0.00	3.52	Reduced or no inflow			Reduced or no inflow		
23	0.00	1.17	Reduced or no inflow			Reduced or no inflow		
24	0.00	1.17	Reduced or no inflow			Reduced or no inflow		
Total	**1500**	**1500**						

* Turbidity samples were taken at 5 minute intervals, and readings were recorded on the HACH bench scale 2100N turbidimeter.

Sediment Dewatering Bag Suspended Solids Test

Date	8-7-2023
Sediment	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

	Outflow	
	5 min	**10 min**
Sample	**1**	**1**
Pan Tare (g)	605.70	606.30
Clear Water (g)	0.00	0.00
Pan and Wet Soil (g)	846.90	854.70
Pan and Dry Soil (g)	606.30	606.85
Wet Soil (g)	241.20	248.40
Dry Soil (g)	0.60	0.55
Percent Sediment (%)	0.002488	0.002214

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Sample	0.002350866	%
Percent Removal	41.2752812	%

APPENDIX C: SOIL DROP INLET RAW TEST DATA

No Device Calibration Test

Test Parameters	**Results**
Test Date	7/29/2023
Test Identification	Soil Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	11:15 AM
Inflow Stop Time	11:57 AM
Outflow Start Time	11:15 AM
Outflow Stop Time	12:00 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	35.71
Average Outlet Flow Rate (GPM)	33.33
Percent Flow Rate Reduction (%)	6.67
Average Inlet Turbidity (NTU)	3414.00
Average Outlet Turbidity (NTU)	3640.19
Percent Turbidity Reduction (%)	–6.63*

*Turbidity was higher (not reduced) because of soil runoff from around the drop inlet.

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)****			**Outlet Turbidity (NTU)****		
1	40.41	32.87	-	-	-	-	-	-
2	40.90	42.78	-	-	-	-	-	-
3	48.80	47.69	-	-	-	-	-	-
4	48.96	47.69	-	-	-	-	-	-
5	30.57	29.07	4200	4206	4212	3780	3897	3792
6	39.53	38.66	-	-	-	-	-	-
7	50.01	49.03	-	-	-	-	-	-
8	31.46	30.42	-	-	-	-	-	-
9	32.75	33.59	-	-	-	-	-	-
10	39.53	38.66	3180	3812	3919	3780	3778	3792
11	48.56	48.08	-	-	-	-	-	-
12	42.03	40.32	-	-	-	-	-	-
13	43.08	43.33	-	-	-	-	-	-
14	36.78	33.59	-	-	-	-	-	-
15	21.78	21.31	3200	3312	3346	3551	3507	3658
16	22.59	22.02	-	-	-	-	-	-
17	20.17	27.17	-	-	-	-	-	-
18	33.88	32.64	-	-	-	-	-	-
19	33.07	31.92	-	-	-	-	-	-
20	47.59	46.10	3270	3324	3150	3843	3800	3835
21	30.65	29.71	-	-	-	-	-	-
22	46.95	46.10	-	-	-	-	-	-
23	30.01	28.36	-	-	-	-	-	-
24	29.85	28.36	-	-	-	-	-	-
25	19.36	18.85	3021	2981	3055	3801	3778	3779

No Device Calibration Test (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)**			Outlet Turbidity (NTU)**		
26	21.78	19.88	-	-	-	-	-	-
27	20.97	18.85	-	-	-	-	-	-
28	29.04	27.88	-	-	-	-	-	-
29	36.30	35.57	-	-	-	-	-	-
30	37.91	37.47	3104	3242	3197	3684	3652	3677
31	36.54	35.57	-	-	-	-	-	-
32	36.30	35.57	-	-	-	-	-	-
33	39.53	46.82	-	-	-	-	-	-
34	46.79	45.55	-	-	-	-	-	-
35	35.49	35.57	3300	3343	3320	3015	3028	3017
36	33.07	32.16	-	-	-	-	-	-
37	35.49	35.88	-	-	-	-	-	-
38	38.72	37.39	-	-	-	-	-	-
39	38.72	37.63	-	-	-	-	-	-
40	45.17	44.68	Inlet volume below sample port					
41	37.91	36.44	-	-	-	-	-	-
42	20.97	20.12	-	-	-	-	-	-
43	0.00	9.19	Reduced or no inflow			Reduced or no inflow		
44	0.00	14.89	Reduced or no inflow			Reduced or no inflow		
45	0.00	4.59	Reduced or no inflow			Reduced or no inflow		
Total	**1500**	**1500**						

**Turbidity samples were taken at 5 minute intervals, and readings were recorded on the HACH bench scale 2100N turbidimeter.

Fiber Log Test

Test Parameters	**Results**
Product Name	Fiber Log
Test Date	7/28/2023
Test Identification	Soil Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	11:05 AM
Inflow Stop Time	12:00 PM
Outflow Start Time	11:08 AM
Outflow Stop Time	12:24 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	27.27
Average Outlet Flow Rate (GPM)	18.99
Percent Flow Rate Reduction (%)	30.38
Average Inlet Turbidity (NTU)	3477.26
Average Outlet Turbidity (NTU)	3184.13
Percent Turbidity Reduction (%)	8.43

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***			**Outlet Turbidity (NTU)***		
1	21.09	0.00	-	-	-	-	-	-
2	21.88	0.00	-	-	-	-	-	-
3	31.89	11.25	-	-	-	-	-	-
4	31.63	25.86	-	-	-	-	-	-
5	31.10	28.58	3694	3567	3610	3122	3348	3415
6	31.37	25.86	-	-	-	-	-	-
7	31.37	25.86	-	-	-	-	-	-
8	30.57	24.50	-	-	-	-	-	-
9	28.99	24.50	-	-	-	-	-	-
10	29.52	23.14	3500	3476	3510	3276	3340	3289
11	28.73	23.14	-	-	-	-	-	-
12	27.15	23.41	-	-	-	-	-	-
13	28.20	24.50	-	-	-	-	-	-
14	23.72	24.50	-	-	-	-	-	-
15	23.46	24.50	3562	3478	3320	3241	3198	3193
16	23.72	24.50	-	-	-	-	-	-
17	22.40	23.14	-	-	-	-	-	-
18	23.72	23.14	-	-	-	-	-	-
19	24.51	23.41	-	-	-	-	-	-
20	25.04	23.27	3204	3312	3120	3100	3099	3178
21	23.72	21.78	-	-	-	-	-	-
22	23.99	22.46	-	-	-	-	-	-
23	24.51	24.63	-	-	-	-	-	-
24	24.78	21.91	-	-	-	-	-	-
25	23.72	23.14	3642	3455	3432	3198	3150	3127
26	23.46	21.37	-	-	-	-	-	-
27	23.19	22.18	-	-	-	-	-	-
28	24.25	21.78	-	-	-	-	-	-
29	24.78	21.91	-	-	-	-	-	-
30	23.72	23.14	3441	3564	3408	3200	3178	3224
31	24.25	22.46	-	-	-	-	-	-

Fiber Log Test (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*			Outlet Turbidity (NTU)*		
32	26.62	20.96	-	-	-	-	-	-
33	26.36	21.78	-	-	-	-	-	-
34	31.63	18.24	-	-	-	-	-	-
35	29.78	20.14	3612	3509	3476	3302	3201	3209
36	28.47	20.41	-	-	-	-	-	-
37	29.78	20.28	-	-	-	-	-	-
38	30.05	20.41	-	-	-	-	-	-
39	30.31	23.14	-	-	-	-	-	-
40	32.42	24.77	3541	3501	3467	3212	3163	3108
41	31.63	26.67	-	-	-	-	-	-
42	32.16	31.85	-	-	-	-	-	-
43	32.68	31.85	-	-	-	-	-	-
44	31.89	31.30	-	-	-	-	-	-
45	31.37	32.66	3476	3540	3469	3100	3089	3044
46	30.84	34.02	-	-	-	-	-	-
47	29.78	37.02	-	-	-	-	-	-
48	30.57	37.02	-	-	-	-	-	-
49	31.37	35.38	-	-	-	-	-	-
50	31.63	35.66	Inlet volume below sample port					
51	28.99	35.38	-	-	-	-	-	-
52	28.47	33.62	-	-	-	-	-	-
53	24.25	31.30	-	-	-	-	-	-
54	23.46	24.50	-	-	-	-	-	-
55	11.07	20.69	Reduced or no inflow			Reduced or no inflow		
56	0.00	19.19	Reduced or no inflow			Reduced or no inflow		
57	0.00	18.24	Reduced or no inflow			Reduced or no inflow		
58	0.00	17.01	Reduced or no inflow			Reduced or no inflow		
59	0.00	13.07	Reduced or no inflow			Reduced or no inflow		
60	0.00	9.80	Reduced or no inflow			Reduced or no inflow		
61	0.00	9.53	Reduced or no inflow			Reduced or no inflow		
62	0.00	8.30	Reduced or no inflow			Reduced or no inflow		
63	0.00	8.17	Reduced or no inflow			Reduced or no inflow		
64	0.00	7.49	Reduced or no inflow			Reduced or no inflow		
65	0.00	6.80	Reduced or no inflow			Reduced or no inflow		
66	0.00	6.53	Reduced or no inflow			Reduced or no inflow		
67	0.00	6.40	Reduced or no inflow			Reduced or no inflow		
68	0.00	5.31	Reduced or no inflow			Reduced or no inflow		
69	0.00	4.08	Reduced or no inflow			Reduced or no inflow		
70	0.00	3.54	Reduced or no inflow			Reduced or no inflow		
71	0.00	3.27	Reduced or no inflow			Reduced or no inflow		
72	0.00	2.99	Reduced or no inflow			Reduced or no inflow		
73	0.00	1.36	Reduced or no inflow			Reduced or no inflow		
74	0.00	2.45	Reduced or no inflow			Reduced or no inflow		
75	0.00	2.04	Reduced or no inflow			Reduced or no inflow		
76	0.00	0.54	Reduced or no inflow			Reduced or no inflow		
77	0.00	0.41	Reduced or no inflow			Reduced or no inflow		
78	0.00	0.41	Reduced or no inflow			Reduced or no inflow		
79	0.00	0.27	Reduced or no inflow			Reduced or no inflow		
Total	**1500**	**1500**						

*Turbidity grab samples were taken at 5 minute intervals, and readings were recorded on the HACH bench scale 2100N turbidimeter.

Sediment Dome Test

Test Parameters	**Results**
Product Name	Sediment Dome
Test Date	8/9/2023
Test Identification	Soil Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	10:02 AM
Inflow Stop Time	10:40 AM
Outflow Start Time	10:03 AM
Outflow Stop Time	10:47 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	39.47
Average Outlet Flow Rate (GPM)	34.09
Percent Flow Rate Reduction (%)	13.64
Average Inlet Turbidity (NTU)	3477.06
Average Outlet Turbidity (NTU)	3239.39
Percent Turbidity Reduction (%)	6.84

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***			**Outlet Turbidity (NTU)***		
1	40.42	0.00	-	-	-	-	-	-
2	40.05	14.90	-	-	-	-	-	-
3	41.53	38.67	-	-	-	-	-	-
4	40.79	38.67	-	-	-	-	-	-
5	46.72	45.41	3692	3638	3717	3475	3419	3551
6	42.65	40.09	-	-	-	-	-	-
7	41.53	41.86	-	-	-	-	-	-
8	41.90	39.38	-	-	-	-	-	-
9	34.86	32.64	-	-	-	-	-	-
10	36.71	34.77	3500	3476	3510	3276	3340	3289
11	37.08	33.35	-	-	-	-	-	-
12	35.60	33.35	-	-	-	-	-	-
13	34.12	31.58	-	-	-	-	-	-
14	33.00	31.22	-	-	-	-	-	-
15	33.00	29.80	3562	3478	3320	3241	3198	3193
16	35.60	33.35	-	-	-	-	-	-
17	35.60	32.64	-	-	-	-	-	-
18	35.60	33.35	-	-	-	-	-	-
19	35.97	36.19	-	-	-	-	-	-
20	37.45	36.54	3204	3312	3120	3100	3099	3178
21	37.82	34.06	-	-	-	-	-	-
22	38.20	34.77	-	-	-	-	-	-
23	43.02	43.28	-	-	-	-	-	-
24	43.02	36.19	-	-	-	-	-	-
25	42.65	40.09	3642	3455	3432	3198	3150	3127
26	42.27	39.38	-	-	-	-	-	-

Sediment Dome Test (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*			Outlet Turbidity (NTU)*		
27	46.72	46.12	-	-	-	-	-	-
28	47.47	47.89	-	-	-	-	-	-
29	48.21	46.12	-	-	-	-	-	-
30	48.21	45.41	3642	3455	3432	3198	3150	3127
31	48.95	46.12	-	-	-	-	-	-
32	49.69	48.96	-	-	-	-	-	-
33	49.32	47.19	-	-	-	-	-	-
34	44.13	43.99	-	-	-	-	-	-
35	43.76	43.99	Inlet volume below sample port					
36	37.82	49.67	-	-	-	-	-	-
37	27.81	49.67	-	-	-	-	-	-
38	0.74	46.12	Reduced or no inflow			Reduced or no inflow		
39	0.00	25.19	Reduced or no inflow			Reduced or no inflow		
40	0.00	19.87	Reduced or no inflow			Reduced or no inflow		
41	0.00	2.84	Reduced or no inflow			Reduced or no inflow		
42	0.00	1.77	Reduced or no inflow			Reduced or no inflow		
43	0.00	1.77	Reduced or no inflow			Reduced or no inflow		
44	0.00	1.77	Reduced or no inflow			Reduced or no inflow		
Total	**1500**	**1500**						

*Turbidity grab samples were taken at 5 minute intervals, and readings were recorded on the HACH bench scale 2100N turbidimeter.

Inlet Sediment Bag Test

Test Parameters	**Results**
Test Date	8/9/2023
Test Identification	Soil Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	9:05 AM
Inflow Stop Time	9:34 AM
Outflow Start Time	9:05 AM
Outflow Stop Time	9:38 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	51.72
Average Outlet Flow Rate (GPM)	45.45
Percent Flow Rate Reduction (%)	12.12
Average Inlet Turbidity (NTU)	3343.27
Average Outlet Turbidity (NTU)	4231.07
Percent Turbidity Reduction (%)	–26.55*

*Turbidity was significantly higher (not reduced) because of major soil rills and runoff from the bare soil surrounding the drop inlet.

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)****			**Outlet Turbidity (NTU)****		
1	49.84	45.99	-	-	-	-	-	-
2	66.06	78.41	-	-	-	-	-	-
3	70.41	75.77	-	-	-	-	-	-
4	75.16	71.63	-	-	-	-	-	-
5	79.11	73.51	3726	3754	3862	4400	4400	4400
6	79.11	68.99	-	-	-	-	-	-
7	83.07	73.51	-	-	-	-	-	-
8	71.20	66.73	-	-	-	-	-	-
9	71.20	64.46	-	-	-	-	-	-
10	75.16	68.23	3373	3391	3344	4323	4340	4375
11	55.38	54.66	-	-	-	-	-	-
12	63.29	56.55	-	-	-	-	-	-
13	59.34	52.78	-	-	-	-	-	-
14	59.34	55.04	-	-	-	-	-	-
15	61.31	57.68	3225	3329	3338	4034	4125	4102
16	63.29	58.81	-	-	-	-	-	-
17	55.38	52.02	-	-	-	-	-	-
18	55.38	49.01	-	-	-	-	-	-
19	57.75	49.01	-	-	-	-	-	-
20	49.45	46.75	3141	3145	3040	4400	4400	4395
21	49.45	46.75	-	-	-	-	-	-
22	43.51	38.83	-	-	-	-	-	-
23	41.14	38.45	-	-	-	-	-	-
24	31.65	27.90	-	-	-	-	-	-
25	27.69	24.88	3186	3173	3122	3952	3940	3880

Inlet Sediment Bag Test (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)**			Outlet Turbidity (NTU)**		
26	2.37	18.47	-	-	-	-	-	-
27	1.58	19.23	-	-	-	-	-	-
28	1.58	21.11	-	-	-	-	-	-
29	0.79	21.11	-	-	-	-	-	-
30	0.00	21.11	Reduced or no inflow			Reduced or no inflow		
31	0.00	1.13	Reduced or no inflow			Reduced or no inflow		
32	0.00	0.75	Reduced or no inflow			Reduced or no inflow		
33	0.00	0.75	Reduced or no inflow			Reduced or no inflow		
Total	**1500**	**1500**						

**Turbidity samples were taken at 5 minute intervals, and readings were recorded on the HACH bench scale 2100N turbidimeter.

Combined Sediment Dome and Inlet Bag Test

Test Parameters	**Results**
Product Name	Combined Sediment Dome and Inlet Bag
Test Date	8/11/2023
Test Identification	Soil Drop Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	10:15 AM
Inflow Stop Time	10:47 AM
Outflow Start Time	10:15 AM
Outflow Stop Time	10:52 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	46.88
Average Outlet Flow Rate (GPM)	40.54
Percent Flow Rate Reduction (%)	13.51
Average Inlet Turbidity (NTU)	3414.22
Average Outlet Turbidity (NTU)	3404.56
Percent Turbidity Reduction (%)	0.28

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***			**Outlet Turbidity (NTU)***		
1	31.21	12.40	-	-	-	-	-	-
2	52.02	45.20	-	-	-	-	-	-
3	52.94	47.41	-	-	-	-	-	-
4	55.08	48.24	-	-	-	-	-	-
5	61.20	53.75	3594	3535	3387	3590	3702	3430
6	59.36	52.37	-	-	-	-	-	-
7	59.06	52.37	-	-	-	-	-	-
8	58.14	51.82	-	-	-	-	-	-
9	52.02	38.59	-	-	-	-	-	-
10	48.96	43.00	3598	3546	3460	3571	3495	3467
11	47.74	41.35	-	-	-	-	-	-
12	46.21	40.24	-	-	-	-	-	-
13	45.90	40.24	-	-	-	-	-	-
14	46.51	40.24	-	-	-	-	-	-
15	45.90	40.24	3575	3485	3635	3228	3237	3215
16	45.59	41.35	-	-	-	-	-	-
17	44.68	39.97	-	-	-	-	-	-
18	43.76	38.59	-	-	-	-	-	-
19	42.84	37.21	-	-	-	-	-	-
20	40.39	35.83	3259	3231	3206	3561	3430	3477
21	42.53	38.04	-	-	-	-	-	-
22	42.23	35.83	-	-	-	-	-	-
23	40.39	37.21	-	-	-	-	-	-
24	53.24	48.24	-	-	-	-	-	-
25	58.14	52.37	3239	3356	3519	3363	3343	3245

Combined Sediment Dome and Inlet Bag Test (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*			Outlet Turbidity (NTU)*		
26	60.59	53.75	-	-	-	-	-	-
27	56.30	49.89	-	-	-	-	-	-
28	56.92	50.44	-	-	-	-	-	-
29	55.69	49.89	-	-	-	-	-	-
30	34.27	49.06	3217	3244	3370	3294	3344	3290
31	19.58	45.20	-	-	-	-	-	-
32	0.61	46.58	Reduced or no inflow			Reduced or no inflow		
33	0.00	43.00	Reduced or no inflow			Reduced or no inflow		
34	0.00	27.01	Reduced or no inflow			Reduced or no inflow		
35	0.00	24.26	Reduced or no inflow			Reduced or no inflow		
36	0.00	4.41	Reduced or no inflow			Reduced or no inflow		
37	0.00	4.41	Reduced or no inflow			Reduced or no inflow		
Total	**1500**	**1500**						

*Turbidity samples were taken at 5 minute intervals, and readings were recorded on the HACH bench scale 2100N turbidimeter.

Fiber Log Suspended Solids Test

Date	7/28/2023
Soil	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

			Outflow		
	5 min	**10 min**	**15 min**	**20 min**	**25 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	605.60	587.70	606.30	588.50	607.00
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	868.00	831.40	839.35	850.95	852.65
Pan and Dry Soil (g)	606.15	588.45	606.95	588.80	607.60
Wet Soil (g)	262.40	243.70	233.05	262.45	245.65
Dry Soil (g)	0.55	0.75	0.65	0.30	0.60
Percent Sediment (%)	0.002096	0.003078	0.002789	0.001143	0.002442

Outflow Suspended Solids Percentage (Continued)

			Outflow		
	30 min	**35 min**	**40 min**	**45 min**	**50 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	588.90	607.60	590.50	609.05	668.00
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	846.60	853.05	852.45	854.45	914.25
Pan and Dry Soil (g)	590.50	609.00	591.15	609.25	668.40
Wet Soil (g)	257.70	245.45	262.0	245.40	246.25
Dry Soil (g)	1.60	1.40	0.6	0.20	0.40
Percent Sediment (%)	0.006209	0.005704	0.002481	0.000815	0.001624

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Samples	0.002838160	%
Percent Removal	29.10268109	%

Sediment Dome Suspended Solids Test

Date	8/9/2023
Soil	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

			Outflow		
	5 min	**10 min**	**15 min**	**20 min**	**25 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	591.65	609.65	668.75	591.85	609.95
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	821.35	846.45	905.75	824.45	858.35
Pan and Dry Soil (g)	591.80	609.90	668.90	592.45	610.55
Wet Soil (g)	229.70	236.80	237.00	232.60	248.40
Dry Soil (g)	0.15	0.25	0.15	0.60	0.60
Percent Sediment (%)	0.000653	0.001056	0.000633	0.002580	0.002415

Outflow Suspended Solids Percentage (Continued)

	Outflow	
	30 min	**35 min**
Sample	**1**	**1**
Pan Tare (g)	668.95	669.45
Clear Water (g)	0.00	0.00
Pan and Wet Soil (g)	906.50	908.00
Pan and Dry Soil (g)	669.40	669.95
Wet Soil (g)	237.55	238.55
Dry Soil (g)	0.45	0.50
Percent Sediment (%)	0.001894	0.002096

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.s.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Samples	0.001618144	%
Percent Removal	59.57870539	%

Inlet Sediment Bag Suspended Solids Test

Date	8/10/2023
Soil	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

			Outflow		
	5 min	**10 min**	**15 min**	**20 min**	**25 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	669.90	592.65	610.60	594.55	612.25
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	906.15	834.60	860.95	810.25	831.80
Pan and Dry Soil (g)	671.65	594.50	612.25	596.55	613.45
Wet Soil (g)	236.25	241.95	250.35	215.70	219.55
Dry Soil (g)	1.75	1.85	1.65	2.00	1.20
Percent Sediment (%)	0.007407	0.007646	0.006591	0.009272	0.005466

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Samples	0.007276450	%
Percent Removal	-81.76595744	%

Combined Sediment Dome and Inlet Bag Suspended Solids Test

Date	8/12/2023
Soil	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

			Outflow		
	5 min	**10 min**	**15 min**	**20 min**	**25 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	588.95	613.75	672.90	589.70	614.35
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	849.20	857.45	920.20	823.05	871.15
Pan and Dry Soil (g)	589.70	614.35	673.45	590.50	615.25
Wet Soil (g)	260.25	243.70	247.30	233.35	256.80
Dry Soil (g)	0.75	0.60	0.55	0.80	0.90
Percent Sediment (%)	0.002882	0.002462	0.002224	0.003428	0.003505

Outflow Suspended Solids Percentage (Continued)

	Outflow
	30 min
Sample	**1**
Pan Tare (g)	673.45
Clear Water (g)	0.00
Pan and Wet Soil (g)	942.30
Pan and Dry Soil (g)	674.65
Wet Soil (g)	268.85
Dry Soil (g)	1.20
Percent Sediment (%)	0.004463

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Samples	0.003160727	%
Percent Removal	21.04493777	%

APPENDIX D: CURB INLET RAW TEST DATA

No Device Calibration Test

Test Parameters	**Results**
Test Date	7/24/2023
Test Identification	Curb Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	8:15 AM
Inflow Stop Time	8:35 AM
Outflow Start Time	8:15 AM
Outflow Stop Time	8:38 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	75.00
Average Outlet Flow Rate (GPM)	65.22
Percent Flow Rate Reduction (%)	13.04
Average Inlet Turbidity (NTU)	4792.29
Average Outlet Turbidity (NTU)	4635.50
Percent Turbidity Reduction (%)	3.27

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	31.95	29.24	Startup	Startup
2	37.27	36.73	Startup	Startup
3	45.79	45.65	Startup	Startup
4	43.66	43.51	Startup	Startup
5	44.01	44.22	Startup	Startup
6	39.04	39.59	4899	4654
7	34.07	33.52	4916	4872
8	34.43	34.24	5009	4999
9	34.07	33.52	3435	3431
10	95.84	93.79	3605	3307
11	95.84	88.09	3563	3423
12	107.19	106.99	4852	4800
13	113.23	113.41	5268	5123
14	104.35	104.49	5445	5322
15	106.48	106.99	5447	5449
16	106.48	106.99	5580	5312
17	114.65	114.84	5421	5218
18	103.29	103.42	4902	4675
19	119.26	119.47	4750	4312
20	89.09	88.09	Reduced or no inflow	Reduced or no inflow
21	0.00	5.71	Reduced or no inflow	Reduced or no inflow
22	0.00	5.71	Reduced or no inflow	Reduced or no inflow
23	0.00	1.78	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Wattle Test

Test Parameters	**Results**
Test Date	7/19/2023
Test Identification	Curb Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	9:10 AM
Inflow Stop Time	10:11 AM
Outflow Start Time	9:11 AM
Outflow Stop Time	10:35 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	24.59
Average Outlet Flow Rate (GPM)	17.86
Percent Flow Rate Reduction (%)	27.38
Average Inlet Turbidity (NTU)	5597.61
Average Outlet Turbidity (NTU)	2675.54
Percent Turbidity Reduction (%)	52.20

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	11.89	0.00	Startup	Startup
2	12.28	5.84	Startup	Startup
3	16.64	11.85	Startup	Startup
4	23.97	14.85	Startup	Startup
5	25.36	15.56	Startup	Startup
6	28.92	16.62	5874	2125
7	28.72	16.27	5643	2411
8	29.12	19.63	5821	2555
9	29.12	20.51	5926	2616
10	28.92	22.64	5612	2634
11	29.71	21.58	5582	2641
12	29.32	21.75	5097	2646
13	28.72	23.52	5706	2657
14	28.13	23.52	5976	2650
15	28.33	22.64	5861	2652
16	27.93	21.58	5715	2654
17	27.73	21.58	5591	2659
18	27.73	21.58	5560	2657
19	27.73	21.93	5673	2663
20	27.54	22.99	5423	2600
21	28.13	22.64	5586	2677
22	27.73	22.64	5652	2677
23	27.54	20.87	5631	2679
24	27.54	21.93	5397	2684
25	26.74	21.93	5330	2607
26	26.74	21.58	5299	2681
27	26.55	21.58	5261	2609
28	26.74	22.64	5243	2690
29	26.74	22.64	5425	2674
30	26.35	22.64	5430	2607
31	25.55	22.64	5438	2701

Wood Wattle Test (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
32	22.55	20.87	5384	2603
33	25.55	21.93	5425	2709
34	25.36	23.52	5396	2701
35	25.36	23.87	5389	2691
36	25.55	23.52	5358	2706
37	25.16	21.93	5550	2704
38	25.75	21.58	5660	2692
39	25.55	21.58	5584	2679
40	25.16	21.93	5585	2665
41	25.16	21.58	5629	2671
42	25.36	20.51	5625	2679
43	24.96	21.58	5687	2687
44	25.16	20.87	5693	2697
45	25.36	20.87	5569	2687
46	25.55	20.51	5470	2692
47	24.96	20.51	5326	2695
48	24.96	19.63	5736	2751
49	24.56	20.51	5701	2833
50	24.17	21.93	5601	2838
51	24.17	22.64	5927	2809
52	23.97	22.64	5922	2795
53	23.57	22.99	6032	2817
54	23.57	22.99	5980	2780
55	23.38	22.64	5848	2707
56	23.18	23.87	5807	2784
57	22.78	22.99	5601	2780
58	20.60	23.52	5499	2772
59	19.61	22.99	5535	2749
60	4.59	22.99	Reduced or no inflow	Reduced or no inflow
61	0.20	22.99	Reduced or no inflow	Reduced or no inflow
62	0.00	22.64	Reduced or no inflow	Reduced or no inflow
63	0.00	20.87	Reduced or no inflow	Reduced or no inflow
64	0.00	19.28	Reduced or no inflow	Reduced or no inflow
65	0.00	16.62	Reduced or no inflow	Reduced or no inflow
66	0.00	13.79	Reduced or no inflow	Reduced or no inflow
67	0.00	12.03	Reduced or no inflow	Reduced or no inflow
68	0.00	11.49	Reduced or no inflow	Reduced or no inflow
69	0.00	11.49	Reduced or no inflow	Reduced or no inflow
70	0.00	11.32	Reduced or no inflow	Reduced or no inflow
71	0.00	10.61	Reduced or no inflow	Reduced or no inflow
72	0.00	10.61	Reduced or no inflow	Reduced or no inflow
73	0.00	9.37	Reduced or no inflow	Reduced or no inflow
74	0.00	9.20	Reduced or no inflow	Reduced or no inflow
75	0.00	9.20	Reduced or no inflow	Reduced or no inflow
76	0.00	8.67	Reduced or no inflow	Reduced or no inflow
77	0.00	8.31	Reduced or no inflow	Reduced or no inflow
78	0.00	7.78	Reduced or no inflow	Reduced or no inflow
79	0.00	5.48	Reduced or no inflow	Reduced or no inflow
80	0.00	3.71	Reduced or no inflow	Reduced or no inflow
81	0.00	2.48	Reduced or no inflow	Reduced or no inflow
82	0.00	1.24	Reduced or no inflow	Reduced or no inflow
83	0.00	1.06	Reduced or no inflow	Reduced or no inflow
84	0.00	0.18	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Fiber Log Test

Test Parameters	**Results**
Test Date	6/12/2023
Test Identification	Curb Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	8:10 AM
Inflow Stop Time	9:03 AM
Outflow Start Time	8:16 AM
Outflow Stop Time	11:16 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	28.30
Average Outlet Flow Rate (GPM)	8.06
Percent Flow Rate Reduction (%)	71.51
Average Inlet Turbidity (NTU)	4764.08
Average Outlet Turbidity (NTU)	2108.98
Percent Turbidity Reduction (%)	55.73

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	23.44	0.00	Startup	Startup
2	23.30	0.00	Startup	Startup
3	25.76	0.00	Startup	Startup
4	27.53	0.00	Startup	Startup
5	28.89	0.00	Startup	Startup
6	27.53	0.80	3849	2202
7	27.26	1.07	4519	2252
8	27.12	5.61	4488	2189
9	25.89	5.61	4449	2092
10	25.62	8.55	4497	2075
11	25.48	10.15	4490	2079
12	25.07	17.10	4490	2080
13	24.53	17.10	4499	2078
14	24.39	17.37	4512	2066
15	24.39	17.64	5124	2055
16	24.39	19.24	5214	2057
17	24.26	19.78	5921	2066
18	24.12	20.04	5232	2065
19	24.12	20.04	4538	2065
20	24.94	20.04	4475	2069
21	24.94	20.31	4554	2127
22	24.94	20.04	4190	2190
23	24.94	20.04	3911	2188
24	23.30	20.31	4571	2156
25	23.30	20.31	4916	2152
26	21.53	20.84	4994	2144
27	23.30	20.84	4512	2124
28	22.35	21.11	4494	2117
29	22.21	21.38	4449	2113
30	24.12	21.38	4100	2116
31	23.03	21.38	4195	2112

Fiber Log Test (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
32	21.53	21.65	3979	2099
33	22.21	21.91	4145	2093
34	18.81	21.91	4051	2088
35	20.85	21.91	3966	2069
36	21.26	21.91	3875	2087
37	20.44	22.18	4782	2074
38	20.85	22.45	4995	2082
39	46.20	22.45	3537	2078
40	46.33	22.45	4710	2105
41	46.33	22.45	5148	2123
42	48.79	23.25	5452	2112
43	42.93	23.25	5570	2096
44	38.84	23.52	5483	2086
45	42.25	24.32	5702	2051
46	41.84	24.59	5624	2046
47	39.52	24.32	5750	2054
48	38.84	23.78	5753	2084
49	41.84	22.98	5529	2118
50	41.84	24.05	5422	2135
51	36.66	24.32	5417	2163
52	33.66	26.46	5540	2176
53	2.18	26.46	5063	2183
54	0.00	26.72	Reduced or no inflow	Reduced or no inflow
55	0.00	26.99	Reduced or no inflow	Reduced or no inflow
56	0.00	29.93	Reduced or no inflow	Reduced or no inflow
57	0.00	27.26	Reduced or no inflow	Reduced or no inflow
58	0.00	26.19	Reduced or no inflow	Reduced or no inflow
59	0.00	22.45	Reduced or no inflow	Reduced or no inflow
60	0.00	21.38	Reduced or no inflow	Reduced or no inflow
61	0.00	17.90	Reduced or no inflow	Reduced or no inflow
62	0.00	17.64	Reduced or no inflow	Reduced or no inflow
63	0.00	16.57	Reduced or no inflow	Reduced or no inflow
64	0.00	14.97	Reduced or no inflow	Reduced or no inflow
65	0.00	14.97	Reduced or no inflow	Reduced or no inflow
66	0.00	13.09	Reduced or no inflow	Reduced or no inflow
67	0.00	10.96	Reduced or no inflow	Reduced or no inflow
68	0.00	10.15	Reduced or no inflow	Reduced or no inflow
69	0.00	10.15	Reduced or no inflow	Reduced or no inflow
70	0.00	8.82	Reduced or no inflow	Reduced or no inflow
71	0.00	8.28	Reduced or no inflow	Reduced or no inflow
72	0.00	7.48	Reduced or no inflow	Reduced or no inflow
73	0.00	8.02	Reduced or no inflow	Reduced or no inflow
74	0.00	8.02	Reduced or no inflow	Reduced or no inflow
75	0.00	8.82	Reduced or no inflow	Reduced or no inflow
76	0.00	8.02	Reduced or no inflow	Reduced or no inflow
77	0.00	8.02	Reduced or no inflow	Reduced or no inflow
78	0.00	7.48	Reduced or no inflow	Reduced or no inflow
79	0.00	7.48	Reduced or no inflow	Reduced or no inflow
80	0.00	5.34	Reduced or no inflow	Reduced or no inflow
81	0.00	5.61	Reduced or no inflow	Reduced or no inflow
82	0.00	4.28	Reduced or no inflow	Reduced or no inflow
83	0.00	3.74	Reduced or no inflow	Reduced or no inflow

Fiber Log Test (Page 3)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
84	0.00	4.28	Reduced or no inflow	Reduced or no inflow
85	0.00	3.74	Reduced or no inflow	Reduced or no inflow
86	0.00	3.74	Reduced or no inflow	Reduced or no inflow
87	0.00	3.74	Reduced or no inflow	Reduced or no inflow
88	0.00	3.47	Reduced or no inflow	Reduced or no inflow
89	0.00	3.47	Reduced or no inflow	Reduced or no inflow
90	0.00	2.94	Reduced or no inflow	Reduced or no inflow
91	0.00	3.21	Reduced or no inflow	Reduced or no inflow
92	0.00	2.67	Reduced or no inflow	Reduced or no inflow
93	0.00	3.21	Reduced or no inflow	Reduced or no inflow
94	0.00	2.94	Reduced or no inflow	Reduced or no inflow
95	0.00	2.67	Reduced or no inflow	Reduced or no inflow
96	0.00	2.14	Reduced or no inflow	Reduced or no inflow
97	0.00	2.14	Reduced or no inflow	Reduced or no inflow
98	0.00	2.14	Reduced or no inflow	Reduced or no inflow
99	0.00	2.14	Reduced or no inflow	Reduced or no inflow
100	0.00	2.94	Reduced or no inflow	Reduced or no inflow
101	0.00	2.14	Reduced or no inflow	Reduced or no inflow
102	0.00	1.87	Reduced or no inflow	Reduced or no inflow
103	0.00	2.14	Reduced or no inflow	Reduced or no inflow
104	0.00	2.14	Reduced or no inflow	Reduced or no inflow
105	0.00	2.14	Reduced or no inflow	Reduced or no inflow
106	0.00	2.41	Reduced or no inflow	Reduced or no inflow
107	0.00	1.87	Reduced or no inflow	Reduced or no inflow
108	0.00	1.87	Reduced or no inflow	Reduced or no inflow
109	0.00	1.87	Reduced or no inflow	Reduced or no inflow
110	0.00	1.87	Reduced or no inflow	Reduced or no inflow
111	0.00	1.87	Reduced or no inflow	Reduced or no inflow
112	0.00	1.87	Reduced or no inflow	Reduced or no inflow
113	0.00	1.87	Reduced or no inflow	Reduced or no inflow
114	0.00	1.87	Reduced or no inflow	Reduced or no inflow
115	0.00	1.87	Reduced or no inflow	Reduced or no inflow
116	0.00	1.87	Reduced or no inflow	Reduced or no inflow
117	0.00	1.87	Reduced or no inflow	Reduced or no inflow
118	0.00	1.87	Reduced or no inflow	Reduced or no inflow
119	0.00	1.87	Reduced or no inflow	Reduced or no inflow
120	0.00	1.87	Reduced or no inflow	Reduced or no inflow
121	0.00	1.87	Reduced or no inflow	Reduced or no inflow
122	0.00	1.87	Reduced or no inflow	Reduced or no inflow
123	0.00	1.87	Reduced or no inflow	Reduced or no inflow
124	0.00	1.60	Reduced or no inflow	Reduced or no inflow
125	0.00	1.34	Reduced or no inflow	Reduced or no inflow
126	0.00	1.60	Reduced or no inflow	Reduced or no inflow
127	0.00	1.34	Reduced or no inflow	Reduced or no inflow
128	0.00	1.34	Reduced or no inflow	Reduced or no inflow
129	0.00	1.34	Reduced or no inflow	Reduced or no inflow
130	0.00	1.34	Reduced or no inflow	Reduced or no inflow
131	0.00	1.34	Reduced or no inflow	Reduced or no inflow
132	0.00	1.34	Reduced or no inflow	Reduced or no inflow
133	0.00	1.34	Reduced or no inflow	Reduced or no inflow
134	0.00	1.34	Reduced or no inflow	Reduced or no inflow
135	0.00	1.34	Reduced or no inflow	Reduced or no inflow

Curb Inlet Fiber Log (Page 4)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
136	0.00	1.34	Reduced or no inflow	Reduced or no inflow
137	0.00	1.34	Reduced or no inflow	Reduced or no inflow
138	0.00	1.34	Reduced or no inflow	Reduced or no inflow
139	0.00	1.34	Reduced or no inflow	Reduced or no inflow
140	0.00	1.34	Reduced or no inflow	Reduced or no inflow
141	0.00	1.34	Reduced or no inflow	Reduced or no inflow
142	0.00	1.07	Reduced or no inflow	Reduced or no inflow
143	0.00	1.07	Reduced or no inflow	Reduced or no inflow
144	0.00	1.34	Reduced or no inflow	Reduced or no inflow
145	0.00	1.07	Reduced or no inflow	Reduced or no inflow
146	0.00	1.34	Reduced or no inflow	Reduced or no inflow
147	0.00	1.07	Reduced or no inflow	Reduced or no inflow
148	0.00	1.07	Reduced or no inflow	Reduced or no inflow
149	0.00	1.07	Reduced or no inflow	Reduced or no inflow
150	0.00	1.07	Reduced or no inflow	Reduced or no inflow
151	0.00	1.34	Reduced or no inflow	Reduced or no inflow
152	0.00	1.07	Reduced or no inflow	Reduced or no inflow
153	0.00	1.07	Reduced or no inflow	Reduced or no inflow
154	0.00	1.07	Reduced or no inflow	Reduced or no inflow
155	0.00	1.07	Reduced or no inflow	Reduced or no inflow
156	0.00	0.80	Reduced or no inflow	Reduced or no inflow
157	0.00	0.80	Reduced or no inflow	Reduced or no inflow
158	0.00	0.53	Reduced or no inflow	Reduced or no inflow
159	0.00	0.80	Reduced or no inflow	Reduced or no inflow
160	0.00	0.80	Reduced or no inflow	Reduced or no inflow
161	0.00	0.53	Reduced or no inflow	Reduced or no inflow
162	0.00	0.53	Reduced or no inflow	Reduced or no inflow
163	0.00	0.80	Reduced or no inflow	Reduced or no inflow
164	0.00	0.53	Reduced or no inflow	Reduced or no inflow
165	0.00	0.53	Reduced or no inflow	Reduced or no inflow
166	0.00	0.80	Reduced or no inflow	Reduced or no inflow
167	0.00	0.80	Reduced or no inflow	Reduced or no inflow
168	0.00	0.53	Reduced or no inflow	Reduced or no inflow
169	0.00	0.53	Reduced or no inflow	Reduced or no inflow
170	0.00	0.53	Reduced or no inflow	Reduced or no inflow
171	0.00	0.53	Reduced or no inflow	Reduced or no inflow
172	0.00	0.53	Reduced or no inflow	Reduced or no inflow
173	0.00	0.53	Reduced or no inflow	Reduced or no inflow
174	0.00	0.53	Reduced or no inflow	Reduced or no inflow
175	0.00	0.80	Reduced or no inflow	Reduced or no inflow
176	0.00	0.53	Reduced or no inflow	Reduced or no inflow
177	0.00	0.27	Reduced or no inflow	Reduced or no inflow
178	0.00	0.53	Reduced or no inflow	Reduced or no inflow
179	0.00	0.27	Reduced or no inflow	Reduced or no inflow
180	0.00	0.27	Reduced or no inflow	Reduced or no inflow
181	0.00	0.27	Reduced or no inflow	Reduced or no inflow
183	0.00	0.27	Reduced or no inflow	Reduced or no inflow
184	0.00	0.27	Reduced or no inflow	Reduced or no inflow
185	0.00	0.27	Reduced or no inflow	Reduced or no inflow
186	0.00	0.27	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wire Backed Poly Test

Test Parameters	**Results**
Test Date	7/6/2023
Test Identification	Curb Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	8:40 AM
Inflow Stop Time	8:58 AM
Outflow Start Time	8:42 AM
Outflow Stop Time	9:01 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	83.33
Average Outlet Flow Rate (GPM)	68.18
Percent Flow Rate Reduction (%)	18.18
Average Inlet Turbidity (NTU)	4394.08
Average Outlet Turbidity (NTU)	2560.54
Percent Turbidity Reduction (%)	41.73

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	10.11	0.00	Startup	Startup
2	63.79	14.40	Startup	Startup
3	71.37	42.29	Startup	Startup
4	140.21	56.69	Startup	Startup
5	166.74	59.83	Startup	Startup
6	158.53	58.17	4551	2556
7	128.84	58.72	4666	2552
8	121.26	55.40	4600	2532
9	112.42	53.55	4542	2558
10	108.63	55.40	4557	2570
11	77.05	136.28	4564	2563
12	90.32	134.62	4553	2583
13	54.95	131.85	4562	2570
14	50.53	124.28	4549	2566
15	39.16	126.31	3960	2591
16	39.16	98.42	3532	2493
17	35.37	93.99	4137	2576
18	31.58	98.05	4350	2577
19	0.00	76.63	Reduced or no inflow	Reduced or no inflow
20	0.00	20.50	Reduced or no inflow	Reduced or no inflow
21	0.00	3.62	Reduced or no inflow	Reduced or no inflow
22	0.00	1.00	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Wattle Tandem Test

Test Parameters	**Results**
Product Name	Wood Wattle Tandem (2 Wattles)
Test Date	7/26/2023
Test Identification	Curb Inlet Test
Overtop Allowed	No
Sediment Type	KB Sand 50% + Ball Clay 50%
Sediment Concentration	4000 mg/l (25.04 lbs. Sand and 25.04 lbs. CNC Ball Clay)
Inflow Start Time	9:05 AM
Inflow Stop Time	9:46 AM
Outflow Start Time	9:06 AM
Outflow Stop Time	9:56 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	36.59
Average Outlet Flow Rate (GPM)	30.00
Percent Flow Rate Reduction (%)	18.00
Average Inlet Turbidity (NTU)	4322.44
Average Outlet Turbidity (NTU)	1561.28
Percent Turbidity Reduction (%)	63.88

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	24.22	0.00	Startup	Startup
2	36.18	17.64	Startup	Startup
3	32.68	23.17	Startup	Startup
4	32.97	26.86	Startup	Startup
5	32.09	29.23	Startup	Startup
6	44.06	36.87	4955	1019
7	42.89	35.55	3963	1320
8	40.56	36.34	4105	1277
9	42.89	38.18	5421	1394
10	43.77	36.34	4316	1432
11	41.43	36.87	4337	1519
12	39.10	35.02	4945	1321
13	37.64	33.71	4733	1346
14	37.64	34.23	4220	1218
15	40.56	36.34	4698	1257
16	37.64	33.71	3817	1502
17	37.93	33.71	3478	1265
18	37.35	31.07	4357	1235
19	37.06	34.23	3545	1107
20	35.60	29.76	4006	1179
21	44.35	41.61	3758	1353
22	37.93	35.02	3606	1569
23	45.22	40.29	4012	1597
24	46.39	41.61	4412	1659
25	40.85	36.34	3878	1525
26	42.89	38.18	4170	1629

Wood Wattle Tandem Test (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
27	39.39	35.55	3986	1493
28	35.01	28.70	3941	1465
29	34.43	29.23	4570	1699
30	34.72	31.07	3698	1649
31	32.09	26.86	3516	1702
32	31.80	28.70	3705	1669
33	29.18	24.75	3519	1654
34	29.18	22.12	4135	1575
35	33.55	29.76	4602	1670
36	28.89	23.44	5545	1707
37	29.76	24.75	4264	1901
38	35.01	30.55	5056	2101
39	35.01	33.71	5279	2352
40	36.18	32.65	5526	2423
41	23.93	38.18	5534	2423
42	0.00	35.02	Reduced or no inflow	Reduced or no inflow
43	0.00	31.07	Reduced or no inflow	Reduced or no inflow
44	0.00	39.50	Reduced or no inflow	Reduced or no inflow
45	0.00	46.61	Reduced or no inflow	Reduced or no inflow
46	0.00	17.64	Reduced or no inflow	Reduced or no inflow
47	0.00	15.27	Reduced or no inflow	Reduced or no inflow
48	0.00	11.85	Reduced or no inflow	Reduced or no inflow
49	0.00	6.85	Reduced or no inflow	Reduced or no inflow
50	0.00	4.21	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Wattle Suspended Solids Test

Date	7/19/2023
Sediment	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

			Outflow		
	5 min	**10 min**	**15 min**	**20 min**	**25 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	613.75	614.40	614.50	614.75	615.05
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	863.50	875.05	854.55	855.30	860.60
Pan and Dry Soil (g)	614.40	614.45	614.80	615.05	615.60
Wet Soil (g)	249.75	260.65	240.05	240.55	245.55
Dry Soil (g)	0.65	0.05	0.30	0.30	0.55
Percent Sediment (%)	0.002603	0.000192	0.001250	0.001247	0.002240

Outflow Suspended Solids Percentage (Continued)

			Outflow		
	30 min	**35 min**	**40 min**	**45 min**	**50 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	615.60	615.85	608.8	616.35	681.30
Clear Water (g)	0.00	0.00	0.0	0.00	0.00
Pan and Wet Soil (g)	847.65	855.15	859.0	847.45	918.05
Pan and Dry Soil (g)	615.85	616.10	609.0	616.60	681.40
Wet Soil (g)	232.05	239.30	250.2	231.10	236.75
Dry Soil (g)	0.25	0.25	0.2	0.25	0.10
Percent Sediment (%)	0.001077	0.001045	0.000800	0.001082	0.000422

Outflow Suspended Solids Percentage (Continued)

	Outflow
	55 min
Sample	**1**
Pan Tare (g)	616.60
Clear Water (g)	0.00
Pan and Wet Soil (g)	865.60
Pan and Dry Soil (g)	616.75
Wet Soil (g)	249.00
Dry Soil (g)	0.15
Percent Sediment (%)	0.000602

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Samples	0.001141759	%
Percent Removal	71.47882378	%

Fiber Log Suspended Solids Test

Date	7/15/2023
Sediment	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

			Outflow		
	5 min	**10 min**	**15 min**	**20 min**	**25 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	585.75	666.30	586.30	666.75	586.40
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	846.65	916.75	840.95	920.85	845.80
Pan and Dry Soil (g)	586.30	666.75	586.40	667.20	586.85
Wet Soil (g)	260.90	250.45	254.65	254.10	259.40
Dry Soil (g)	0.55	0.45	0.10	0.45	0.45
Percent Sediment (%)	0.002108	0.001797	0.000393	0.001771	0.001735

Outflow Suspended Solids Percentage (Continued)

	30 min	**35 min**	**40 min**	**45 min**
Sample	**1**	**1**	**1**	**1**
Pan Tare (g)	667.20	586.85	667.7	587.50
Clear Water (g)	0.00	0.00	0.0	0.00
Pan and Wet Soil (g)	916.10	831.70	913.3	840.35
Pan and Dry Soil (g)	667.70	587.50	668.0	587.60
Wet Soil (g)	248.90	244.85	245.6	252.85
Dry Soil (g)	0.50	0.65	0.3	0.10
Percent Sediment (%)	0.002009	0.002655	0.001221	0.000395

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Samples	0.001564866	%
Percent Removal	60.90959971	%

Wire Backed Poly Suspended Solids Test

Date	7/6/2023
Sediment	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

		Outflow	
	5 min	**10 min**	**15 min**
Sample	**1**	**1**	**1**
Pan Tare (g)	585.90	668.70	589.45
Clear Water (g)	0.00	0.00	0.00
Pan and Wet Soil (g)	804.15	906.20	840.90
Pan and Dry Soil (g)	586.00	669.30	589.80
Wet Soil (g)	218.25	237.50	251.45
Dry Soil (g)	0.10	0.60	0.35
Percent Sediment (%)	0.000458	0.002526	0.001392

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Samples	0.001458811	%
Percent Removal	63.55885659	%

Wood Wattle Tandem Suspended Solids Test

Date	7/26/2023
Sediment	CNC Ball Clay + KB Sand
Technician	DF

Outflow Suspended Solids Percentage

			Outflow		
	5 min	**10 min**	**15 min**	**20 min**	**25 min**
Sample	**1**	**1**	**1**	**1**	**1**
Pan Tare (g)	585.55	586.10	586.60	587.30	587.35
Clear Water (g)	0.00	0.00	0.00	0.00	0.00
Pan and Wet Soil (g)	822.50	853.85	844.80	819.95	845.65
Pan and Dry Soil (g)	586.10	586.55	587.30	587.35	587.90
Wet Soil (g)	236.95	267.75	258.20	232.65	258.30
Dry Soil (g)	0.55	0.45	0.70	0.05	0.55
Percent Sediment (%)	0.002321	0.001681	0.002711	0.000215	0.002129

Outflow Suspended Solids Percentage (Continued)

	Outflow	
	30 min	**35 min**
Sample	**1**	**1**
Pan Tare (g)	588.20	588.20
Clear Water (g)	0.00	0.00
Pan and Wet Soil (g)	819.20	832.40
Pan and Dry Soil (g)	588.21	588.69
Wet Soil (g)	231.00	244.20
Dry Soil (g)	0.01	0.49
Percent Sediment (%)	0.000043	0.002007

Mix Calculations

Total Weight of Sediment Added	50.08	lbs.
Total Weight of Water (1500 gal)	12510.00	lbs.
Percent Sediment for Total Volume	0.004003197	%

Outlet Sample

Average Percent Sediment for Outlet Samples	0.001586711	%
Percent Removal	60.36390524	%

APPENDIX E: INSTREAM AND PERIMETER PROTECTION RAW TEST DATA

Recycled Fiber Log Test 1A

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	3:53 PM
Inflow Stop Time	4:37 PM
Outflow Start Time	3:54 PM
Outflow Stop Time	4:51 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	50.00
Average Outlet Flow Rate (GPM)	50.00
Percent Flow Rate Reduction (%)	0.00
Average Inlet Turbidity (NTU)	2899.20
Average Outlet Turbidity (NTU)	2302.07
Percent Turbidity Reduction (%)	20.60

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	0.00	0.00	Startup	Startup
2	51.95	4.11	Startup	Startup
3	52.97	6.88	Startup	Startup
4	42.70	7.40	Startup	Startup
5	42.66	14.73	Startup	Startup
6	41.60	22.35	Startup	Startup
7	41.41	22.63	Startup	Startup
8	41.19	22.93	Startup	Startup
9	39.51	25.13	2162	2023
10	39.06	25.91	-	-
11	38.42	26.59	2719	1931
12	37.04	29.21	-	-
13	37.13	30.54	2541	1350
14	36.69	31.34	-	-
15	46.01	33.29	2592	1644
16	45.20	35.97	-	-
17	45.28	36.86	2527	1941
18	44.66	37.28	-	-
19	44.97	38.60	2712	2355
20	43.10	40.19	-	-
21	41.79	42.02	3186	2117
22	40.35	42.82	-	-
23	37.80	43.45	2591	2076
24	36.64	42.84	-	-
25	36.53	42.68	2723	2703
26	35.40	40.60	-	-
27	33.26	40.24	3041	3377

Recycled Fiber Log Test 1A (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
28	33.07	38.08	-	-
29	31.86	37.13	3380	2921
30	32.17	36.88	-	-
31	31.23	36.86	3035	2563
32	29.82	36.67	-	-
33	29.89	36.60	3670	2243
34	29.30	36.18	-	-
35	27.81	35.54	3261	2831
36	27.20	35.37	-	-
37	26.24	35.57	3348	2456
38	25.36	36.01	Values not measured	Values not measured
39	24.56	34.16	Values not measured	Values not measured
40	23.17	32.53	Values not measured	Values not measured
41	21.52	27.86	Values not measured	Values not measured
42	20.28	23.79	Values not measured	Values not measured
43	12.49	21.69	Values not measured	Values not measured
44	0.53	20.37	Reduced or no inflow	Reduced or no inflow
45	0.15	19.06	Reduced or no inflow	Reduced or no inflow
46	0.00	17.87	Reduced or no inflow	Reduced or no inflow
47	0.00	17.87	Reduced or no inflow	Reduced or no inflow
48	0.00	17.44	Reduced or no inflow	Reduced or no inflow
49	0.00	15.61	Reduced or no inflow	Reduced or no inflow
50	0.00	14.12	Reduced or no inflow	Reduced or no inflow
51	0.00	13.10	Reduced or no inflow	Reduced or no inflow
52	0.00	12.22	Reduced or no inflow	Reduced or no inflow
53	0.00	10.96	Reduced or no inflow	Reduced or no inflow
54	0.00	7.18	Reduced or no inflow	Reduced or no inflow
55	0.00	2.42	Reduced or no inflow	Reduced or no inflow
56	0.00	1.73	Reduced or no inflow	Reduced or no inflow
57	0.00	1.47	Reduced or no inflow	Reduced or no inflow
58	0.00	1.04	Reduced or no inflow	Reduced or no inflow
59	0.00	0.03	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Recycled Fiber Log Test 1B

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	4:05 PM
Inflow Stop Time	4:44 PM
Outflow Start Time	4:05 PM
Outflow Stop Time	4:58 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	37.50
Average Outlet Flow Rate (GPM)	27.78
Percent Flow Rate Reduction (%)	25.93
Average Inlet Turbidity (NTU)	3132.07
Average Outlet Turbidity (NTU)	2372.40
Percent Turbidity Reduction (%)	24.25

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
1	4.17	0.29	Startup	Startup
2	78.33	1.55	Startup	Startup
3	71.30	4.33	Startup	Startup
4	42.94	8.50	Startup	Startup
5	41.83	9.89	Startup	Startup
6	41.53	15.45	Startup	Startup
7	41.12	19.78	Startup	Startup
8	41.04	21.59	Startup	Startup
9	39.67	23.68	3084	1974
10	39.98	25.06	-	-
11	39.67	28.52	3193	2139
12	38.43	30.78	-	-
13	45.04	32.31	3251	2355
14	47.11	32.86	-	-
15	46.32	34.32	2768	2387
16	45.13	36.37	-	-
17	44.40	37.61	3581	2063
18	43.99	38.82	-	-
19	42.20	39.12	2955	2229
20	41.66	39.53	-	-
21	40.73	39.69	3390	2689
22	39.81	40.94	-	-
23	39.35	42.45	3109	2478
24	38.68	42.45	-	-
25	37.85	42.00	2783	2149
26	37.07	41.88	-	-
27	36.10	40.67	3521	2348

Recycled Fiber Log Test 1B (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
28	35.07	41.08	-	-
29	34.03	40.14	3568	2543
30	33.36	40.39	-	-
31	32.88	39.16	3045	2622
32	31.66	37.91	-	-
33	30.08	36.26	3110	2495
34	29.10	34.66	-	-
35	28.01	32.76	2597	2266
36	27.67	34.85	-	-
37	25.95	34.97	3026	2849
38	23.55	35.10	-	-
39	19.46	35.21	Reduced or no inflow	Reduced or no inflow
40	3.76	35.99	Reduced or no inflow	Reduced or no inflow
41	0.00	35.47	Reduced or no inflow	Reduced or no inflow
42	0.00	31.76	Reduced or no inflow	Reduced or no inflow
43	0.00	29.35	Reduced or no inflow	Reduced or no inflow
44	0.00	25.50	Reduced or no inflow	Reduced or no inflow
45	0.00	24.10	Reduced or no inflow	Reduced or no inflow
46	0.00	22.10	Reduced or no inflow	Reduced or no inflow
47	0.00	19.57	Reduced or no inflow	Reduced or no inflow
48	0.00	15.45	Reduced or no inflow	Reduced or no inflow
49	0.00	15.03	Reduced or no inflow	Reduced or no inflow
50	0.00	12.56	Reduced or no inflow	Reduced or no inflow
51	0.00	11.30	Reduced or no inflow	Reduced or no inflow
52	0.00	6.29	Reduced or no inflow	Reduced or no inflow
53	0.00	2.56	Reduced or no inflow	Reduced or no inflow
54	0.00	0.03	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Recycled Fiber Log Test 1C

Test Parameters	**Results**
Product	Recycled Fiber Log
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	1:22 PM
Inflow Stop Time	2:02 PM
Outflow Start Time	1:22 PM
Outflow Stop Time	2:17 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	36.59
Average Outlet Flow Rate (GPM)	26.79
Percent Flow Rate Reduction (%)	26.79
Average Inlet Turbidity (NTU)	2706.47
Average Outlet Turbidity (NTU)	2115.20
Percent Turbidity Reduction (%)	21.85

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	0.25	0.02	Startup	Startup
2	67.09	1.22	Startup	Startup
3	45.15	4.65	Startup	Startup
4	54.39	10.06	Startup	Startup
5	53.09	14.26	Startup	Startup
6	49.45	17.39	Startup	Startup
7	48.37	19.90	Startup	Startup
8	48.52	20.65	3247	3088
9	47.79	22.83	-	-
10	45.79	24.95	3079	2160
11	45.10	28.11	-	-
12	44.17	30.45	2394	1408
13	44.16	34.69	-	-
14	42.52	36.67	2582	1703
15	41.47	38.03	-	-
16	40.95	38.35	1750	1880
17	40.88	38.89	-	-
18	41.54	39.01	2497	1733
19	40.42	39.09	-	-
20	39.38	39.22	2478	1744
21	39.17	40.67	-	-
22	38.38	40.82	2449	1938
23	37.39	40.95	-	-
24	36.65	41.76	2730	2223
25	35.89	41.14	-	-
26	35.92	41.18	2388	2170

Recycled Fiber Log Test 1C (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
27	35.55	41.04	-	-
28	34.30	41.27	2594	2052
29	33.80	40.08	-	-
30	33.32	40.06	2812	2515
31	32.87	39.84	-	-
32	31.80	38.75	3164	2354
33	30.80	37.59	-	-
34	29.79	36.19	2876	2103
35	28.40	35.76	-	-
36	27.09	35.20	3557	2657
37	25.65	35.00	-	-
38	23.30	34.37	Reduced or no inflow	Reduced or no inflow
39	21.26	33.31	Reduced or no inflow	Reduced or no inflow
40	7.75	32.40	Reduced or no inflow	Reduced or no inflow
41	0.46	30.34	Reduced or no inflow	Reduced or no inflow
42	0.00	29.30	Reduced or no inflow	Reduced or no inflow
43	0.00	27.97	Reduced or no inflow	Reduced or no inflow
44	0.00	25.87	Reduced or no inflow	Reduced or no inflow
45	0.00	22.79	Reduced or no inflow	Reduced or no inflow
46	0.00	19.42	Reduced or no inflow	Reduced or no inflow
47	0.00	15.79	Reduced or no inflow	Reduced or no inflow
48	0.00	12.01	Reduced or no inflow	Reduced or no inflow
49	0.00	10.72	Reduced or no inflow	Reduced or no inflow
50	0.00	9.93	Reduced or no inflow	Reduced or no inflow
51	0.00	9.14	Reduced or no inflow	Reduced or no inflow
52	0.00	7.65	Reduced or no inflow	Reduced or no inflow
53	0.00	6.48	Reduced or no inflow	Reduced or no inflow
54	0.00	4.72	Reduced or no inflow	Reduced or no inflow
55	0.00	1.96	Reduced or no inflow	Reduced or no inflow
56	0.00	0.08	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**	Reduced or no inflow	Reduced or no inflow

*Turbidity readings were recorded every 2 minutes after the startup period.

Recycled Fiber Log Test 2A

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	2:44 PM
Inflow Stop Time	3:25 PM
Outflow Start Time	2:45 PM
Outflow Stop Time	3:35 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	35.71
Average Outlet Flow Rate (GPM)	28.85
Percent Flow Rate Reduction (%)	19.23
Average Inlet Turbidity (NTU)	2491.40
Average Outlet Turbidity (NTU)	2218.73
Percent Turbidity Reduction (%)	10.94

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
1	7.67	0.00	Startup	Startup
2	66.87	5.42	Startup	Startup
3	66.69	8.83	Startup	Startup
4	39.35	10.58	Startup	Startup
5	50.15	15.78	Startup	Startup
6	49.78	30.55	Startup	Startup
7	49.29	33.45	Startup	Startup
8	48.09	35.47	Startup	Startup
9	47.86	36.62	Startup	Startup
10	46.24	38.06	2449	2217
11	46.41	39.24	-	-
12	46.32	39.40	2428	2074
13	45.19	39.95	-	-
14	44.94	40.01	2400	2040
15	43.93	40.28	-	-
16	43.18	40.41	2394	2156
17	42.45	40.86	-	-
18	41.87	41.70	2512	1978
19	40.58	41.67	-	-
20	39.96	40.66	2620	1942
21	39.25	39.95	-	-
22	38.37	39.38	2287	1957
23	37.24	39.21	-	-
24	36.51	39.77	2587	2393
25	35.34	40.08	-	-

Recycled Fiber Log Test 2A (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
26	34.22	39.35	2256	2238
27	33.42	39.06	-	-
28	32.33	38.91	2542	2580
29	31.77	38.98	-	-
30	30.53	38.85	2136	2164
31	30.01	38.82	-	-
32	29.47	38.78	3123	2432
33	28.09	36.75	-	-
34	26.25	33.91	2544	2363
35	25.82	33.14	-	-
36	24.87	29.77	2608	2454
37	23.64	27.94	-	-
38	22.00	25.77	2485	2293
39	19.62	23.87	Reduced or no inflow	Reduced or no inflow
40	14.01	22.98	Reduced or no inflow	Reduced or no inflow
41	0.44	22.16	Reduced or no inflow	Reduced or no inflow
42	0.01	22.20	Reduced or no inflow	Reduced or no inflow
43	0.00	22.00	Reduced or no inflow	Reduced or no inflow
44	0.00	21.70	Reduced or no inflow	Reduced or no inflow
45	0.00	20.41	Reduced or no inflow	Reduced or no inflow
46	0.00	19.54	Reduced or no inflow	Reduced or no inflow
47	0.00	18.94	Reduced or no inflow	Reduced or no inflow
48	0.00	13.48	Reduced or no inflow	Reduced or no inflow
49	0.00	10.73	Reduced or no inflow	Reduced or no inflow
50	0.00	3.20	Reduced or no inflow	Reduced or no inflow
51	0.00	1.41	Reduced or no inflow	Reduced or no inflow
52	0.00	0.01	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Recycled Fiber Log Test 2B

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	3:51 PM
Inflow Stop Time	4:23 PM
Outflow Start Time	3:51 PM
Outflow Stop Time	4:41 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	45.45
Average Outlet Flow Rate (GPM)	29.41
Percent Flow Rate Reduction (%)	35.29
Average Inlet Turbidity (NTU)	2949.00
Average Outlet Turbidity (NTU)	2401.67
Percent Turbidity Reduction (%)	18.56

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
1	0.01	0.00	Startup	Startup
2	60.02	11.82	Startup	Startup
3	66.90	16.82	Startup	Startup
4	65.92	22.23	2354	2915
5	64.24	27.08	-	-
6	63.71	28.60	2464	2087
7	62.36	31.42	-	-
8	61.54	33.15	2778	2578
9	59.58	34.52	-	-
10	58.81	35.29	3003	2100
11	58.22	35.78	-	-
12	57.64	37.34	2916	2554
13	55.27	38.09	-	-
14	51.21	38.35	3129	3093
15	49.63	39.11	-	-
16	48.56	39.40	3167	2721
17	46.87	41.30	-	-
18	46.19	41.68	2542	2205
19	46.10	42.59	-	-
20	44.33	43.99	2965	2525
21	43.50	45.17	-	-
22	42.17	46.17	3351	2088
23	40.79	47.59	-	-
24	39.51	49.81	3102	2491
25	38.63	51.52	-	-
26	36.73	50.83	2516	1834
27	35.45	49.98	-	-
28	33.24	47.47	3424	1930

Recycled Fiber Log Test 2B (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
29	31.74	44.27	-	-
30	29.88	41.81	3329	2610
31	27.72	39.65	-	-
32	24.93	37.19	3195	2294
33	8.60	34.64	Reduced or no inflow	Reduced or no inflow
34	0.00	32.85	Reduced or no inflow	Reduced or no inflow
35	0.00	29.26	Reduced or no inflow	Reduced or no inflow
36	0.00	24.63	Reduced or no inflow	Reduced or no inflow
37	0.00	23.09	Reduced or no inflow	Reduced or no inflow
38	0.00	21.54	Reduced or no inflow	Reduced or no inflow
39	0.00	20.78	Reduced or no inflow	Reduced or no inflow
40	0.00	20.71	Reduced or no inflow	Reduced or no inflow
41	0.00	19.10	Reduced or no inflow	Reduced or no inflow
42	0.00	17.95	Reduced or no inflow	Reduced or no inflow
43	0.00	13.99	Reduced or no inflow	Reduced or no inflow
44	0.00	13.04	Reduced or no inflow	Reduced or no inflow
45	0.00	11.62	Reduced or no inflow	Reduced or no inflow
46	0.00	9.48	Reduced or no inflow	Reduced or no inflow
47	0.00	7.55	Reduced or no inflow	Reduced or no inflow
48	0.00	4.86	Reduced or no inflow	Reduced or no inflow
49	0.00	2.57	Reduced or no inflow	Reduced or no inflow
50	0.00	2.19	Reduced or no inflow	Reduced or no inflow
51	0.00	0.14	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Recycled Fiber Log Test 2C

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	4:20 PM
Inflow Stop Time	4:49 PM
Outflow Start Time	4:21 PM
Outflow Stop Time	5:05 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	50.00
Average Outlet Flow Rate (GPM)	32.61
Percent Flow Rate Reduction (%)	34.78
Average Inlet Turbidity (NTU)	3279.93
Average Outlet Turbidity (NTU)	2767.00
Percent Turbidity Reduction (%)	15.64

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
1	40.67	0.00	Startup	Startup
2	92.34	18.54	3017	2866
3	84.69	27.78	-	-
4	71.36	30.53	3002	2853
5	70.34	33.57	-	-
6	68.41	37.10	3597	2719
7	66.81	37.27	-	-
8	65.93	40.13	3000	2806
9	63.62	44.00	-	-
10	61.78	44.52	4158	3021
11	59.88	45.13	-	-
12	53.92	47.58	3221	2760
13	51.93	47.17	-	-
14	51.37	48.12	3180	2745
15	50.61	48.27	-	-
16	49.33	46.07	3216	2772
17	48.57	44.97	-	-
18	47.28	42.50	3048	2884
19	46.70	43.32	-	-
20	45.15	45.51	3226	2396
21	43.41	46.89	-	-
22	42.28	47.05	3639	2655
23	41.07	48.31	-	-
24	38.09	49.64	2955	2875
25	36.18	49.92	-	-
26	34.28	50.72	3192	2626
27	33.14	47.56	-	-
28	28.97	46.07	3095	2785

Recycled Fiber Log Test 2C (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
29	11.76	44.69	-	-
30	0.13	43.29	3653	2742
31	0.00	39.74	Reduced or no inflow	Reduced or no inflow
32	0.00	37.13	Reduced or no inflow	Reduced or no inflow
33	0.00	34.38	Reduced or no inflow	Reduced or no inflow
34	0.00	27.65	Reduced or no inflow	Reduced or no inflow
35	0.00	23.54	Reduced or no inflow	Reduced or no inflow
36	0.00	22.06	Reduced or no inflow	Reduced or no inflow
37	0.00	15.27	Reduced or no inflow	Reduced or no inflow
38	0.00	11.18	Reduced or no inflow	Reduced or no inflow
39	0.00	10.19	Reduced or no inflow	Reduced or no inflow
40	0.00	8.81	Reduced or no inflow	Reduced or no inflow
41	0.00	8.31	Reduced or no inflow	Reduced or no inflow
42	0.00	6.45	Reduced or no inflow	Reduced or no inflow
43	0.00	4.11	Reduced or no inflow	Reduced or no inflow
44	0.00	2.63	Reduced or no inflow	Reduced or no inflow
45	0.00	1.25	Reduced or no inflow	Reduced or no inflow
46	0.00	1.08	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Recycled Fiber Log Test Summary

Product	Recycled Fiber Log
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l

Test ID	Average Inlet Flow Rate (gpm)	Average Outlet Flow Rate (gpm)	Flow Rate Reduction (%)	Average Inlet Turbidity (NTU)	Average Outlet Turbidity (NTU)	Turbidity Reduction (%)
Test 1A	65.22	50.00	23.33	2899.20	2302.07	20.60
Test 1B	37.50	27.78	25.93	3132.07	2372.40	24.25
Test 1C	36.59	26.79	26.79	2706.47	2115.20	21.85
Test 2A	35.71	28.85	19.23	2491.40	2218.73	10.94
Test 2B	45.45	29.41	35.29	2949.00	2401.67	18.56
Test 2C	50.00	32.61	34.78	3279.93	2767.00	15.64
Average	**45.08**	**32.57**	**27.56**	**2909.68**	**2362.85**	**18.64**

Wood Fiber Bale Test 1A

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	10:25 AM
Inflow Stop Time	11:26 AM
Outflow Start Time	10:28 AM
Outflow Stop Time	11:40 AM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	24.59
Average Outlet Flow Rate (GPM)	20.00
Percent Flow Rate Reduction (%)	18.67
Average Inlet Turbidity (NTU)	2163.81
Average Outlet Turbidity (NTU)	1617.87
Percent Turbidity Reduction (%)	25.23

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
1	3.77	0.00	Startup	Startup
2	18.45	0.00	Startup	Startup
3	17.83	0.00	Startup	Startup
4	17.56	8.04	Startup	Startup
5	16.52	8.18	Startup	Startup
6	16.31	7.67	Startup	Startup
7	15.83	8.92	Startup	Startup
8	15.84	9.43	Startup	Startup
9	15.21	10.38	1723	1434
10	14.87	12.61	1642	1272
11	14.23	11.83	1546	1302
12	16.41	13.58	1481	1307
13	28.00	13.74	1456	1411
14	27.61	14.04	1422	1363
15	26.39	16.41	1713	1240
16	26.32	18.03	2020	1471
17	26.03	20.09	2051	1720
18	25.78	21.82	2029	1825
19	25.57	23.13	1985	1700
20	24.81	23.32	1972	1220
21	24.38	23.74	1735	1418
22	23.97	23.15	2236	1537
23	24.01	23.30	2323	1703
24	23.83	22.43	2314	1418
25	23.21	21.22	2266	1204
26	22.80	20.46	2222	879
27	22.24	19.79	2094	926
28	22.16	19.01	2459	1637

Wood Fiber Bale Test 1A (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
29	21.81	20.07	2570	1632
30	21.34	19.96	2546	1867
31	20.97	20.13	2467	1918
32	20.43	18.67	2379	1885
33	20.04	19.02	2284	1928
34	19.50	18.51	2229	1963
35	19.57	17.82	1693	1965
36	18.83	17.51	2389	1946
37	19.26	17.87	2521	1821
38	19.53	21.22	2508	1945
39	19.48	24.31	2460	1952
40	33.66	26.00	2545	1954
41	40.61	27.25	2375	1930
42	40.17	27.63	2475	1986
43	40.12	28.94	2288	2035
44	39.31	31.58	2061	609
45	38.14	32.08	2261	1887
46	37.38	32.70	2289	1967
47	36.92	34.05	2344	2093
48	35.79	32.84	2468	2096
49	34.88	29.41	2349	2091
50	33.61	28.99	2328	2010
51	32.80	28.52	2263	1991
52	32.47	26.98	2241	1451
53	32.55	28.32	2294	1231
54	31.34	27.17	2378	1341
55	29.59	27.65	2210	940
56	28.64	27.46	1959	1235
57	27.31	27.71	Values not measured	Values not measured
58	25.88	27.59	Values not measured	Values not measured
59	23.29	26.38	Values not measured	Values not measured
60	20.41	27.13	Values not measured	Values not measured
61	4.43	27.30	Values not measured	Values not measured
62	0.00	28.88	Values not measured	Values not measured
63	0.00	28.25	Values not measured	Values not measured
64	0.00	25.88	Values not measured	Values not measured
65	0.00	25.85	Values not measured	Values not measured
66	0.00	24.64	Values not measured	Values not measured
67	0.00	21.87	Values not measured	Values not measured
68	0.00	21.92	Values not measured	Values not measured
69	0.00	16.18	Values not measured	Values not measured
70	0.00	15.61	Values not measured	Values not measured
71	0.00	8.65	Values not measured	Values not measured
72	0.00	7.20	Values not measured	Values not measured
73	0.00	5.92	Values not measured	Values not measured
74	0.00	4.61	Values not measured	Values not measured
75	0.00	1.45	Values not measured	Values not measured
Total	**1500**	**1500**		

Wood Fiber Bale Test 1B

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	3:27 PM
Inflow Stop Time	4:28 PM
Outflow Start Time	3:29 PM
Outflow Stop Time	4:49 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	24.59
Average Outlet Flow Rate (GPM)	18.52
Percent Flow Rate Reduction (%)	24.69
Average Inlet Turbidity (NTU)	2851.10
Average Outlet Turbidity (NTU)	2014.60
Percent Turbidity Reduction (%)	29.34

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
1	3.77	0.00	Startup	Startup
2	18.45	0.00	Startup	Startup
3	17.83	13.42	Startup	Startup
4	17.56	13.42	Startup	Startup
5	16.52	14.74	Startup	Startup
6	16.31	14.72	Startup	Startup
7	15.83	14.57	Startup	Startup
8	15.84	14.53	Startup	Startup
9	15.21	14.74	1889	1364
10	14.87	14.44	-	-
11	14.23	13.18	-	-
12	16.41	13.23	4346	2040
13	28.00	14.87	-	-
14	27.61	17.94	-	-
15	26.39	19.90	1881	1588
16	26.32	20.51	-	-
17	26.03	21.98		
18	25.78	22.17	3011	2429
19	25.57	23.07	-	-
20	24.81	17.94	-	-
21	24.38	21.76	2213	2118
22	23.97	21.82	-	-
23	24.01	21.83	-	-
24	23.83	21.83	2091	1766
25	23.21	21.79	-	-
26	22.80	21.84	-	-
27	22.24	22.70	3102	2187
28	22.16	22.99	-	-
29	21.81	20.43	-	-
30	21.34	20.32	2636	2243

Wood Fiber Bale Test 1B (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
31	20.97	19.25	-	-
32	20.43	19.87	-	-
33	20.04	18.87	3081	2193
34	19.50	17.56	-	-
35	19.57	18.55	-	-
36	18.83	19.53	4261	2218
37	19.26	18.78	Values not measured	Values not measured
38	19.53	18.91	Values not measured	Values not measured
39	19.48	18.93	Values not measured	Values not measured
40	33.66	19.10	Values not measured	Values not measured
41	40.61	21.47	Values not measured	Values not measured
42	40.17	21.94	Values not measured	Values not measured
43	40.12	24.68	Values not measured	Values not measured
44	39.31	25.06	Values not measured	Values not measured
45	38.14	29.27	Values not measured	Values not measured
46	37.38	27.25	Values not measured	Values not measured
47	36.92	27.90	Values not measured	Values not measured
48	35.79	30.53	Values not measured	Values not measured
49	34.88	31.03	Values not measured	Values not measured
50	33.61	31.36	Values not measured	Values not measured
51	32.80	31.73	Values not measured	Values not measured
52	32.47	30.20	Values not measured	Values not measured
53	32.55	29.35	Values not measured	Values not measured
54	31.34	28.88	Values not measured	Values not measured
55	29.59	28.92	Values not measured	Values not measured
56	28.64	29.06	Values not measured	Values not measured
57	27.31	29.57	Values not measured	Values not measured
58	25.88	27.27	Values not measured	Values not measured
59	23.29	25.14	Values not measured	Values not measured
60	20.41	20.31	Values not measured	Values not measured
61	4.43	21.16	Values not measured	Values not measured
62	0.00	20.08	Values not measured	Values not measured
63	0.00	17.94	Values not measured	Values not measured
64	0.00	17.42	Values not measured	Values not measured
65	0.00	17.12	Values not measured	Values not measured
66	0.00	16.31	Values not measured	Values not measured
67	0.00	15.03	Values not measured	Values not measured
68	0.00	15.96	Values not measured	Values not measured
69	0.00	13.74	Values not measured	Values not measured
70	0.00	13.09	Values not measured	Values not measured
71	0.00	11.96	Values not measured	Values not measured
72	0.00	10.19	Values not measured	Values not measured
73	0.00	10.15	Values not measured	Values not measured
74	0.00	8.85	Values not measured	Values not measured
75	0.00	8.71	Values not measured	Values not measured
76	0.00	6.48	Values not measured	Values not measured
77	0.00	5.33	Values not measured	Values not measured
78	0.00	4.68	Values not measured	Values not measured
79	0.00	5.01	Values not measured	Values not measured
80	0.00	3.40	Values not measured	Values not measured
81	0.00	0.45	Values not measured	Values not measured
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Wood Fiber Bale Test 1C

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	4:08 PM
Inflow Stop Time	4:44 PM
Outflow Start Time	4:08 PM
Outflow Stop Time	5:06 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	40.54
Average Outlet Flow Rate (GPM)	25.42
Percent Flow Rate Reduction (%)	37.29
Average Inlet Turbidity (NTU)	2406.20
Average Outlet Turbidity (NTU)	1753.27
Percent Turbidity Reduction (%)	27.14

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	10.06	2.02	Startup	Startup
2	104.53	18.77	2322	2034
3	61.06	21.29	-	-
4	43.09	22.53	2481	1882
5	43.62	24.03	-	-
6	46.95	23.96	2386	1947
7	64.06	23.15	-	-
8	62.87	24.55	2711	1860
9	61.21	24.93	-	-
10	60.59	26.84	2362	1821
11	40.73	27.10	-	-
12	25.82	28.17	2108	1404
13	25.51	27.08	-	-
14	25.27	30.31	1828	1421
15	25.19	30.32	-	-
16	24.61	29.42	1951	1752
17	24.44	27.77	-	-
18	24.49	27.06	2313	1505
19	24.12	25.56	-	-
20	23.76	25.07	2757	1657
21	34.97	27.97	-	-
22	37.98	29.99	3175	1762
23	41.48	31.65	-	-
24	56.17	31.95	2022	2346
25	53.88	32.86	-	-
26	52.53	34.64	2251	1916

Wood Fiber Bale Test 1C (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
27	51.80	35.74	-	-
28	49.84	38.81	2571	1899
29	47.49	36.66	-	-
30	45.94	34.90	2855	1093
31	44.66	33.29	Values not measured	Values not measured
32	42.73	34.05	Values not measured	Values not measured
33	39.52	34.80	Values not measured	Values not measured
34	36.13	35.37	Values not measured	Values not measured
35	32.41	35.11	Values not measured	Values not measured
36	10.08	36.07	Values not measured	Values not measured
37	0.42	35.87	Values not measured	Values not measured
38	0.00	35.34	Values not measured	Values not measured
39	0.00	34.21	Values not measured	Values not measured
40	0.00	34.09	Values not measured	Values not measured
41	0.00	33.29	Values not measured	Values not measured
42	0.00	30.85	Values not measured	Values not measured
43	0.00	28.81	Values not measured	Values not measured
44	0.00	27.60	Values not measured	Values not measured
45	0.00	23.49	Values not measured	Values not measured
46	0.00	22.06	Values not measured	Values not measured
47	0.00	18.29	Values not measured	Values not measured
48	0.00	16.06	Values not measured	Values not measured
49	0.00	15.06	Values not measured	Values not measured
50	0.00	14.82	Values not measured	Values not measured
51	0.00	13.92	Values not measured	Values not measured
52	0.00	13.03	Values not measured	Values not measured
53	0.00	12.81	Values not measured	Values not measured
54	0.00	11.81	Values not measured	Values not measured
55	0.00	11.37	Values not measured	Values not measured
56	0.00	12.01	Values not measured	Values not measured
57	0.00	12.05	Values not measured	Values not measured
58	0.00	9.07	Values not measured	Values not measured
59	0.00	0.27	Values not measured	Values not measured
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Wood Fiber Bale Test 2A

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	4:17 PM
Inflow Stop Time	5:14 PM
Outflow Start Time	4:18 PM
Outflow Stop Time	5:26 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	25.86
Average Outlet Flow Rate (GPM)	21.43
Percent Flow Rate Reduction (%)	17.14
Average Inlet Turbidity (NTU)	2866.47
Average Outlet Turbidity (NTU)	1619.27
Percent Turbidity Reduction (%)	43.51

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
1	3.46	0.00	Startup	Startup
2	57.37	0.02	Startup	Startup
3	38.17	0.87	Startup	Startup
4	37.75	1.34	Startup	Startup
5	38.01	5.75	2993	1320
6	37.62	12.19	-	-
7	37.64	15.69	3005	1094
8	36.04	16.69	-	-
9	35.21	18.69	1903	1066
10	35.29	19.94	-	-
11	35.02	20.94	1917	1337
12	35.80	23.47	-	-
13	34.77	24.01	2111	1140
14	34.04	26.65	-	-
15	33.72	27.06	3595	1388
16	34.05	28.76	-	-
17	33.07	28.77	2910	1810
18	30.86	28.86	-	-
19	30.77	29.09	3149	1604
20	29.17	29.43	-	-
21	30.09	29.87	3454	1530
22	30.83	30.09	-	-
23	29.33	30.63	2893	2036
24	28.08	30.71	-	-
25	28.41	30.84	2804	3068
26	27.64	30.99	-	-
27	28.13	30.96	3375	1795
28	27.26	31.20	-	-

Wood Fiber Bale Test 2A (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
29	26.75	30.63	3157	1762
30	26.26	30.53	-	-
31	26.15	30.97	3003	1874
32	26.12	31.06	-	-
33	26.02	30.47	2728	1465
34	24.85	30.39	Values not measured	Values not measured
35	24.74	29.57	Values not measured	Values not measured
36	24.37	28.86	Values not measured	Values not measured
37	24.24	28.59	Values not measured	Values not measured
38	23.55	27.21	Values not measured	Values not measured
39	22.96	26.85	Values not measured	Values not measured
40	22.42	26.66	Values not measured	Values not measured
41	22.28	26.68	Values not measured	Values not measured
42	22.14	25.90	Values not measured	Values not measured
43	21.29	25.94	Values not measured	Values not measured
44	21.42	25.86	Values not measured	Values not measured
45	21.16	25.74	Values not measured	Values not measured
46	20.53	25.50	Values not measured	Values not measured
47	19.91	24.55	Values not measured	Values not measured
48	19.17	23.96	Values not measured	Values not measured
49	18.42	22.92	Values not measured	Values not measured
50	17.70	22.90	Values not measured	Values not measured
51	17.36	21.90	Values not measured	Values not measured
52	16.31	21.89	Values not measured	Values not measured
53	15.39	21.82	Values not measured	Values not measured
54	14.25	21.35	Values not measured	Values not measured
55	12.55	20.93	Values not measured	Values not measured
56	3.87	20.66	Values not measured	Values not measured
57	0.17	20.46	Values not measured	Values not measured
58	0.11	19.78	Values not measured	Values not measured
59	0.00	19.56	Values not measured	Values not measured
60	0.00	18.93	Values not measured	Values not measured
61	0.00	17.24	Values not measured	Values not measured
62	0.00	16.48	Values not measured	Values not measured
63	0.00	14.95	Values not measured	Values not measured
64	0.00	12.40	Values not measured	Values not measured
65	0.00	11.01	Values not measured	Values not measured
66	0.00	7.20	Values not measured	Values not measured
67	0.00	5.04	Values not measured	Values not measured
68	0.00	2.11	Values not measured	Values not measured
69	0.00	0.93	Values not measured	Values not measured
70	0.00	0.11	Values not measured	Values not measured
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Wood Fiber Bale Test 2B

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	4:51 PM
Inflow Stop Time	5:44 PM
Outflow Start Time	4:51 PM
Outflow Stop Time	6:03 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	27.78
Average Outlet Flow Rate (GPM)	20.55
Percent Flow Rate Reduction (%)	26.03
Average Inlet Turbidity (NTU)	3222.33
Average Outlet Turbidity (NTU)	1442.00
Percent Turbidity Reduction (%)	55.25

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	19.29	0.05	Startup	Startup
2	39.14	0.14	Startup	Startup
3	40.36	1.96	Startup	Startup
4	38.73	1.15	Startup	Startup
5	37.70	2.28	Startup	Startup
6	37.32	5.63	Startup	Startup
7	37.39	6.73	Startup	Startup
8	36.95	12.13	Startup	Startup
9	36.58	16.29	Startup	Startup
10	35.90	20.58	3618	1843
11	35.81	22.24	-	-
12	34.60	22.83	2795	1331
13	33.87	26.17	-	-
14	34.76	26.48	2995	965
15	35.07	27.27	-	-
16	33.40	28.59	3223	1494
17	32.29	29.24	-	-
18	32.18	31.50	2806	833
19	32.35	31.52	-	-
20	32.71	32.03	3065	1654
21	32.04	32.15	-	-
22	31.92	33.04	2862	1189
23	31.64	33.10	-	-
24	30.96	33.04	2808	1524
25	31.25	33.17	-	-
26	30.42	33.13	3042	1380
27	29.37	33.25	-	-

Wood Fiber Bale Test 2B (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
28	29.48	33.61	2838	1688
29	29.12	32.15	-	-
30	28.99	33.09	4203	694
31	28.82	31.42	-	-
32	26.72	30.95	3212	1134
33	26.98	30.23	-	-
34	26.65	30.21	3395	1939
35	25.98	30.09	-	-
36	25.13	30.06	4092	2106
37	25.26	29.97	-	-
38	24.74	29.62	3381	1856
39	24.56	29.52	Values not measured	Values not measured
40	23.02	29.32	Values not measured	Values not measured
41	22.14	28.38	Values not measured	Values not measured
42	22.76	28.55	Values not measured	Values not measured
43	22.03	28.02	Values not measured	Values not measured
44	21.12	26.43	Values not measured	Values not measured
45	21.13	23.49	Values not measured	Values not measured
46	21.10	22.62	Values not measured	Values not measured
47	19.54	22.60	Values not measured	Values not measured
48	19.20	22.40	Values not measured	Values not measured
49	18.15	22.39	Values not measured	Values not measured
50	17.48	22.16	Values not measured	Values not measured
51	16.56	22.08	Values not measured	Values not measured
52	14.18	21.95	Values not measured	Values not measured
53	4.74	21.75	Values not measured	Values not measured
54	0.42	21.72	Values not measured	Values not measured
55	0.00	21.68	Values not measured	Values not measured
56	0.00	20.78	Values not measured	Values not measured
57	0.00	18.43	Values not measured	Values not measured
58	0.00	17.66	Values not measured	Values not measured
59	0.00	17.45	Values not measured	Values not measured
60	0.00	16.09	Values not measured	Values not measured
61	0.00	12.02	Values not measured	Values not measured
62	0.00	10.81	Values not measured	Values not measured
63	0.00	9.76	Values not measured	Values not measured
64	0.00	9.61	Values not measured	Values not measured
65	0.00	8.50	Values not measured	Values not measured
66	0.00	6.49	Values not measured	Values not measured
67	0.00	5.11	Values not measured	Values not measured
68	0.00	4.87	Values not measured	Values not measured
69	0.00	3.92	Values not measured	Values not measured
70	0.00	3.19	Values not measured	Values not measured
71	0.00	1.96	Values not measured	Values not measured
72	0.00	0.87	Values not measured	Values not measured
73	0.00	0.31	Values not measured	Values not measured
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Wood Fiber Bale Test 2C

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	4:14 PM
Inflow Stop Time	5:04 PM
Outflow Start Time	4:15 PM
Outflow Stop Time	5:17 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	29.41
Average Outlet Flow Rate (GPM)	23.44
Percent Flow Rate Reduction (%)	20.31
Average Inlet Turbidity (NTU)	2784.33
Average Outlet Turbidity (NTU)	1961.53
Percent Turbidity Reduction (%)	29.55

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	0.08	0.00	Startup	Startup
2	0.07	0.02	Startup	Startup
3	0.05	0.02	Startup	Startup
4	0.09	0.02	Startup	Startup
5	0.10	0.09	Startup	Startup
6	9.65	0.92	Startup	Startup
7	81.29	1.17	4215	2031
8	79.96	17.70	-	-
9	77.29	23.15	3017	4311
10	76.93	26.23	-	-
11	75.28	30.44	3175	1918
12	72.78	36.59	-	-
13	71.77	41.55	4306	2160
14	71.20	41.31	-	-
15	69.30	42.36	2865	2564
16	67.36	43.67	-	-
17	66.64	45.17	2471	1763
18	65.94	47.38	-	-
19	63.51	50.58	2221	1602
20	57.70	51.07	-	-
21	52.97	53.32	2266	1936
22	52.96	58.35	-	-
23	50.87	57.50	2109	1691
24	48.56	55.15	-	-
25	47.08	53.06	2152	1835
26	45.15	50.05	-	-
27	43.39	48.10	2436	1636
28	39.67	48.45	-	-
29	38.35	47.33	2015	1532

Wood Fiber Bale Test 2C (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
30	35.15	46.62	-	-
31	30.16	46.58	3047	1437
32	6.54	46.10	-	-
33	0.35	45.73	2890	1248
34	0.22	40.24	-	-
35	0.19	39.41	2580	1759
36	0.09	37.92	Values not measured	Values not measured
37	0.12	36.70	Values not measured	Values not measured
38	0.12	31.89	Values not measured	Values not measured
39	0.08	29.28	Values not measured	Values not measured
40	0.06	26.61	Values not measured	Values not measured
41	0.06	18.13	Values not measured	Values not measured
42	0.06	15.58	Values not measured	Values not measured
43	0.06	12.84	Values not measured	Values not measured
44	0.10	10.29	Values not measured	Values not measured
45	0.11	6.58	Values not measured	Values not measured
46	0.07	5.44	Values not measured	Values not measured
47	0.09	5.08	Values not measured	Values not measured
48	0.11	4.25	Values not measured	Values not measured
49	0.10	4.12	Values not measured	Values not measured
50	0.12	2.34	Values not measured	Values not measured
51	0.09	2.14	Values not measured	Values not measured
52	0.00	2.13	Values not measured	Values not measured
53	0.00	2.10	Values not measured	Values not measured
54	0.00	1.98	Values not measured	Values not measured
55	0.00	1.11	Values not measured	Values not measured
56	0.00	1.08	Values not measured	Values not measured
57	0.00	1.15	Values not measured	Values not measured
58	0.00	1.06	Values not measured	Values not measured
59	0.00	1.28	Values not measured	Values not measured
60	0.00	1.17	Values not measured	Values not measured
61	0.00	1.11	Values not measured	Values not measured
62	0.00	1.11	Values not measured	Values not measured
63	0.00	0.09	Values not measured	Values not measured
64	0.00	0.02	Values not measured	Values not measured
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Wood Fiber Bale Test Summary

Product	Wood Fiber Bales
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l

Test ID	Average Inlet Flow Rate (gpm)	Average Outlet Flow Rate (gpm)	Flow Rate Reduction (%)	Average Inlet Turbidity (NTU)	Average Outlet Turbidity (NTU)	Turbidity Reduction (%)
Test 1A	24.59	20.00	18.67	2163.81	1617.87	25.23
Test 1B	24.59	18.52	24.69	2851.10	2014.60	29.34
Test 1C	40.54	25.42	37.29	2406.20	1753.27	27.14
Test 2A	25.86	21.43	17.14	2866.47	1619.27	43.51
Test 2B	27.78	20.55	26.03	3222.33	1442.00	55.25
Test 2C	29.41	23.44	20.31	2784.33	1961.53	29.55
Average	**28.80**	**21.56**	**24.02**	**2715.71**	**1734.76**	**35.00**

Compost Sock Test 1A

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	10:42 AM
Inflow Stop Time	11:15 AM
Outflow Start Time	10:43 AM
Outflow Stop Time	11:20 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	44.12
Average Outlet Flow Rate (GPM)	37.50
Percent Flow Rate Reduction (%)	15.00
Average Inlet Turbidity (NTU)	2130.53
Average Outlet Turbidity (NTU)	1624.27
Percent Turbidity Reduction (%)	23.76

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	0.00	0.00	Startup	Startup
2	18.67	0.20	Startup	Startup
3	31.16	3.42	Startup	Startup
4	30.45	7.57	2345	1575
5	29.96	18.13	-	-
6	45.57	20.29	1488	1445
7	57.71	24.53	-	-
8	55.92	26.76	1593	1378
9	53.67	34.01	-	-
10	52.89	36.28	2241	632
11	50.64	44.68	-	-
12	48.46	45.98	1221	980
13	47.02	46.63	-	-
14	47.68	50.01	2497	2368
15	45.97	49.68	-	-
16	45.13	51.31	1788	1580
17	43.62	53.02	-	-
18	42.19	54.78	2095	1832
19	41.76	59.20	-	-
20	40.67	46.64	2521	1880
21	39.60	45.05	-	-
22	38.93	44.89	2202	1972
23	37.80	46.60	-	-
24	37.47	38.93	2507	2405
25	36.50	35.46	-	-
26	47.64	41.12	2774	2323

Compost Sock Test 1A (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
27	55.21	46.28	-	-
28	53.44	48.24	2183	1197
29	52.39	51.97	-	-
30	49.56	55.33	2485	1233
31	50.28	56.18	-	-
32	97.98	60.56	2018	1564
33	73.47	64.25	Reduced or no inflow	Reduced or no inflow
34	0.60	61.84	Reduced or no inflow	Reduced or no inflow
35	0.00	58.84	Reduced or no inflow	Reduced or no inflow
36	0.00	39.33	Reduced or no inflow	Reduced or no inflow
37	0.00	16.20	Reduced or no inflow	Reduced or no inflow
38	0.00	13.15	Reduced or no inflow	Reduced or no inflow
39	0.00	1.97	Reduced or no inflow	Reduced or no inflow
40	0.00	0.72	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Compost Sock Test 1B

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	12:08 PM
Inflow Stop Time	12:37 PM
Outflow Start Time	12:08 PM
Outflow Stop Time	12:42 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	50.00
Average Outlet Flow Rate (GPM)	42.86
Percent Flow Rate Reduction (%)	14.29
Average Inlet Turbidity (NTU)	2402.40
Average Outlet Turbidity (NTU)	1979.00
Percent Turbidity Reduction (%)	17.62

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	0.00	0.00	-	-
2	20.25	4.63	2182	1509
3	28.64	18.68	-	-
4	27.90	25.66	1932	2052
5	28.02	29.47	-	-
6	73.55	33.89	1871	1213
7	83.00	33.94	-	-
8	80.81	34.50	1950	1532
9	78.65	40.61	-	-
10	77.96	44.34	2229	1650
11	76.16	47.51	-	-
12	73.93	51.40	2142	2054
13	71.14	56.91	-	-
14	70.36	60.63	2002	2466
15	67.38	69.89	-	-
16	65.07	72.41	2147	2342
17	61.75	70.62	-	-
18	51.51	71.38	2293	2188
19	49.68	72.59	-	-
20	48.78	74.41	2621	2018
21	47.87	79.65	-	-
22	48.10	83.49	2682	2197
23	45.23	84.99	-	-
24	43.93	65.21	4357	3070
25	41.69	58.03	-	-
26	39.21	52.14	2523	1720

Compost Sock Test 1B (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
27	36.18	39.98	-	-
28	33.42	36.31	2467	1478
29	27.47	25.74	-	-
30	2.35	20.98	2638	2196
31	0.00	17.82	Reduced or no inflow	Reduced or no inflow
32	0.00	12.90	Reduced or no inflow	Reduced or no inflow
33	0.00	6.36	Reduced or no inflow	Reduced or no inflow
34	0.00	2.24	Reduced or no inflow	Reduced or no inflow
35	0.00	0.68	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Compost Sock Test 1C

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	2:00 PM
Inflow Stop Time	2:34 PM
Outflow Start Time	2:00 PM
Outflow Stop Time	2:39 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	42.86
Average Outlet Flow Rate (GPM)	37.50
Percent Flow Rate Reduction (%)	12.50
Average Inlet Turbidity (NTU)	2248.93
Average Outlet Turbidity (NTU)	1967.07
Percent Turbidity Reduction (%)	12.53

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	0.00	0.00	Startup	Startup
2	20.77	2.78	Startup	Startup
3	70.80	14.24	2236	1673
4	70.32	21.39	-	-
5	68.11	27.03	1996	1691
6	66.30	31.53	-	-
7	64.40	40.64	2034	1732
8	62.89	49.44	-	-
9	60.93	53.21	2245	2210
10	58.70	56.34	-	-
11	57.88	59.19	2390	2193
12	55.58	60.69	-	-
13	49.27	57.99	2457	1974
14	48.15	56.49	-	-
15	47.09	62.60	2678	2213
16	46.32	64.92	-	-
17	45.29	63.37	2352	1943
18	44.26	61.82	-	-
19	43.94	57.93	2427	1692
20	43.56	56.93	-	-
21	43.13	49.44	2187	1835
22	41.00	46.63	-	-
23	40.74	45.15	2234	2135
24	40.21	42.95	-	-
25	38.88	41.63	2241	2077
26	38.29	41.65	-	-
27	37.42	40.55	2095	2152

Compost Sock Test 1C (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
28	34.94	41.35	-	-
29	33.26	39.62	2145	2013
30	31.33	42.30	-	-
31	30.64	47.08	2017	1973
32	28.37	35.30	Reduced or no inflow	Reduced or no inflow
33	25.07	25.58	Reduced or no inflow	Reduced or no inflow
34	12.08	21.37	Reduced or no inflow	Reduced or no inflow
35	0.05	17.64	Reduced or no inflow	Reduced or no inflow
36	0.00	11.59	Reduced or no inflow	Reduced or no inflow
37	0.00	7.34	Reduced or no inflow	Reduced or no inflow
38	0.00	1.73	Reduced or no inflow	Reduced or no inflow
39	0.00	1.75	Reduced or no inflow	Reduced or no inflow
40	0.00	0.79	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Compost Sock Test 2A

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	12:13 PM
Inflow Stop Time	12:52 PM
Outflow Start Time	12:14 PM
Outflow Stop Time	1:19 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	37.50
Average Outlet Flow Rate (GPM)	22.39
Percent Flow Rate Reduction (%)	40.30
Average Inlet Turbidity (NTU)	2545.20
Average Outlet Turbidity (NTU)	2165.80
Percent Turbidity Reduction (%)	14.91

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
1	15.18	0.00	Startup	Startup
2	55.70	5.38	Startup	Startup
3	54.61	9.30	Startup	Startup
4	53.21	10.53	2325	2109
5	53.74	16.90	-	-
6	52.83	24.95	2453	2030
7	52.77	27.83	-	-
8	51.32	35.79	2399	1948
9	51.47	37.63	-	-
10	48.87	40.42	2304	2061
11	46.71	43.07	-	-
12	47.55	43.86	2335	2019
13	46.31	45.18	-	-
14	45.15	43.89	2640	2504
15	43.85	42.64	-	-
16	43.00	44.43	2342	2096
17	42.13	45.97	-	-
18	41.62	47.25	2581	2156
19	40.34	45.10	-	-
20	38.57	41.61	2529	2038
21	39.43	40.43	-	-
22	37.88	37.39	2336	2101
23	37.08	36.27	-	-
24	36.09	35.02	3290	2151
25	34.99	34.60	-	-
26	34.22	30.57	2549	2125

Compost Sock Test 2A (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
27	33.46	31.61	-	-
28	32.95	32.40	2503	2094
29	32.75	33.49	-	-
30	31.21	35.33	2728	2556
31	30.62	36.00	-	-
32	29.72	36.12	2864	2499
33	28.30	36.55	Reduced or no inflow	Reduced or no inflow
34	27.14	35.75	Reduced or no inflow	Reduced or no inflow
35	26.48	30.52	Reduced or no inflow	Reduced or no inflow
36	25.22	29.16	Reduced or no inflow	Reduced or no inflow
37	22.77	26.20	Reduced or no inflow	Reduced or no inflow
38	20.39	25.06	Reduced or no inflow	Reduced or no inflow
39	13.97	24.75	Reduced or no inflow	Reduced or no inflow
40	0.42	23.38	Reduced or no inflow	Reduced or no inflow
41	0.00	16.76	Reduced or no inflow	Reduced or no inflow
42	0.00	15.51	Reduced or no inflow	Reduced or no inflow
43	0.00	15.36	Reduced or no inflow	Reduced or no inflow
44	0.00	14.93	Reduced or no inflow	Reduced or no inflow
45	0.00	13.85	Reduced or no inflow	Reduced or no inflow
46	0.00	12.47	Reduced or no inflow	Reduced or no inflow
47	0.00	11.23	Reduced or no inflow	Reduced or no inflow
48	0.00	10.22	Reduced or no inflow	Reduced or no inflow
49	0.00	9.80	Reduced or no inflow	Reduced or no inflow
50	0.00	9.68	Reduced or no inflow	Reduced or no inflow
51	0.00	9.02	Reduced or no inflow	Reduced or no inflow
52	0.00	8.86	Reduced or no inflow	Reduced or no inflow
53	0.00	8.58	Reduced or no inflow	Reduced or no inflow
54	0.00	7.45	Reduced or no inflow	Reduced or no inflow
55	0.00	6.48	Reduced or no inflow	Reduced or no inflow
56	0.00	3.89	Reduced or no inflow	Reduced or no inflow
57	0.00	3.75	Reduced or no inflow	Reduced or no inflow
58	0.00	3.71	Reduced or no inflow	Reduced or no inflow
59	0.00	3.47	Reduced or no inflow	Reduced or no inflow
60	0.00	2.64	Reduced or no inflow	Reduced or no inflow
61	0.00	2.33	Reduced or no inflow	Reduced or no inflow
62	0.00	2.08	Reduced or no inflow	Reduced or no inflow
63	0.00	1.69	Reduced or no inflow	Reduced or no inflow
64	0.00	1.40	Reduced or no inflow	Reduced or no inflow
65	0.00	1.22	Reduced or no inflow	Reduced or no inflow
66	0.00	1.23	Reduced or no inflow	Reduced or no inflow
67	0.00	0.04	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Compost Sock Test 2B

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	3:06 PM
Inflow Stop Time	3:37 PM
Outflow Start Time	3:07 PM
Outflow Stop Time	3:51 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	46.88
Average Outlet Flow Rate (GPM)	32.61
Percent Flow Rate Reduction (%)	30.43
Average Inlet Turbidity (NTU)	2459.40
Average Outlet Turbidity (NTU)	2166.60
Percent Turbidity Reduction (%)	11.91

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	0.00	0.00	Startup	Startup
2	64.29	3.36	Startup	Startup
3	77.37	13.86	Startup	Startup
4	47.39	19.94	1536	1297
5	41.72	24.55	-	-
6	41.01	24.49	2655	2519
7	40.15	24.68	-	-
8	38.68	27.37	2160	1028
9	38.10	28.45	-	-
10	39.97	29.31	2524	2075
11	38.95	30.65	-	-
12	38.78	32.10	2294	2136
13	37.49	33.78	-	-
14	37.00	40.90	2285	2207
15	51.66	41.09	-	-
16	74.58	45.78	2614	2534
17	70.62	51.87	-	-
18	68.04	54.60	2529	2381
19	66.07	55.07	-	-
20	64.48	55.82	2596	2380
21	61.55	56.09	-	-
22	51.43	54.78	2334	2325
23	48.55	56.12	-	-
24	48.27	56.26	2744	2245
25	48.14	56.35	-	-
26	45.11	54.78	2611	2216

Compost Sock Test 2B (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
27	43.75	53.21	-	-
28	42.36	51.70	2851	2346
29	38.38	48.83	-	-
30	37.47	44.12	2685	2442
31	33.64	39.56	-	-
32	25.01	38.19	2473	2368
33	0.00	34.86	Reduced or no inflow	Reduced or no inflow
34	0.00	32.06	Reduced or no inflow	Reduced or no inflow
35	0.00	30.60	Reduced or no inflow	Reduced or no inflow
36	0.00	26.34	Reduced or no inflow	Reduced or no inflow
37	0.00	24.12	Reduced or no inflow	Reduced or no inflow
38	0.00	22.97	Reduced or no inflow	Reduced or no inflow
39	0.00	20.85	Reduced or no inflow	Reduced or no inflow
40	0.00	19.89	Reduced or no inflow	Reduced or no inflow
41	0.00	12.49	Reduced or no inflow	Reduced or no inflow
42	0.00	12.21	Reduced or no inflow	Reduced or no inflow
43	0.00	10.72	Reduced or no inflow	Reduced or no inflow
44	0.00	2.30	Reduced or no inflow	Reduced or no inflow
45	0.00	1.69	Reduced or no inflow	Reduced or no inflow
46	0.00	1.25	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Compost Sock Test 2C

Test Parameters	**Results**
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	2:07 PM
Inflow Stop Time	2:54 PM
Outflow Start Time	2:08 PM
Outflow Stop Time	3:22 PM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	31.25
Average Outlet Flow Rate (GPM)	19.74
Percent Flow Rate Reduction (%)	36.84
Average Inlet Turbidity (NTU)	2796.93
Average Outlet Turbidity (NTU)	2277.07
Percent Turbidity Reduction (%)	18.59

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)***	**Outlet Turbidity (NTU)***
1	4.51	0.00	Startup	Startup
2	68.10	2.42	Startup	Startup
3	74.04	4.08	Startup	Startup
0	32.45	13.17	2409	2442
5	29.87	17.63	-	-
6	29.79	18.21	2629	2069
7	29.60	18.35	-	-
8	30.27	18.88	2430	1780
9	30.26	19.54	-	-
10	29.84	21.01	2413	2366
11	29.91	21.63	-	-
12	29.89	21.64	3411	2285
13	30.20	22.26	-	-
14	29.60	22.29	3064	2085
15	28.97	22.91	-	-
16	29.05	22.95	2501	2149
17	28.60	24.15	-	-
18	28.13	24.56	2927	2098
19	27.33	25.24	-	-
20	26.72	26.08	3279	2642
21	26.11	26.36	-	-
22	26.07	27.75	2803	2641
23	34.16	28.99	-	-
24	43.88	30.66	3116	2588
25	42.05	30.76	-	-
26	41.33	31.13	2600	2265
27	40.12	31.11	-	-
28	39.24	31.35	2792	2108
29	38.02	31.27	-	-
30	37.22	31.90	2958	2395

Compost Sock Test 2C (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)*	Outlet Turbidity (NTU)*
31	35.55	32.06	-	-
32	34.66	32.07	2622	2243
33	33.93	33.05	Values not measured	Values not measured
34	33.45	33.88	Values not measured	Values not measured
35	33.70	34.17	Values not measured	Values not measured
36	32.45	34.77	Values not measured	Values not measured
37	31.53	34.69	Values not measured	Values not measured
38	31.62	35.31	Values not measured	Values not measured
39	31.00	36.06	Values not measured	Values not measured
40	29.70	34.45	Values not measured	Values not measured
41	27.19	34.17	Values not measured	Values not measured
42	26.63	33.65	Values not measured	Values not measured
43	24.88	32.51	Values not measured	Values not measured
44	23.84	31.91	Values not measured	Values not measured
45	21.89	31.23	Values not measured	Values not measured
46	19.22	30.25	Values not measured	Values not measured
47	13.13	27.70	Values not measured	Values not measured
48	0.32	25.06	Reduced or no inflow	Reduced or no inflow
49	0.00	24.54	Reduced or no inflow	Reduced or no inflow
50	0.00	23.19	Reduced or no inflow	Reduced or no inflow
51	0.00	21.13	Reduced or no inflow	Reduced or no inflow
52	0.00	19.87	Reduced or no inflow	Reduced or no inflow
53	0.00	17.37	Reduced or no inflow	Reduced or no inflow
54	0.00	14.68	Reduced or no inflow	Reduced or no inflow
55	0.00	13.67	Reduced or no inflow	Reduced or no inflow
56	0.00	13.27	Reduced or no inflow	Reduced or no inflow
57	0.00	12.51	Reduced or no inflow	Reduced or no inflow
58	0.00	11.40	Reduced or no inflow	Reduced or no inflow
59	0.00	10.87	Reduced or no inflow	Reduced or no inflow
60	0.00	9.62	Reduced or no inflow	Reduced or no inflow
61	0.00	9.10	Reduced or no inflow	Reduced or no inflow
62	0.00	8.24	Reduced or no inflow	Reduced or no inflow
63	0.00	5.86	Reduced or no inflow	Reduced or no inflow
64	0.00	5.68	Reduced or no inflow	Reduced or no inflow
65	0.00	4.62	Reduced or no inflow	Reduced or no inflow
66	0.00	3.66	Reduced or no inflow	Reduced or no inflow
67	0.00	3.30	Reduced or no inflow	Reduced or no inflow
68	0.00	2.90	Reduced or no inflow	Reduced or no inflow
69	0.00	2.32	Reduced or no inflow	Reduced or no inflow
70	0.00	1.36	Reduced or no inflow	Reduced or no inflow
71	0.00	1.43	Reduced or no inflow	Reduced or no inflow
72	0.00	1.39	Reduced or no inflow	Reduced or no inflow
73	0.00	1.27	Reduced or no inflow	Reduced or no inflow
74	0.00	0.71	Reduced or no inflow	Reduced or no inflow
75	0.00	0.62	Reduced or no inflow	Reduced or no inflow
76	0.00	0.14	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

*Turbidity readings were recorded every 2 minutes after the startup period.

Compost Sock Test Summary

Product	Compost Socks
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l

Test ID	Average Inlet Flow Rate (gpm)	Average Outlet Flow Rate (gpm)	Flow Rate Reduction (%)	Average Inlet Turbidity (NTU)	Average Outlet Turbidity (NTU)	Turbidity Reduction (%)
Test 1A	44.12	37.50	15.00	2130.53	1624.27	23.76
Test 1B	50.00	42.86	14.29	2402.40	1979.00	17.62
Test 1C	42.86	37.50	12.50	2248.93	1967.07	12.53
Test 2A	37.50	22.39	40.30	2545.20	2165.80	14.91
Test 2B	46.88	32.61	30.43	2459.40	2166.60	11.91
Test 2C	31.25	19.74	36.84	2796.93	2277.07	18.59
Average	**42.10**	**32.10**	**24.89**	**2430.57**	**2029.97**	**16.55**

Wood Chip Log Test 1A

Test Parameters	**Results**
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	10:03 AM
Inflow Stop Time	11:46 AM
Outflow Start Time	10:05 AM
Outflow Stop Time	11:51 AM

Measurements	**Results**
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	14.85
Average Outlet Flow Rate (GPM)	14.02
Percent Flow Rate Reduction (%)	5.61
Average Inlet Turbidity (NTU)	2299.43
Average Outlet Turbidity (NTU)	1829.43
Percent Turbidity Reduction (%)	20.44

Running Time (Minutes)	**Inflow (GPM)**	**Outflow (GPM)**	**Inlet Turbidity (NTU)**	**Outlet Turbidity (NTU)**
1	11.88	0.00	Startup	Startup
2	10.99	0.00	Startup	Startup
3	10.99	13.92	Startup	Startup
4	10.57	11.25	Startup	Startup
5	10.57	9.25	Startup	Startup
6	10.23	8.48	Startup	Startup
7	10.23	7.15	2150	1792
8	10.36	7.43	2119	1513
9	10.52	6.39	2059	1680
10	10.57	6.77	2029	1672
11	9.84	6.39	2214	1627
12	10.02	6.67	2168	1475
13	10.02	6.77	2063	1444
14	9.86	6.39	2066	1730
15	9.60	6.67	2046	1781
16	9.60	6.77	2185	1840
17	9.86	6.86	2114	1881
18	9.86	6.00	2175	1572
19	9.26	5.91	2144	1541
20	9.00	5.34	2089	1474
21	9.26	5.34	2099	1386
22	9.26	5.91	2289	1622
23	23.76	5.53	2292	1633
24	21.95	5.62	2245	1654
25	22.22	5.72	2190	1631
26	18.41	5.34	2245	1868
27	16.84	4.86	2317	2287
28	16.42	4.48	2315	2194

Wood Chip Log Test 1A (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
29	9.52	4.57	2352	2053
30	9.18	6.39	2389	1922
31	9.13	12.68	2389	1825
32	9.26	21.83	2486	1684
33	9.60	23.64	2487	1773
34	9.60	24.88	2382	1813
35	21.48	19.82	2214	1854
36	21.09	16.20	2289	1836
37	20.80	11.25	2279	1692
38	20.22	8.01	2297	1884
39	20.41	6.29	2257	1989
40	19.28	5.34	2199	1974
41	18.83	4.96	2277	1989
42	18.83	6.96	2351	1889
43	18.83	17.25	2356	1891
44	18.83	21.92	2342	1862
45	18.91	23.45	2294	1861
46	18.83	25.64	2259	1872
47	17.99	24.11	2353	1866
48	17.81	23.92	2350	1776
49	17.47	22.78	2322	1754
50	17.47	21.92	2284	1738
51	18.28	21.83	2279	1755
52	18.28	21.35	2384	1864
53	17.47	21.35	2451	1898
54	17.26	20.68	2384	1885
55	17.36	20.68	2230	1977
56	17.36	21.06	2324	1903
57	17.36	20.02	2282	1807
58	17.36	20.02	2289	1791
59	16.76	19.82	2260	1718
60	16.84	19.25	2249	1677
61	17.21	19.16	2384	1869
62	16.84	19.82	2432	1889
63	16.21	19.25	2389	1887
64	17.39	20.02	2383	1842
65	16.26	19.25	2374	1723
66	16.26	19.25	2394	1916
67	15.97	19.82	2364	1948
68	15.55	19.25	2369	1944
69	16.24	18.68	2384	1992
70	15.82	18.49	2250	1975
71	16.24	17.44	2470	1951
72	15.82	17.44	2430	1955
73	15.82	17.44	2421	1841
74	15.55	16.68	2387	1777
75	15.48	16.20	2382	1754
76	15.40	17.25	2460	1910
77	14.98	17.16	2451	1894
78	15.06	16.77	2384	1853

Wood Chip Log Test 1A (Page 3)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
79	14.64	16.01	2410	1858
80	14.64	16.68	2422	1883
81	15.97	14.39	2436	1998
82	15.55	15.44	2410	1978
83	16.24	14.96	2370	1997
84	15.97	16.20	2389	1969
85	15.82	16.01	2312	1986
86	15.82	18.11	2259	2009
87	15.55	16.68	2172	2006
88	14.98	16.68	2160	1945
89	15.97	16.77	2162	1987
90	15.06	17.25	2284	1949
91	14.40	17.44	2393	1862
92	14.64	17.44	2489	1826
93	14.61	16.77	2340	1716
94	13.90	16.68	2387	1681
95	13.67	16.68	2290	1717
96	13.67	15.63	2257	1879
97	13.67	15.63	2191	1897
98	12.80	15.44	2183	1860
99	19.93	16.20	2470	1845
100	13.19	14.20	Reduced or no inflow	Reduced or no inflow
101	1.55	26.88	Reduced or no inflow	Reduced or no inflow
102	0.00	26.31	Reduced or no inflow	Reduced or no inflow
103	0.00	12.68	Reduced or no inflow	Reduced or no inflow
104	0.00	4.19	Reduced or no inflow	Reduced or no inflow
105	0.00	2.67	Reduced or no inflow	Reduced or no inflow
106	0.00	2.00	Reduced or no inflow	Reduced or no inflow
107	0.00	1.52	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Chip Log Test 1B

Test Parameters	Results
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	1:49 PM
Inflow Stop Time	3:24 PM
Outflow Start Time	1:50 PM
Outflow Stop Time	3:31 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	15.96
Average Outlet Flow Rate (GPM)	15.00
Percent Flow Rate Reduction (%)	6.00
Average Inlet Turbidity (NTU)	2560.98
Average Outlet Turbidity (NTU)	1783.47
Percent Turbidity Reduction (%)	30.36

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
1	27.96	0.00	Startup	Startup
2	26.11	19.35	Startup	Startup
3	26.11	21.54	Startup	Startup
4	26.33	23.89	Startup	Startup
5	25.01	24.48	Startup	Startup
6	8.96	18.17	2390	1633
7	10.49	10.52	2380	1583
8	10.70	9.59	2339	1552
9	14.75	9.84	2259	1522
10	14.86	11.86	2249	1506
11	13.76	12.87	2161	1505
12	13.76	13.38	2381	1553
13	13.55	13.21	2396	1537
14	14.31	13.38	2418	1491
15	14.09	13.21	2372	1445
16	14.86	12.87	2340	1530
17	14.31	13.21	2396	1617
18	14.09	13.21	2484	1695
19	14.09	12.70	2470	1699
20	13.76	13.38	2424	1685
21	13.11	13.21	2371	1612
22	13.76	13.38	2441	1624
23	14.09	12.37	2484	1670
24	12.45	12.87	2472	1637
25	12.89	13.21	2514	1578
26	12.89	12.20	2489	1567
27	12.02	12.20	2524	1636
28	12.89	11.69	2564	1688

Wood Chip Log Test 1B (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
29	13.55	12.37	2586	1662
30	12.45	12.87	2447	1615
31	12.34	12.70	2394	1582
32	12.45	12.37	2514	1630
33	12.02	12.37	2580	1760
34	12.34	11.69	2560	1737
35	12.34	12.37	2579	1697
36	11.80	12.87	2540	1703
37	21.30	12.37	2537	1757
38	19.12	15.06	2571	1862
39	19.55	18.84	2575	1726
40	19.12	18.84	2552	1782
41	18.79	18.93	2555	1897
42	18.13	19.35	2632	1921
43	17.70	19.35	2644	1921
44	17.70	18.93	2625	1830
45	18.46	18.84	2614	1770
46	18.46	17.58	2625	1744
47	17.59	18.93	2637	1837
48	17.59	18.93	2639	1890
49	17.70	18.34	2548	1913
50	18.46	18.17	2457	1863
51	17.59	18.84	2494	1843
52	17.04	17.83	2530	1854
53	16.39	18.17	2630	1904
54	15.73	17.58	2675	1895
55	15.73	16.99	2650	1870
56	15.62	18.17	2584	1802
57	16.82	17.83	2669	1910
58	15.62	16.99	2694	1951
59	16.39	17.58	2672	1917
60	15.29	17.25	2585	1930
61	15.73	17.25	2537	1946
62	18.13	18.17	2635	1925
63	18.46	18.84	2644	1920
64	17.59	18.34	2660	1835
65	17.04	19.35	2669	1792
66	17.59	18.84	2630	1792
67	16.17	18.34	2789	1937
68	18.13	18.84	2752	1987
69	16.39	17.83	2756	2063
70	16.82	16.99	2719	2130
71	16.17	17.58	2665	2113
72	16.17	17.25	2686	1952
73	16.17	16.57	2632	1817
74	15.73	15.82	2560	1655
75	16.17	14.81	2489	1750
76	15.29	16.57	2469	1741
77	15.62	16.07	2680	1936
78	15.62	15.82	2707	1916
79	14.86	15.06	2640	1875

Wood Chip Log Test 1B (Page 3)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
80	14.75	15.56	2530	1837
81	15.29	15.06	2541	1781
82	14.31	15.31	2712	1931
83	14.86	14.30	2790	1924
84	14.75	15.06	2797	1901
85	14.31	15.06	2679	1877
86	13.76	14.30	2686	1896
87	13.55	14.30	2670	1926
88	13.11	15.31	2725	1974
89	13.11	15.31	2687	1944
90	13.11	14.39	2625	1841
91	12.45	13.88	2569	1830
92	21.41	14.30	2582	1790
93	33.97	17.83	2542	1871
94	6.34	25.41	Reduced or no inflow	Reduced or no inflow
95	0.00	11.86	Reduced or no inflow	Reduced or no inflow
96	0.00	6.31	Reduced or no inflow	Reduced or no inflow
97	0.00	2.44	Reduced or no inflow	Reduced or no inflow
98	0.00	1.93	Reduced or no inflow	Reduced or no inflow
99	0.00	1.68	Reduced or no inflow	Reduced or no inflow
100	0.00	1.01	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Chip Log Test 1C

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Sediment Concentration	2000 mg/l
Inflow Start Time	9:41 AM
Inflow Stop Time	11:05 AM
Outflow Start Time	9:43 AM
Outflow Stop Time	11:11 AM

Measurements	Results
Inlet Total Volume (gal)	3000
Outlet Total Volume (gal)	3000
Average Inlet Flow Rate (GPM)	35.29
Average Outlet Flow Rate (GPM)	32.97
Percent Flow Rate Reduction (%)	6.59
Average Inlet Turbidity (NTU)	2955.58
Average Outlet Turbidity (NTU)	1950.64
Percent Turbidity Reduction (%)	34.00

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
1	27.27	0.00	Startup	Startup
2	26.53	0.00	Startup	Startup
3	27.27	18.64	Startup	Startup
4	26.53	23.92	Startup	Startup
5	17.09	22.76	Startup	Startup
6	16.66	17.65	2639	1745
7	17.83	16.40	2612	1721
8	17.30	18.28	2610	1711
9	17.09	16.84	2695	1742
10	17.09	17.65	2644	1773
11	17.83	17.65	2630	1749
12	18.47	18.01	2687	1673
13	19.10	16.22	2665	1613
14	17.83	17.47	2635	1580
15	17.09	16.40	2735	1772
16	17.09	16.84	2751	1767
17	16.66	17.47	2773	1764
18	16.66	16.40	2886	1726
19	15.92	16.40	2795	1728
20	16.45	16.84	2767	1738
21	15.81	16.40	2734	1717
22	16.45	15.86	2792	1791
23	15.92	16.40	2817	1868
24	15.92	15.68	2854	1811
25	16.66	16.22	2895	1885
26	17.09	16.40	2870	1928
27	15.92	16.22	2894	1926

Wood Chip Log Test 1C (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
28	16.66	16.40	2853	1912
29	15.92	15.32	2822	1916
30	14.54	14.69	2887	1931
31	14.96	15.14	2859	1899
32	15.81	15.14	2847	1847
33	14.96	15.14	2864	1835
34	18.68	17.65	2934	2017
35	19.95	18.82	2938	2042
36	19.74	18.64	2924	2013
37	17.30	18.01	2982	1980
38	18.47	18.28	2859	1944
39	17.94	17.65	2875	1972
40	17.09	18.82	2964	2011
41	17.83	17.65	2988	1945
42	16.66	18.28	3034	2084
43	16.66	18.28	3049	2127
44	17.09	17.02	3022	2063
45	16.77	17.38	2971	2010
46	16.66	17.47	2967	1995
47	16.66	18.01	2955	1961
48	16.45	17.65	2921	1943
49	17.09	17.02	2993	2006
50	17.83	16.84	3070	2035
51	15.18	16.84	3081	1940
52	15.60	17.02	3023	1874
53	15.92	16.40	2976	1841
54	15.92	15.86	3082	1931
55	20.91	18.64	3044	2034
56	19.32	19.35	3065	2105
57	19.95	19.44	3119	2153
58	18.47	19.35	3194	2227
59	18.68	18.82	3159	2122
60	18.47	19.71	3086	2096
61	18.47	18.64	3056	2020
62	18.68	19.89	3129	1892
63	18.68	19.35	3134	1969
64	17.30	19.35	3139	2019
65	16.66	18.28	3187	2087
66	16.45	17.56	3037	1923
67	16.45	17.65	2959	1857
68	15.92	17.65	3125	2006
69	15.60	17.56	3100	1999
70	16.66	16.22	3140	1977
71	15.18	17.02	3284	1890
72	14.96	16.40	3261	1920
73	14.96	17.65	3254	1961
74	22.18	18.64	3284	2107
75	22.18	20.61	3162	2259
76	21.44	21.86	3139	2330
77	21.65	22.76	3161	2315
78	19.95	22.13	3130	2325

Wood Chip Log Test 1C (Page 3)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
79	19.32	20.79	3062	2357
80	19.10	21.24	3164	2122
81	18.47	20.79	3070	1996
82	17.94	19.35	3044	1979
83	14.54	18.82	2994	2075
84	13.80	18.28	2862	2078
85	5.84	15.32	2782	2049
86	0.00	6.63	Reduced or no inflow	Reduced or no inflow
87	0.00	2.96	Reduced or no inflow	Reduced or no inflow
88	0.00	2.06	Reduced or no inflow	Reduced or no inflow
89	0.00	1.08	Reduced or no inflow	Reduced or no inflow
90	0.00	0.90	Reduced or no inflow	Reduced or no inflow
91	0.00	0.81	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Chip Log Test 2A

Test Parameters	Results
Product	Wood Chip Log
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	12:55 PM
Inflow Stop Time	2:43 PM
Outflow Start Time	12:57 PM
Outflow Stop Time	2:50 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	13.89
Average Outlet Flow Rate (GPM)	13.04
Percent Flow Rate Reduction (%)	6.09
Average Inlet Turbidity (NTU)	2257.65
Average Outlet Turbidity (NTU)	1809.90
Percent Turbidity Reduction (%)	19.83

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
1	34.74	0.00	Startup	Startup
2	12.05	0.00	Startup	Startup
3	10.52	8.89	Startup	Startup
4	11.46	9.74	Startup	Startup
5	11.58	9.32	Startup	Startup
6	10.87	9.42	2245	1561
7	11.46	9.32	2232	1554
8	11.46	8.89	2154	1435
9	12.64	9.32	2017	1243
10	11.46	9.32	1952	1157
11	11.11	9.32	2004	1134
12	10.52	8.89	2167	1532
13	10.52	9.42	2226	1659
14	10.52	9.32	2132	1624
15	10.04	8.89	2092	1611
16	10.40	9.74	2161	1622
17	10.40	8.68	2260	1632
18	10.52	9.32	2269	1604
19	10.52	9.32	2114	1419
20	13.59	10.16	2122	1430
21	13.35	10.80	2141	1491
22	13.23	11.96	2237	1769
23	13.23	11.75	2281	1821
24	13.35	13.76	2172	1817
25	13.35	13.13	2185	1790
26	13.35	13.76	2160	1840
27	12.88	12.92	2183	1767

Wood Chip Log Test 2A (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
28	12.88	12.92	2119	1736
29	12.29	11.75	2008	1701
30	12.64	13.13	1929	1690
31	13.23	12.92	2183	1770
32	12.29	13.13	2214	1772
33	12.17	11.96	2161	1929
34	12.29	11.96	2091	1930
35	12.05	12.28	2047	1945
36	12.64	12.28	2324	1925
37	12.88	11.96	2389	1920
38	12.64	12.92	2314	1861
39	12.29	11.33	2287	1740
40	12.64	11.75	2170	1732
41	12.64	11.54	2154	1655
42	12.64	11.75	2354	1719
43	11.58	11.54	2372	1697
44	11.11	11.96	2289	1614
45	12.05	11.54	2290	1454
46	12.64	11.33	2220	1555
47	11.58	11.33	2380	1812
48	12.29	11.54	2271	1841
49	11.11	11.01	2242	1899
50	10.52	12.28	2264	1897
51	11.46	9.95	2360	1967
52	12.05	10.37	2384	1767
53	12.29	10.37	2267	1768
54	11.58	9.74	2237	1669
55	15.00	14.61	2134	1604
56	15.36	14.82	2294	1992
57	15.00	15.35	2222	1942
58	15.00	15.35	2236	1913
59	15.12	15.35	2220	1919
60	15.24	15.35	2225	1920
61	14.77	14.61	2380	1968
62	13.59	14.61	2324	1976
63	14.77	15.35	2382	1977
64	15.36	15.35	2282	1986
65	14.77	14.61	2261	2045
66	14.06	14.61	2290	1965
67	15.00	13.13	2370	1984
68	14.77	14.29	2367	1987
69	14.06	14.29	2318	1846
70	14.06	13.55	2274	1751
71	13.35	13.76	2385	1635
72	12.64	14.29	2385	1736
73	12.88	12.92	2317	1696
74	12.64	13.55	2259	1666
75	12.29	12.49	2232	1586
76	14.06	13.55	2234	1570
77	14.06	14.08	2370	1849
78	13.23	14.82	2380	1869

Wood Chip Log Test 2A (Page 3)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
79	13.59	14.29	2284	1947
80	13.71	17.36	2183	1765
81	13.59	17.36	2319	1932
82	15.95	16.73	2390	2153
83	16.19	18.53	2396	2206
84	17.37	18.53	2260	2106
85	16.19	17.89	2380	2077
86	16.66	18.53	2412	1906
87	16.19	18.53	2482	1859
88	15.36	18.63	2377	1839
89	15.60	17.36	2382	1797
90	16.19	18.74	2350	1797
91	23.28	18.53	2341	1625
92	24.10	17.26	2449	2040
93	23.04	17.26	2445	2177
94	21.50	17.26	2420	2196
95	20.56	19.16	2416	2266
96	19.02	23.50	2375	2493
97	19.26	25.83	2360	2489
98	19.85	23.82	2271	1979
99	19.26	23.50	2250	1970
100	17.72	24.24	2217	1859
101	14.06	22.97	2381	2006
102	14.06	21.60	2251	2008
103	14.18	19.16	2299	1926
104	14.06	19.16	2197	1896
105	14.06	19.16	2182	1770
106	14.18	18.10	2090	1765
107	12.29	16.51	2154	1902
108	0.35	11.96	Reduced or no inflow	Reduced or no inflow
109	0.00	3.28	Reduced or no inflow	Reduced or no inflow
110	0.00	2.22	Reduced or no inflow	Reduced or no inflow
111	0.00	1.38	Reduced or no inflow	Reduced or no inflow
112	0.00	1.06	Reduced or no inflow	Reduced or no inflow
113	0.00	1.38	Reduced or no inflow	Reduced or no inflow
114	0.00	1.48	Reduced or no inflow	Reduced or no inflow
115	0.00	1.16	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Chip Log Test 2B

Test Parameters	Results
Product	Wood Chip Log
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	12:55 PM
Inflow Stop Time	2:43 PM
Outflow Start Time	12:57 PM
Outflow Stop Time	2:50 PM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	19.48
Average Outlet Flow Rate (GPM)	17.44
Percent Flow Rate Reduction (%)	10.47
Average Inlet Turbidity (NTU)	2760.25
Average Outlet Turbidity (NTU)	1813.65
Percent Turbidity Reduction (%)	34.29

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
1	12.49	0.00	Startup	Startup
2	13.15	19.03	Startup	Startup
3	12.71	16.51	Startup	Startup
4	14.92	13.06	Startup	Startup
5	18.67	13.99	Startup	Startup
6	18.56	15.30	2437	1503
7	18.01	15.76	2417	1513
8	17.79	15.76	2440	1565
9	16.57	15.76	2439	1486
10	17.35	15.95	2383	1452
11	16.57	15.95	2369	1445
12	16.46	15.95	2449	1526
13	16.57	15.95	2589	1637
14	15.80	15.95	2420	1625
15	16.57	16.51	2472	1632
16	15.80	14.74	2469	1627
17	16.46	16.32	2569	1658
18	14.92	15.76	2559	1702
19	16.46	15.76	2569	1713
20	15.80	14.74	2567	1727
21	16.24	15.21	2554	1717
22	15.80	15.76	2646	1710
23	15.80	14.55	2669	1743
24	20.77	15.30	2590	1742
25	24.09	18.75	2576	1767
26	23.87	20.24	2647	1869
27	23.43	22.11	2687	1926
28	23.09	22.76	2720	1818
29	22.54	23.97	2813	1713
30	23.09	23.69	2838	1659
31	23.09	23.04	2886	1729
32	22.32	23.04	2882	1789

Wood Chip Log Test 2B (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
33	23.09	23.41	2775	1857
34	22.32	22.11	2677	1819
35	23.43	22.11	2830	1763
36	21.77	22.11	2839	1753
37	21.55	23.41	2834	1845
38	21.77	21.64	2792	1927
39	21.55	22.29	2869	1899
40	21.77	21.64	2869	1829
41	21.33	21.36	2859	1795
42	20.55	21.64	2867	1821
43	20.55	21.36	2862	1811
44	21.33	20.24	2869	1823
45	20.55	20.24	2827	1832
46	20.55	20.71	2820	1827
47	20.11	19.59	2841	1866
48	19.23	19.40	2889	1857
49	19.45	19.03	2892	1855
50	18.67	19.59	2847	1783
51	19.23	19.03	2852	1787
52	18.67	19.03	2874	1813
53	19.23	19.03	2880	1865
54	19.45	19.40	2879	1837
55	18.67	18.75	2874	1740
56	17.79	17.54	2821	1630
57	18.01	17.72	2872	1815
58	18.67	18.38	2889	1943
59	17.79	17.72	2793	2020
60	17.79	17.07	2814	1990
61	26.52	20.24	2857	1975
62	25.41	21.46	2931	2065
63	25.41	23.41	2984	2072
64	24.53	22.76	2992	2084
65	24.53	23.41	3040	2093
66	24.09	24.35	3056	2085
67	24.09	24.16	3062	2071
68	24.09	24.35	3080	2043
69	23.09	24.16	2969	1993
70	22.54	22.76	2962	1981
71	22.32	23.04	2937	1850
72	20.77	22.11	2879	1895
73	20.11	22.76	2869	1987
74	19.45	20.99	2797	2009
75	17.35	20.15	2721	2013
76	14.36	18.38	2653	1990
77	0.66	13.62	2687	1982
78	0.00	8.12	Reduced or no inflow	Reduced or no inflow
79	0.00	5.78	Reduced or no inflow	Reduced or no inflow
80	0.00	3.82	Reduced or no inflow	Reduced or no inflow
81	0.00	1.31	Reduced or no inflow	Reduced or no inflow
82	0.00	1.40	Reduced or no inflow	Reduced or no inflow
83	0.00	1.40	Reduced or no inflow	Reduced or no inflow
84	0.00	0.93	Reduced or no inflow	Reduced or no inflow
85	0.00	1.21	Reduced or no inflow	Reduced or no inflow
86	0.00	1.12	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Chip Log Test 2C

Test Parameters	Results
Test Date	After Instream/Perimeter Test System was Constructed
Test Identification	Instream and Perimeter Protection Test
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Inflow Start Time	9:45 AM
Inflow Stop Time	10:54 AM
Outflow Start Time	9:46 AM
Outflow Stop Time	10:59 AM

Measurements	Results
Inlet Total Volume (gal)	1500
Outlet Total Volume (gal)	1500
Average Inlet Flow Rate (GPM)	21.74
Average Outlet Flow Rate (GPM)	20.27
Percent Flow Rate Reduction (%)	6.76
Average Inlet Turbidity (NTU)	2410.83
Average Outlet Turbidity (NTU)	1815.13
Percent Turbidity Reduction (%)	24.71

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
1	26.46	0.00	Startup	Startup
2	26.79	20.16	Startup	Startup
3	26.13	21.04	Startup	Startup
4	25.35	23.65	Startup	Startup
5	24.80	25.30	Startup	Startup
6	26.13	23.94	2217	1646
7	25.69	22.98	2244	1643
8	24.80	23.17	2225	1596
9	25.69	23.17	2270	1719
10	24.47	23.65	2267	1706
11	24.47	23.65	2273	1523
12	23.81	23.17	2318	1404
13	23.81	23.65	2298	1732
14	24.47	23.17	2289	1810
15	24.03	22.20	2289	1724
16	23.37	22.20	2281	1545
17	23.37	22.49	2322	1439
18	23.81	22.98	2330	1802
19	22.27	22.49	2365	1858
20	22.49	21.52	2489	1793
21	22.27	21.81	2449	1643
22	22.27	22.20	2442	1693
23	21.72	21.81	2474	1877
24	21.72	21.04	2418	1874
25	21.72	20.94	2337	1761
26	21.28	21.04	2324	1662
27	20.06	21.81	2354	1526

Wood Chip Log Test 2C (Page 2)

Running Time (Minutes)	Inflow (GPM)	Outflow (GPM)	Inlet Turbidity (NTU)	Outlet Turbidity (NTU)
28	20.72	20.36	2346	1767
29	19.84	20.36	2386	1861
30	21.28	21.04	2378	1819
31	20.06	19.78	2358	1620
32	19.84	19.78	2342	1510
33	19.40	20.36	2374	1797
34	19.84	19.78	2419	1937
35	19.18	19.49	2418	1936
36	19.40	19.49	2450	1821
37	17.97	17.16	2447	1630
38	19.18	18.42	2450	1856
39	19.18	18.90	2455	1972
40	18.63	18.90	2379	1963
41	18.63	18.90	2348	1922
42	22.49	19.10	2357	1727
43	23.04	19.10	2441	1970
44	23.04	20.16	2433	1996
45	23.04	21.81	2468	1900
46	21.50	22.49	2477	1837
47	21.50	21.81	2546	1626
48	21.50	22.20	2535	1890
49	20.50	21.52	2529	2027
50	20.06	21.52	2469	1997
51	19.84	20.94	2529	1905
52	19.84	20.36	2476	1862
53	19.40	21.04	2534	1965
54	19.40	20.36	2556	1985
55	18.63	21.04	2469	1971
56	19.18	20.36	2430	1742
57	18.63	20.16	2377	1700
58	17.97	19.78	2537	1917
59	25.35	19.78	2559	2018
60	27.56	19.10	2556	2021
61	28.00	19.10	2550	2248
62	25.69	23.17	2590	2196
63	24.03	24.62	2609	2145
64	23.04	27.34	2537	1968
65	21.50	26.66	2465	1764
66	19.40	25.88	2379	1850
67	17.75	25.11	2351	1822
68	21.50	24.62	2358	1893
69	0.22	24.33	2351	1839
70	0.00	17.74	Reduced or no inflow	Reduced or no inflow
71	0.00	5.33	Reduced or no inflow	Reduced or no inflow
72	0.00	3.68	Reduced or no inflow	Reduced or no inflow
73	0.00	1.26	Reduced or no inflow	Reduced or no inflow
74	0.00	0.58	Reduced or no inflow	Reduced or no inflow
Total	**1500**	**1500**		

Wood Chip Log Test Summary

Sediment Type: Silica 50% + Ball Clay 50%
Sediment Concentration: 2000 mg/l

Test ID	Average Inlet Flow Rate (gpm)	Average Outlet Flow Rate (gpm)	Flow Rate Reduction (%)	Average Inlet Turbidity (NTU)	Average Outlet Turbidity (NTU)	Turbidity Reduction (%)
Test 1A	14.85	14.01	5.61	2299.43	1829.43	20.44
Test 1B	15.95	15.00	6.00	2560.98	1783.47	30.36
Test 1C	35.29	32.96	6.59	2955.58	1950.64	34.00
Test 2A	13.89	13.04	6.09	2257.65	1809.90	19.83
Test 2B	19.48	17.44	10.47	2760.25	1813.65	34.29
Test 2C	21.74	20.27	6.76	2410.83	1815.13	24.71
Average	**20.20**	**18.79**	**6.92**	**2540.79**	**1833.70**	**27.27**

Pine Wattle Test Summary

Product Name	Pine Wattles
Test ID	Sediment Control Device Instream/Perimeter
Test Type (Overtop)	No Overtopping
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Test Date	After Instream/Perimeter Test System was Constructed

Test ID	Average Inlet Flow Rate (gpm)	Average Outlet Flow Rate (gpm)	Flow Rate Reduction (%)	Average Inlet Turbidity (NTU)	Average Outlet Turbidity (NTU)	Turbidity Reduction (%)
Test 1A	17.05	14.42	15.38	2129	1858	12.74
Test 1B	18.75	17.24	8.05	2295	2120	7.62
Test 1C	18.99	15.96	15.96	3088	2464	20.19
Test 2A	29.41	22.39	23.88	1237	1032	16.62
Test 2B	22.73	21.43	5.71	2049	1688	17.63
Test 2C	31.25	27.78	11.11	2581	1972	23.60
Average	**23.03**	**19.87**	**13.35**	**2229.84**	**1855.64**	**16.40**

Milled Wood Sediment Control Log Test Summary

Test Type (Overtop)	No Overtopping
Sediment Type	Silica 50% + Ball Clay 50%
Sediment Concentration	2000 mg/l
Test Date	After Instream/Perimeter Test System was Constructed

Test ID	Average Inlet Flow Rate (gpm)	Average Outlet Flow Rate (gpm)	Flow Rate Reduction (%)	Average Inlet Turbidity (NTU)	Average Outlet Turbidity (NTU)	Turbidity Reduction (%)
Test 1A	28.33	28.33	0.00	1073	1073	0.00
Test 1B	28.33	23.66	16.48	1001	909	9.19
Test 1C	28.28	24.29	14.11	972	912	6.17
Test 2A	28.05	26.56	5.31	1162	1162	0.00
Test 2B	28.29	26.56	6.12	1017	1017	0.00
Test 2C	27.26	25.76	5.50	1073	1073	0.00
Test 3A	28.07	26.56	5.38	1041	978	6.05
Test 3B	27.56	25.76	6.53	996	984	1.20
Test 3C	28.03	26.56	5.24	964	964	0.00
Average	**28.02**	**26.00**	**7.19**	**1033.22**	**1008.00**	**2.51**

APPENDIX F: FLOATING TURBIDITY BARRIER RAW TEST DATA

Floating Turbidity Barrier Test

Test Parameters	**Results**
Test Date	8/18/2023
Test Identification	Floating Turbidity Barrier
Overtop Allowed	No
Sediment Type	Silica 50% + Ball Clay 50%
Total Volume of Water	1 acre-inch (102,790.15 l)
Sediment Concentration	110.3 mg/l (12.5 lbs. Silica and 12.5 lbs. CNC Ball Clay)
Inflow Start Time	2:10 PM
Inflow Stop Time	2:13 PM
Outflow Start Time	2:15 PM
Outflow Stop Time	2:45 PM

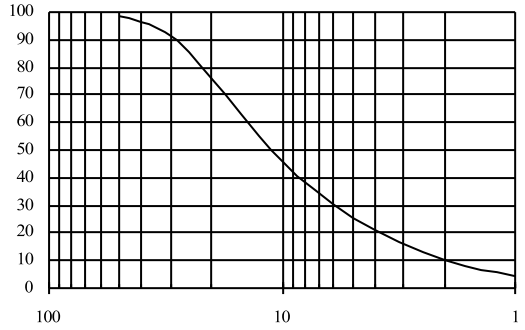
Measurements	**Results**
Average Pre-Barrier Turbidity (NTU)	141.72
Average Post-Barrier Turbidity (NTU)	26.06
Percent Turbidity Reduction (%)	81.61

Running Time (Minutes)	**Inlet Turbidity (NTU)***			**Outlet Turbidity (NTU)***		
1	-	-	-	-	-	-
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-
5	154	146	153	14.8	16.9	17
6	-	-	-	-	-	-
7	-	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	206	201	200	23.9	21.3	21.4
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	160	155	157	26.4	25.4	28.7
16	-	-	-	-	-	-
17	-	-	-	-	-	-
18	-	-	-	-	-	-
19	-	-	-	-	-	-
20	120	121	130	54.3	55.6	57.8
21	-	-	-	-	-	-
22	-	-	-	-	-	-
23	-	-	-	-	-	-
24	-	-	-	-	-	-
25	105	111	103	22.3	23.9	23.9
26	-	-	-	-	-	-
27	-	-	-	-	-	-
28	-	-	-	-	-	-
29	-	-	-	-	-	-
30	108	109	112	11.4	12.1	12

*Turbidity samples were taken at 5 minute intervals, and readings were recorded on the HACH bench scale 2100N turbidimeter.

APPENDIX G: SIL-CO-SIL 49 PRODUCT DATA SHEET

PARTICLE SIZE DISTRIBUTION



U.S. STANDARD SIEVE SIZE		TYPICAL VALUES		
		PERCENT RETAINED		PERCENT PASSING
MESH	MICRONS	INDIVIDUAL	CUMULATIVE	CUMULATIVE
100	150	0.0	0.0	100.0
140	106	0.0	0.0	100.0
200	75	0.3	0.3	99.7
270	53	1.3	1.6	98.4
325	45	1.4	3.0	97.0

TYPICAL PHYSICAL PROPERTIES

HARDNESS (Mohs)	7
MELTING POINT (°F)	3100
MINERAL	Quartz
pH	7
REFLECTANCE (%)	90.2
YELLOWNESS INDEX	3.06
SPECIFIC GRAVITY	2.65

TYPICAL CHEMICAL ANALYSIS (%)

SiO_2 (Silicon Dioxide)	99.7
Fe_2O_3 (Iron Oxide)	0.016
Al_2O_3 (Aluminum Oxide)	0.15
TiO_2 (Titanium Dioxide)	<0.01
CaO (Calcium Oxide)	<0.01
MgO (Magnesium Oxide)	<0.01
Na_2O (Sodium Oxide)	<0.01
K_2O (Potassium Oxide)	0.02
LOI (Loss on Ignition)	0.1

DISCLAIMER: The information set forth in this Product Data Sheet represents typical properties of the product described; the information and the typical values are not specifications. U.S. Silica Company makes no representation or warranty concerning the Products, expressed or implied, by this Product Data Sheet.

WARNING**: The product contains crystalline silica-quartz, which can cause silicosis (an occupational lung disease) and lung cancer.** For detailed information on the potential health effect of crystalline silica-quartz, see the U.S. Silica Company Material Safety Data Sheet.

APPENDIX H: C&C BALL CLAY PRODUCT DATA SHEET

Application: a white firing ball clay for use in ceramic manufacturing that requires strength with high levels of plasticity and thermal expansion.

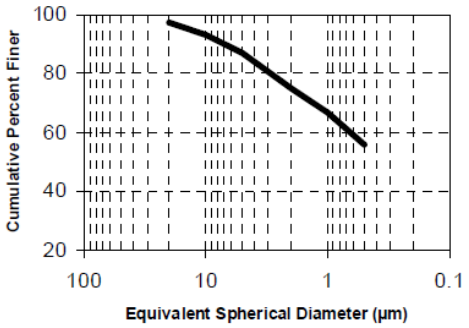
Chemical Properties

SiO_2	57.0 %	CaO	0.1 %
Al_2O_3	29.0 %	K_2O	0.3 %
Fe_2O_3	1.1 %	Na_2O	0.2 %
TiO_2	2.0 %	Ignition Loss	10.0 %
MgO	0.2 %	% Total Carbon	0.2 – 0.4

Physical Properties

% Fired Shrinkage (cone10)	9.6
+200 mesh residue	0.6
+325 mesh residue	1.5
Modulus of Rupture (50% clay/50% flint) (psi)	650
Raw Color	grey
Fired Color	off white

Particle Size Distribution



CPFT	20 µm	97
	10 µm	93
	5 µm	87
	2 µm	75
	1 µm	67
	0.5 µm	56
Specific Surface Area (m^2/g)		24.9

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A Lhoist Group Company

Typical Analysis