

Nephi City

Sanitary Sewer Management Plan

Introduction

Nephi City is a municipal corporation established in Utah under the Utah State Code. Nephi City was established in 1889 and provides sewage collection and treatment to the residents of Nephi, Utah. This Sewer System Management Plan (SSMP) manual has been established to provide a plan and schedule to properly manage, operate, and maintain all parts of the sewer collection system to reduce and prevent SSOs, as well as minimize impacts of any SSOs that occur. The Management for this entity recognizes the responsibility it has to operate the sewer system in an environmentally and fiscally responsible manner. As such, this manual will cover aspects of the collection system program necessary to provide such an operation. This manual may refer to other programs or ordinances and by reference may incorporate these programs into this manual.

Definitions

The following definitions are to be used in conjunction with those found in Utah Administrative Code R317. The following terms have the meaning as set forth:

- (1) "BMP" means "best management practice".
- (2) "CCTV" means "closed circuit television".
- (3) "CIP" means a "Capital Improvement Plan".
- (4) "DWQ" means "the Utah Division of Water Quality".
- (5) "FOG" means "fats, oils and grease". This is also referred to as a Grease Oil and Sand Program (GOSI).
- (6) "I/I" means "infiltration and inflow".

(7) "Permittee" means a federal or state agency, municipality, county, district, or other political subdivision [public entity] of the state that owns or operates a sewer collection system or who is in direct responsible charge for operation and maintenance of the sewer collection system. When two separate federal or state agencies, municipalities, counties, districts, or other political subdivision of the state are interconnected, each shall be considered a separate Permittee.

(8) "SECAP" means "System Evaluation and Capacity Assurance Plan".

(9) "Sewer Collection System" means a system for the collection and conveyance of wastewaters or sewage from domestic, industrial and commercial sources. The Sewer Collection System does not include sewer laterals under the ownership and control of an owner of real property, private sewer systems owned and operated by an owner of real property, and systems that collect and convey stormwater exclusively.

(10) "SORP" means "Sewer Overflow Response Plan"

(11) "SSMP" means "Sewer System Management Plan".

(12) "SSO" means "sanitary sewer overflow", the escape of wastewater or pollutants from, or beyond, the intended or designed containment of a sewer collection system.

(13) "Class 1 SSO" (Significant SSO) means a SSO or backup that is not caused by a private lateral obstruction or problem and:

(a) affects more than five private structures;

(b) affects one or more public, commercial, or industrial structure(s);

(c) may result in a public health risk to the general public;

(d) has a spill volume that exceeds 5,000 gallons, excluding those in single private structures; or

(e) discharges to Waters of the State of Utah.

(14) "Class 2 SSO" (Non Significant SSO) means a SSO or backup that is not

caused by a private lateral obstruction or problem and does not meet the Class 1 SSO criteria.

(15) "USMP" means the "Utah Sewer Management Program".

General SSO Requirements

The following general requirements for SSO's are stipulated in R317-801 and are included here as general information.

1) The permittee shall take all feasible steps to eliminate SSOs, to include:

(a) Properly managing, operating, and maintaining all parts of the sewer collection system;

(b) training system operators;

(c) allocating adequate resources for the operation, maintenance, and repair of its sewer collection system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures in accordance with generally acceptable accounting practices; and,

(d) providing adequate capacity to convey base flows and peak flows, including flows related to normal wet weather events. Capacity shall meet or exceed the design criteria of R317-3.

(2) SSOs shall be reported in accordance with the requirements below.

(3) When an SSO occurs, the permittee shall take all feasible steps to:

(a) control, contain, or limit the volume of untreated or partially treated wastewater discharged;

(b) terminate the discharge;

(c) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water; and,

(d) mitigate the impacts of the SSO.

SSO Reporting Requirements

R317-801 stipulates when and how SSO's are reported. Following are those reporting requirements as of 04/23/2012.

SSO REPORTING. SSOs shall be reported as follows:

(1) A Class 1 SSO shall be reported orally within 24 hrs and with a written report submitted to the DWQ within five calendar days. Class 1 SSO's shall be included in the annual USMP report.

(2) Class 2 SSOs shall be reported on an annual basis in the USMP annual report.

ANNUAL REPORT. A permittee shall submit to DWQ a USMP annual operating report covering information for the previous calendar year by April 15 of the following year.

Sewer Use Ordinance

Nephi City has a sewer use ordinance that has been adopted by the governing body. This ordinance contains, or will contain the following items as stipulated by Utah State Code R317-801:

1. Prohibition on unauthorized discharges,
2. Requirement that sewers be constructed and maintained in accordance with R317-3,
3. Ensures access or easements for maintenance, inspections, and repairs,
4. Has the ability to limit debris which obstruct or inhibit the flow in sewers such as foreign objects or grease and oil,
5. Allows for the inspection of industrial users, and
6. Provides for enforcement of ordinance or rules violations.

The following elements are included in this SSMP:

- General Information
- Operations and Maintenance Program
- Sewer Design Standards
- Sanitary Sewer Overflow Response Plan

- Grease, Oil and Sand Interceptor Management Program
- System Evaluation and Capacity Assurance Plan
- SSMP Monitoring and Measurement Plan
- Sewer System Mapping Program
- Basement Backup Program

This program is intended to be a guidance document and is not intended to be part of a regulatory requirement. As such, failure to strictly comply with documentation requirements is, in and of itself, not a failure of the program's effectiveness.

Documentation failures are intended to be identified during system self-audits and will be addressed as training opportunities. Significant system failures will be followed up with corrective action plans. This corrective action process will be implemented by all individuals involved in the SSMP program. Not all Nephi City employees will necessarily be involved in the collection system operations. As such, not all employees will receive program training. Finally, although not a part of this SSMP program, Nephi City is an active participant in the Blue Stakes of Utah Utility Notification system. This system, regulated under title 54-8A of the Utah State Code, stipulates utility notification of all underground operators when excavation takes place. The intent of this regulation is to minimize damage to underground facilities. Nephi City has a responsibility to mark its underground sewer facilities when notified an excavation is going to take place. Participation in the Blue Stakes program further enhances the protection of the collection system and reduces SSO's.

Nephi City
SSMP – General Information

This Sanitary Sewer Management Plan was adopted by the City Council on October 20, 2015.

The responsible representatives, positions, and phone numbers are

<u>Kyle Marchant, Public Works Director</u>	<u>(435) 623-0822</u>
<u>Justin Blackett, Water & Sewer Superintendent</u>	<u>(435) 623-0822</u>
<u>Marty Palmer, Crew Member</u>	<u>(435) 623-0822</u>
<u>Mike Lynn, Crew Member</u>	<u>(435) 623-0822</u>

Description of Roles and Responsibilities

The positions have the described responsibility for implementation and management of the specific measures as described in the SSMP.

Public Works Director

This individual is responsible for overall management of the sanitary sewer collection system. Responsibilities include working with governance to assure sufficient budget is allocated to implement the SSMP, maintenance of the SSMP documentation, development of a capital improvement program and general supervision of all staff. This individual is responsible for the development and maintenance of collection system design standards, maintenance of collection system mapping and maintenance of the SECAP program.

Superintendent

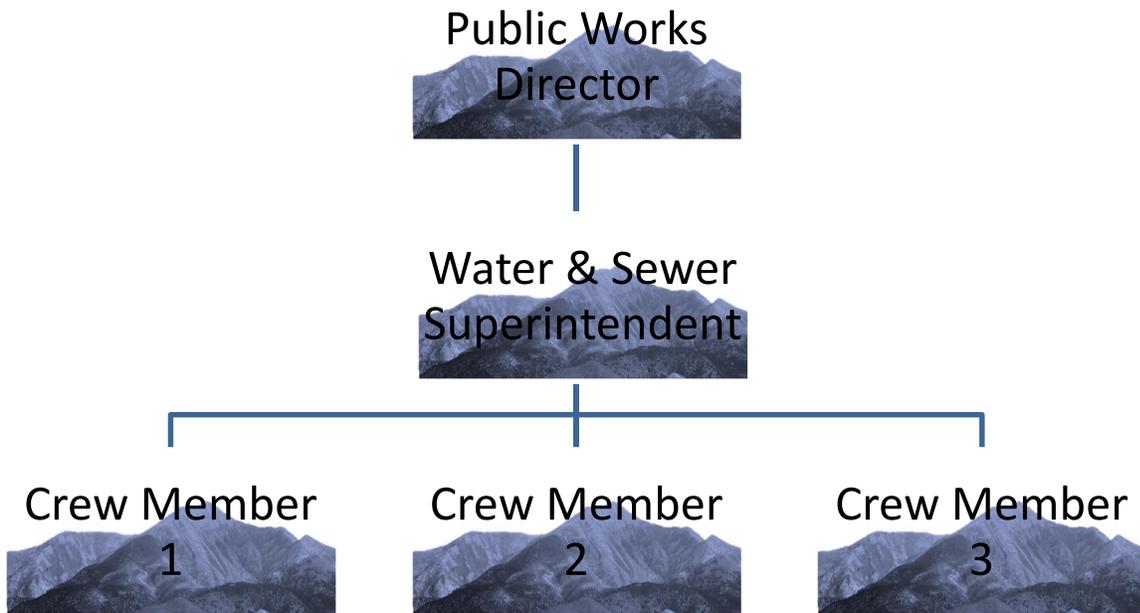
This individual is responsible for daily implementation of the SSMP. This includes maintenance activities, compliance with SORP requirements, and monitoring and measurement reporting requirements. This individual is responsible for implementation of the pretreatment program including the fats oil and grease program.

Crew Member

This individual is responsible for daily implementation of the SSMP. This includes maintenance activities, compliance with SORP requirements, and monitoring and measurement reporting requirements.

Organization Chart

Below is the organization chart associated with the SSMP



Nephi City

Operations and Maintenance Program

Nephi City has established this sanitary sewer system operations and maintenance program to ensure proper system operations, to minimize any basement backups or SSOs, and to provide for replacement, refurbishment, or repair of damaged or deteriorated piping systems. The combined maintenance program should insure that the environment and health of the public are protected at a reasonable cost for the end users. To this end, the following areas are described and included in this maintenance program:

- System Mapping
- System Cleaning
- System CCTV Inspection
- Manhole Inspection
- Defect Reporting
- Damage Assessment

System Mapping

An up-to-date map is essential for effective system operations. Nephi City has assigned the mapping responsibility to the Public Works Director who will prepare and maintain current mapping for the entire sanitary sewer system. Mapping may be maintained on either paper or in a graphical information system (GIS) or a combination of both. Current mapping is available at the following location:

Nephi City Hall
21 East 100 North
Nephi, Utah 84648

Should any employee identify an error in the mapping, they should document the error on a defect report and give it to the Public Works Director.

System Cleaning

Sanitary-sewer-system cleaning is accomplished through various means and methods. Nephi City has established a goal to clean the entire system every three years. Based

on experience over the past 20 years, this frequency significantly reduces the number of basement backups, controls grease problems, and flushes any bellies in the system. In addition, Nephi City has a listing of identified hot spots which are maintained at a higher frequency. Systems which may have roots are mechanically rodded or hydraulically cut out and areas where restaurants are close together are hydraulically flushed with a high pressure jet truck. The following methods are employed to provide system cleaning:

Nephi City Hydraulic Cleaning
Contractor Hydraulic Cleaning
Nephi City Mechanical Rodding.

Cleaning records are maintained at the Water & Sewer Division. Contractors are required to provide cleaning records associated with their work. Cleaning history may also be entered into the GIS; however, this is not always necessary. Should the cleaning process identify a serious defect, the problem should be reported on a Defect Report Form. The Water & Sewer Superintendent should be given the defect reports for further action. The defect report should be specific as to location and type of problem. A copy of the Defect Report Form is included at the end of this narrative section. A summary of cleaning activities shall be prepared annually by the Water & Sewer Superintendent or designee. This summary will normally be presented to the Public Works Director

System CCTV Inspection

Closed Circuit TV inspections of the sanitary sewer system are used to assess pipe condition and identify problems or possible future failures which need current attention. The CCTV process also identifies the piping condition to allow for replacement prior to failure. Generally Nephi City will conduct CCTV inspection with its own staff, contractor or both. Inspections of the system will occur every five years. This inspection frequency is based on the pipe aging process. As such, once the system has been inspected completely, change usually occurs gradually. CCTV will also be employed when a systems operation or capacity is questioned or when an SSO occurs. Any defects identified during the CCTV process should be reported on a Defect Report Form, and the form should be given to the Water & Sewer Superintendent for possible repairs. Documentation of CCTV activities will be maintained at the Water & Sewer Division. When contractors are employed to inspect the sanitary sewer system they will be required to submit records for their work. The Water & Sewer Superintendent will

prepare an annual summary of CCTV completed for that calendar year.

Manhole Inspection

Nephi City schedules annual inspection of the sanitary sewer manholes (M/H). The M/H inspection involves the identification of foreign objects and surcharging that may be present. Crews inspecting the manholes will be given maps by the Public Works Director or Water and Sewer Superintendent who will monitor the progress and completeness of the inspection process. When a potential defect is identified, the manhole should be flagged. Flagged manholes should be checked by an operator within several days to determine further action. If, during the inspection process, the inspection crew believes a problem is imminent, they should immediately cease inspecting and inform the Water & Sewer Superintendent of the problem. A cleaning crew should be dispatched immediately to ensure correct system operations. All inspection records should be retained for documentation of work performed.

Defect Reporting

Defect Reports generated through the cleaning, CCTV inspection, manhole inspection programs will be prioritized for correction by the Water & Sewer Superintendent. Any defects which have the potential for catastrophic failure and thus create a sanitary sewer overflow should be evaluated immediately and discussed with the Public Works Director for repair. Repair methods may include:

- Spot Excavation Repairs
- Spot Band Repairs
- Segment Excavation Replacements
- Segment Lining
- Manhole Rehabilitation

When a defect is not flagged for immediate repair, it should be considered for placement on the “hot spot” list. This will allow for vigilant maintenance to ensure failure and a subsequent sanitary sewer overflow do not take place. Defect reports should be used in the budget process to determine what financial allocation should be made in the next budget year. The Water & Sewer Superintendent should include outstanding defects in the annual report.

Collection System Damage

Collection damage may occur as a result of multiple factors, some identified as a result

of inspection activities and some identified as a result of damage by third parties such as contractors.

Damage Identification

The identification of system damage which may result in an SSO or basement backup is important to prevent environmental, public health, or economic harm. Identification of damage may be from either internal activities or external activities.

Internal activities which may result in the identification of damage include the following:

1. Collections Maintenance Activities
2. CCTV Inspection Activities
3. Manhole Inspection Activities

These three activities are discussed in this Maintenance Program, and the identification of damage will result in the generation of a Defect Report. Generally, damage identification is a repeated and continuous process.

External activities which identify damages include:

1. Contractor Notification of Damage
2. Directional Drilling Notification of Damage
3. Public Damage Complaints

All three of these notifications generally require immediate response. Staff should respond and evaluate the seriousness of the damage and the effect on the environment. Damages which include a release to the environment should be handled in accordance with the SORP. Damages which cause a basement backup should trigger the Basement Backup Program. Damages which remain in the trench should be de minimis and do not require more action than the repair of the damage.

Whatever the cause of collection system damage, the response should be expeditious to prevent environmental or economic harm. City staff should consider all damages an emergency until it is shown by inspection to be a lower priority.

Damage Response Actions

When damages occur in the collection system, the following actions help define the path staff should take. These action plans are not inclusive of all options available but are indicative of the types of response that may be taken.

Stable Damage

Inspection activities may show a system damage which has been there for an extended period of time. Such damage may not require immediate action but may be postponed for a period of time. When stable damage is identified and not acted upon immediately, a defect report should be prepared. If such a defect is identified and repaired immediately, a defect report is not needed. An example of stable damage could be a major crack in a pipeline or a severely misaligned lateral connection where infiltration is occurring.

Unstable Damage

Unstable damage is damage which has a high likelihood that failure will occur in the near future. Such damage may be a broken pipe with exposed soil or a line which has complete crown corrosion. In these cases, action should be taken as soon as there is a time, labor and equipment, materials, and other necessary resources available. When such unstable damage is identified, if possible, consideration should be given to trenchless repairs which may be able to be completed quicker than standard excavation. Immediately after identification, the Public Works Director should be contacted to review and take care of budget considerations.

Immediate Damage

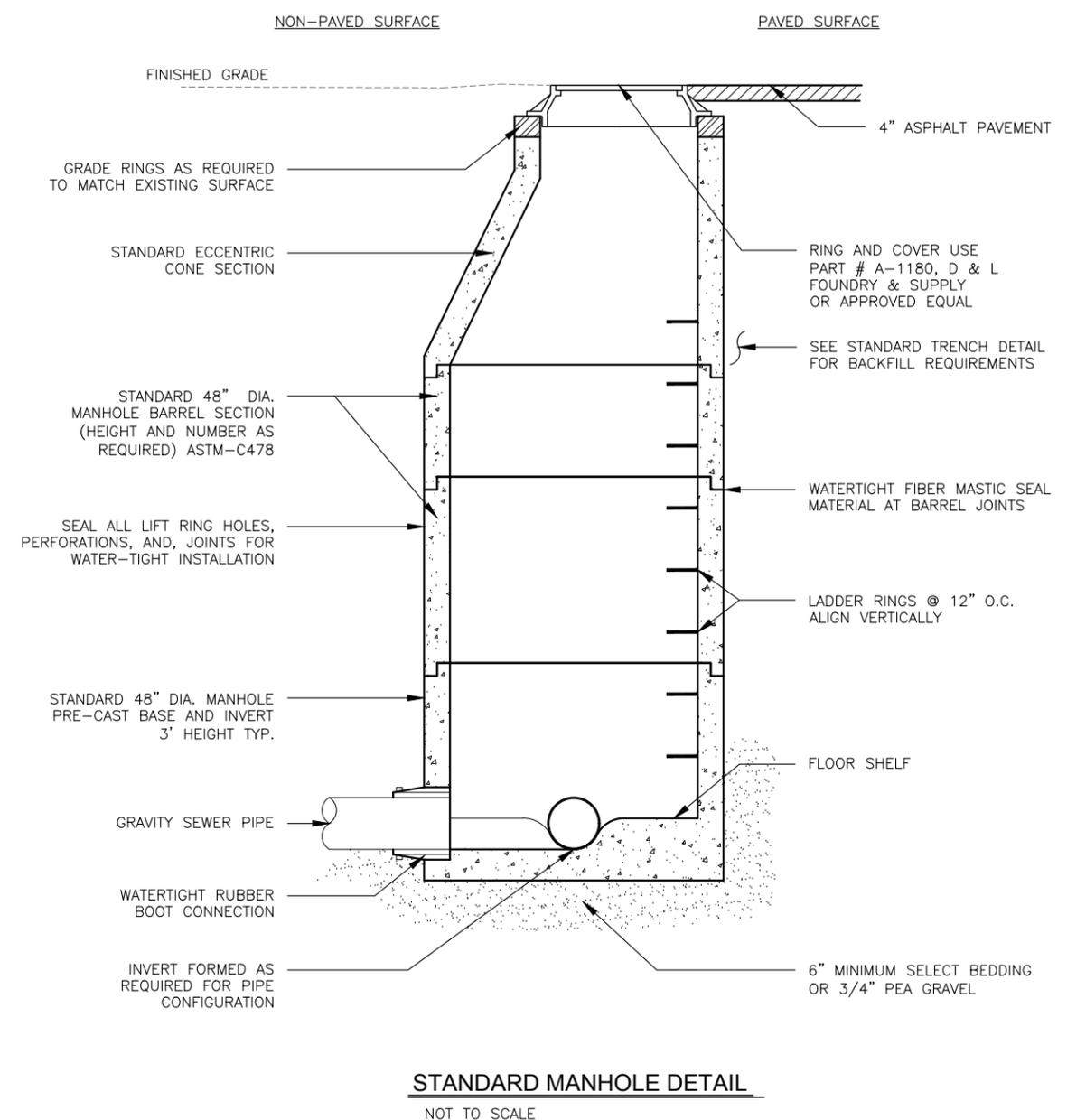
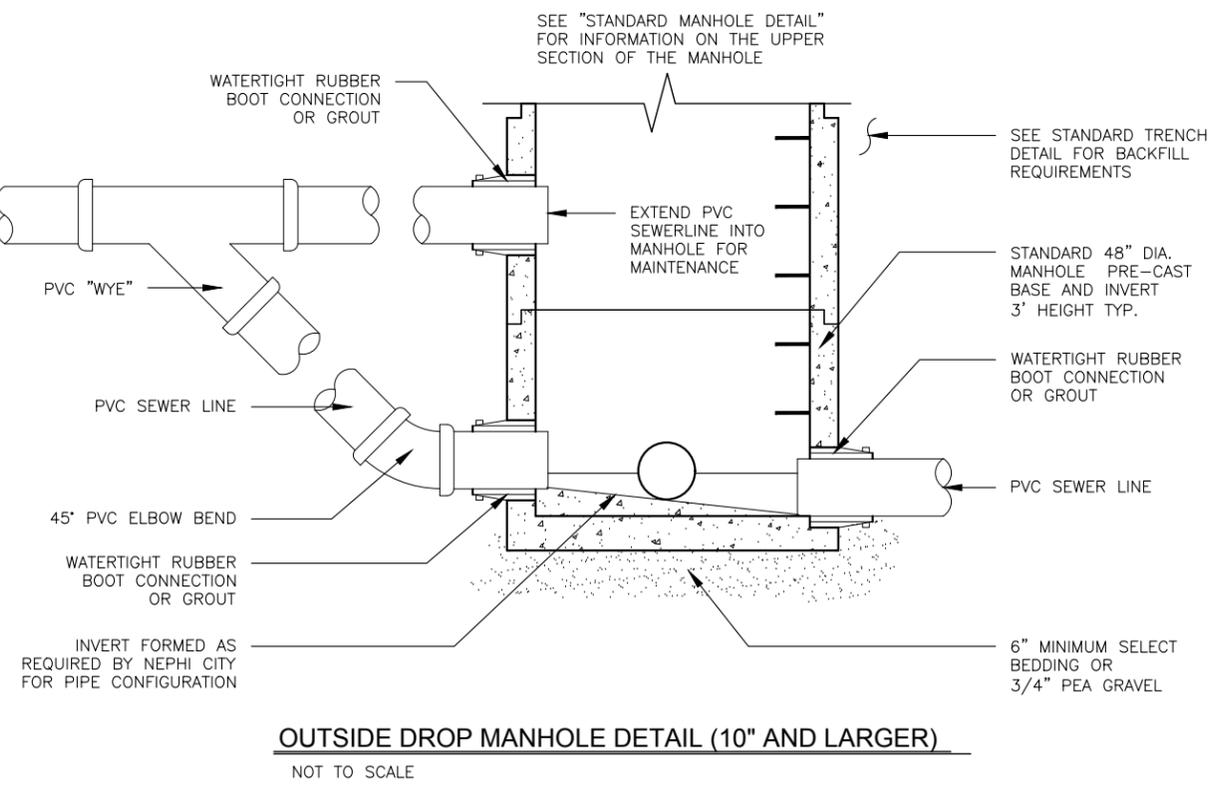
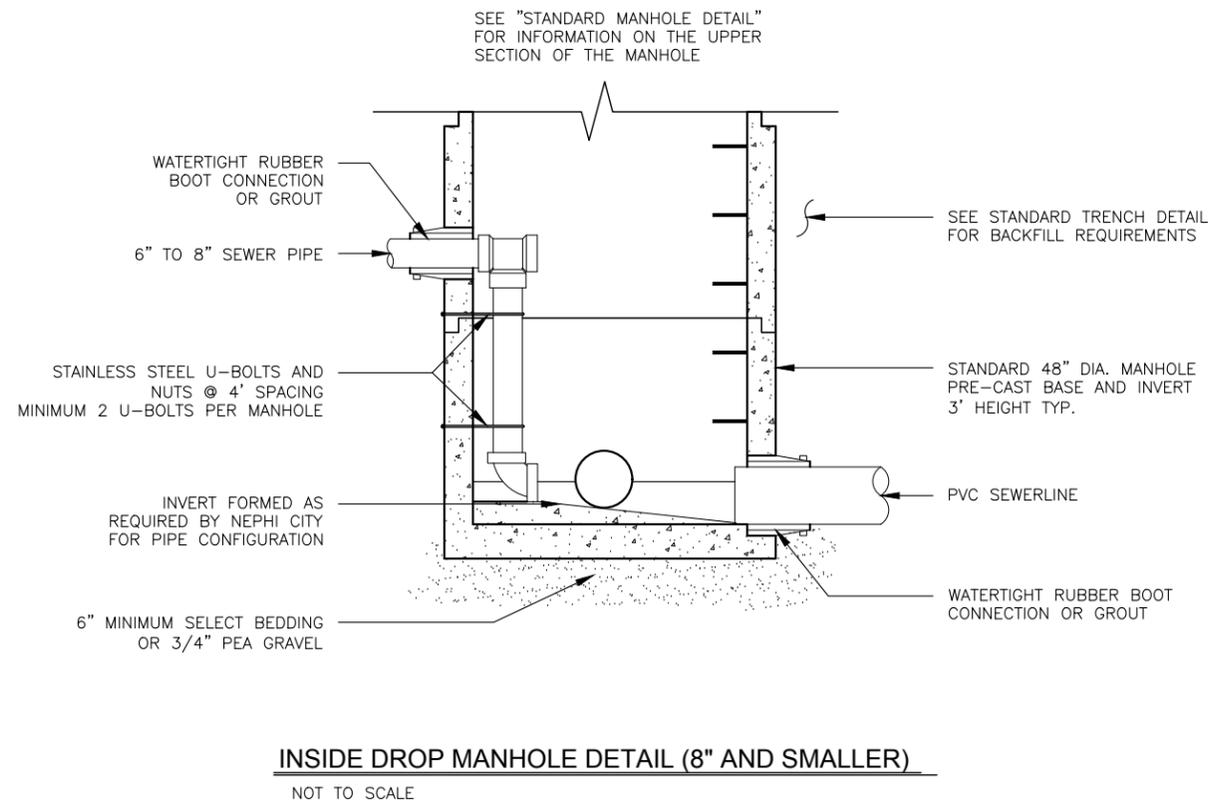
When a contractor or others damage a collection line such that the line is no longer capable of functioning as a sewer, this immediate damage must be handled expeditiously. Such damage allows untreated wastewater to pool in the excavation site, spill into the environment, or possibly back up into a basement. Under such conditions priority should be given to an immediate repair. Since excavation damage may be a result of contractor negligence, or it could be a failure of Nephi City to adequately protect the line by appropriately following the Damages to Underground Utilities

Statute 54-8A. Priority should be given to effecting a repair and not to determining the eventual responsible party.

As can be determined from the above action plans, priority should always be preventing SSO's and attendant environmental damage, to prevent basement backups and financial impacts, and to prevent public health issues.

Nephi City
Sewer Design Standards

See the sanitary sewer design standards for Nephi City. These design standards are intended to be used in conjunction with Utah Administrative Code R317-3. Where a conflict exists between these two standards, the Administrative Code shall prevail.



NOTES:

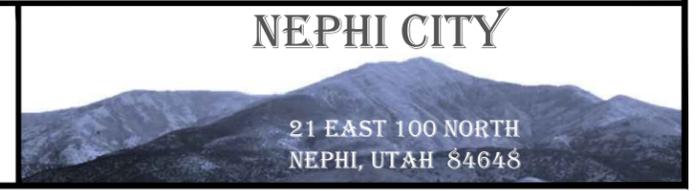
1. MINIMUM GRADES FOR MAIN LINE INSTALLATION SHALL BE IN ACCORDANCE WITH STATE REGULATIONS
2. DROP MANHOLES ARE NOT REQUIRED ON DROPS LESS THAN 18"
3. SDR 35 PVC REQUIRED ON ALL NEW MAIN LINE INSTALLATION
4. VENTED LIDS REQUIRED IN CITY STREETS
5. WHERE FIELD CONDITIONS PROHIBIT THE COMBINATIONS SHOWN, OTHER COMBINATIONS MAY BE USED UPON APPROVAL BY NEPHI CITY

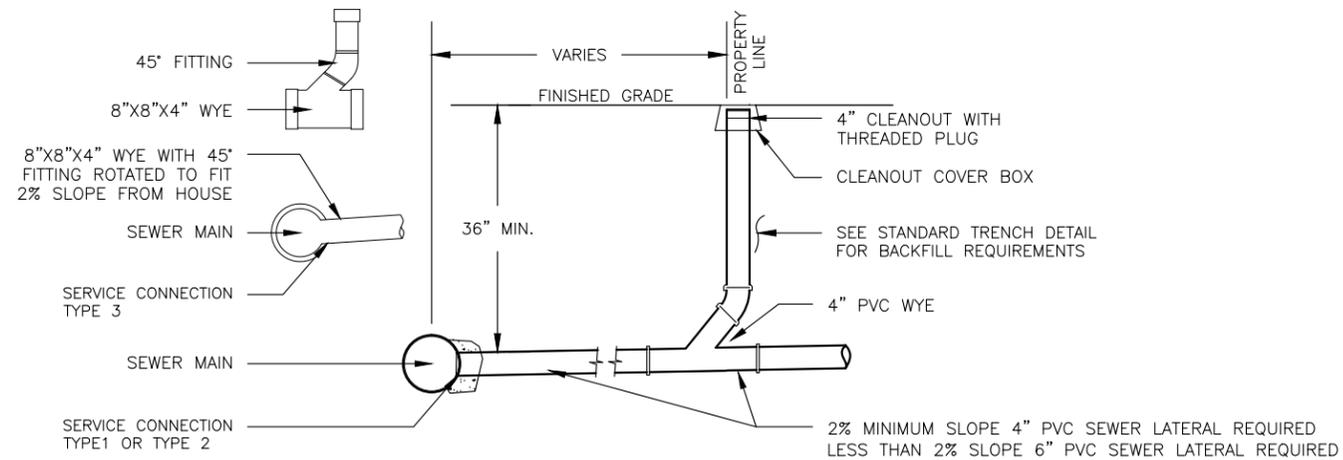
SEE ALSO GENERAL SEWER UTILITY NOTES ON SHEET?

SHEET 1	ORIGINAL
	BY _____ DATE _____
OF 2	REVISIONS
	△ BY _____ DATE _____
	△ BY _____ DATE _____

**SEWER DETAIL
STANDARD MANHOLE
DROP MANHOLE**

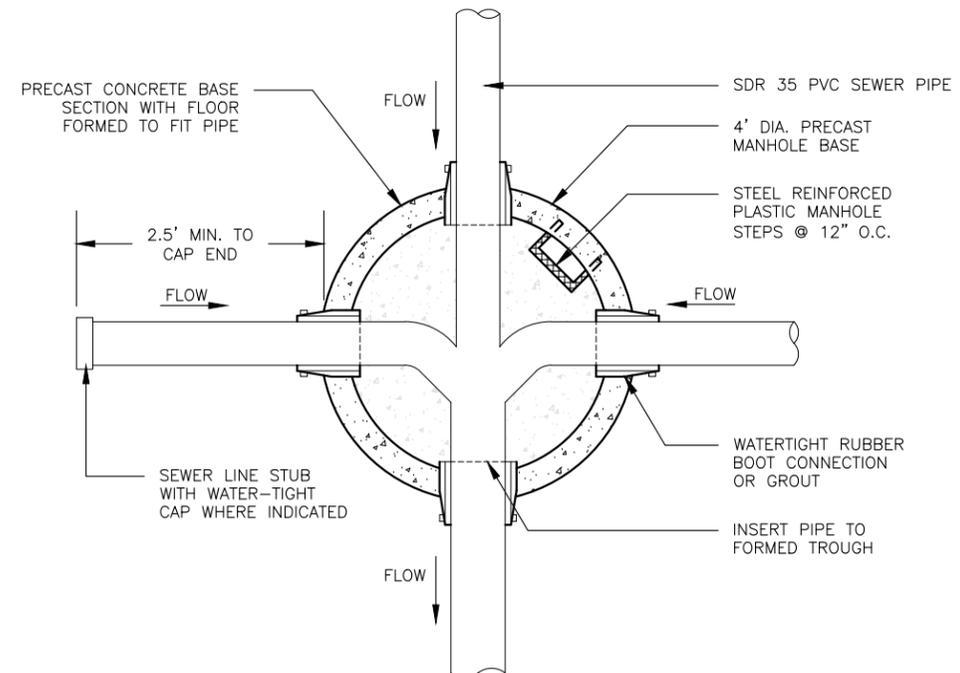
**STANDARD DRAWING
NEPHI CITY CORPORATION**



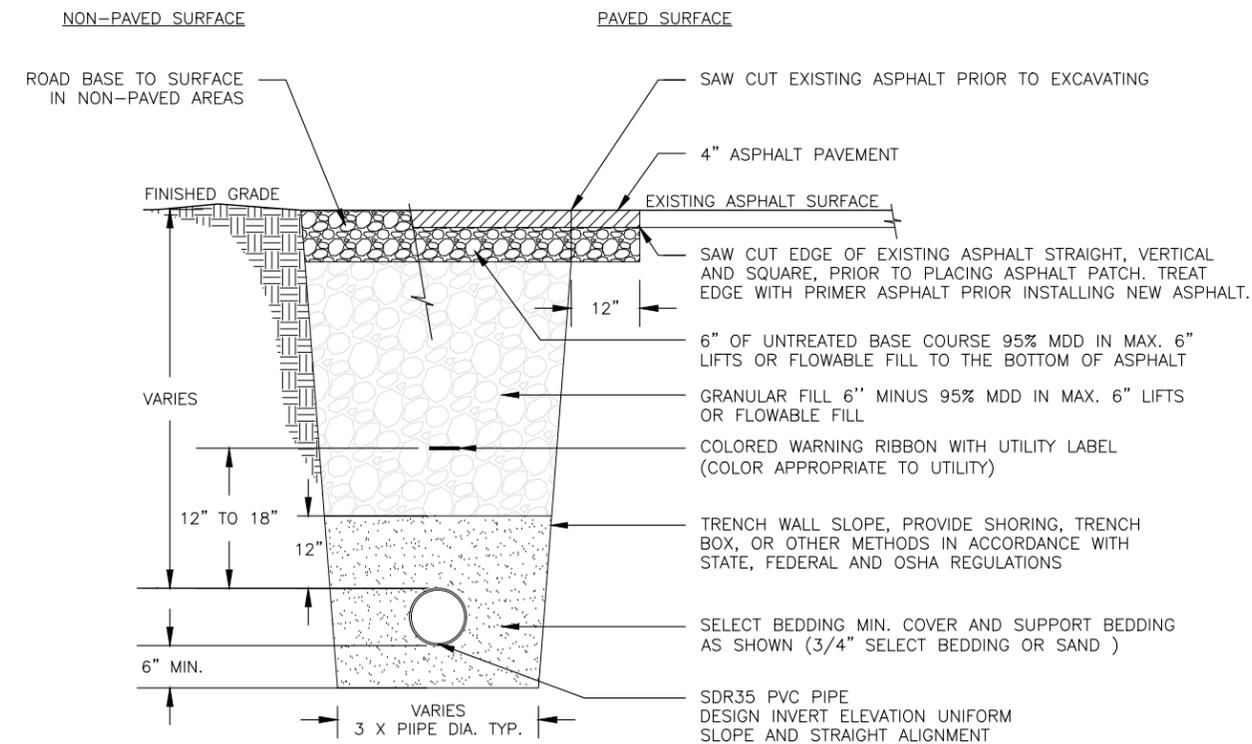


- NOTES:**
- SERVICE CONNECTION TYPES:**
1. FOR CONNECTION TO EXISTING PVC MAIN LINE, A STRAIGHT TAP INTO THE MAIN WILL BE MADE WITH A GASKET AND LATERAL INSERTED.
 2. FOR CONNECTION TO EXISTING CONCRETE OR CLAY TILE MAIN LINE, THE LATERAL PIPE WILL BE INSERTED INTO A SECTION OF THE MAIN LINE PIPE WHERE THE CONTRACTOR HAS BROKEN OUT A CIRCULAR OPENING. THE LATERAL PIPE IS INSERTED NO FARTHER THAN TO THE INSIDE OF THE MAIN LINE PIPE WALL. THE CONNECTION IS THEN SECURED BY CONCRETE.
 3. FOR CONNECTION ON NEW PVC LINE. INSTALL 8"x8"x4" WYE, ROTATED TO CREATE A 2% GRADE FROM THE RESIDENTIAL HOME

STANDARD SEWER LATERAL DETAIL
NOT TO SCALE



STANDARD SEWER MANHOLE PLAN VIEW
NOT TO SCALE



STANDARD TRENCH DETAIL (SEWER MAIN LINE)
NOT TO SCALE

GENERAL SEWER UTILITY DETAIL NOTES

1. BACKFILL IN COMPACTED 6" LIFTS, FREE FROM ORGANIC MATERIAL & ROCKS LARGER THAN 6" COMPACTED TO 95% OF A T-180 UNDER TRAVELED AREAS. (NO PEA GRAVEL OR OTHER CLEAN ROCK MAY BE USED) IN NON-TRAVELED AREAS, COMPACTION MAY BE 95% OF A T-99 DENSITY WITH ± 2% OPTIMUM MOISTURE.
2. SAND APPROVED BY THE NEPHI CITY WILL BE USED FOR UTILITY LINE BEDDING, BUT MUST BE FREE OF LUMPS AND CHIPS. SAND 6" BELOW PIPE & 12" ABOVE OR AS APPROVED BY NEPHI CITY TO BE PLACED IN COMPACTED LIFTS NOT GREATER THAN 6 INCHES. COMPACTION WILL BE TO 95% OF A T-180 WITH ± 2% OPTIMUM MOISTURE OR AS APPROVED BY CITY INSPECTOR. BEDDING COMPACTION FROM THE CROWN OF THE PIPE DOWN MAY ONLY BE DONE WITH HAND-OPERATED COMPACTOR (JUMPING JACK OR PLATE COMPACTION).
3. CHECK DAMS TO BE INSTALLED EVERY 200 FEET, OR AS DIRECTED BY NEPHI CITY, IN UTILITY MAIN LINE TRENCHES TO PREVENT MIGRATION OF WATER THROUGH THE TRENCH FILL. DAMS WILL BE THROUGH ALL FILL LAYERS UP TO THE TOP OF THE SUBGRADE, INCLUDING PIPE BEDDING. CHECK DAMS ARE TO BE 3- FEET WIDE, CONSTRUCTED IN 6" COMPACTED LIFTS OF MATERIAL APPROVED BY THE NEPHI CITY.
4. MINIMUM GRADE FOR MAIN LINES MUST BE EQUAL TO OR GREATER THAN STATE REGULATIONS.
5. ALL SEWER SYSTEM MATERIALS ARE TO BE PRE-APPROVED BEFORE INSTALLATION.
6. GRADE FROM BUILDING TO MAIN LINES TO MEET INTERNATIONAL RESIDENTIAL CODE, OR APPROVED BY NEPHI CITY BUILDING INSPECTOR.
7. SEWER MAINS TO BE PRESSURE TESTED AND MANDRILL TESTED AS DIRECTED BY THE CITY WATER AND SEWER SUPERINTENDENT. TELEVISION INSPECTION MAY BE REQUIRED IF PRESSURE OR MANDRILL TEST FAILS.
8. SEWER MANHOLE BASES SHALL PROVIDE A .1' DROP DISTANCE ACROSS THE MANHOLE (MINIMUM).
9. MANHOLES SHALL HAVE A MINIMUM DEPTH OF 9'-0" UNLESS OTHERWISE APPROVED BY THE CITY.
10. SDR35 REQUIRED ON ALL NEW MAIN LINE INSTALLATION
11. ALL WORK MUST BE INSPECTED BY NEPHI CITY PRIOR TO BACKFILL

SHEET 2	ORIGINAL
	BY _____ DATE _____
OF 2	REVISIONS
	△ BY _____ DATE _____
	△ BY _____ DATE _____

**SEWER DETAIL
STANDARD TRENCH
SEWER LATERAL**

**STANDARD DRAWING
NEPHI CITY CORPORATION**

NEPHI CITY

21 EAST 100 NORTH
NEPHI, UTAH 84648

Nephi City

Sanitary Sewer Overflow Action Plan

Whenever sanitary sewage leave the confines of the piping system, immediate action is necessary to prevent environmental, public health, or financial damage from occurring. In addition, quick action is normally needed to mitigate damage which may have already occurred. For the purposes of this section, the following are part of the emergency action plan.

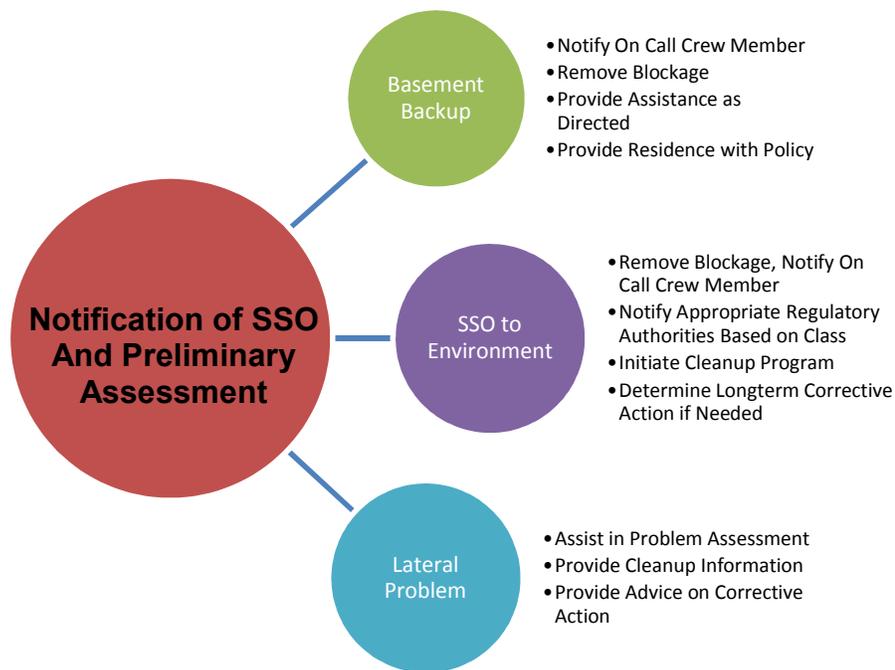
1. Basement Backups
2. Sanitary Sewer Overflows
3. Sanitary Sewer Breaks which Remain in the Trench
4. Sewer Lateral Backups

All of the above conditions are likely to cause some damage. Each should be treated as an emergency, and corrective actions taken in accordance with Nephi City directions. Items 1 and 2 above should be reported immediately based on whether they constitute a Class 1 or Class 2 SSO. As stated in the definitions section of the SSMP Introduction, a Class 1 SSO is an overflow which affects more than five private structures; affects a public, commercial, or industrial structure; results in a significant public health risk; has a spill volume more than 5,000 gallons; or has reached Waters of the State. All other overflows are Class 2 SSO's. All Class 1 SSO's should be reported immediately. Class 2 SSO's should be documented and reported in the annual SSMP report and included in the Municipal Wastewater Planning Program submitted to the State. Item 3 may be reported to the local health department if, in the opinion of the responsible staff member, there is potential for a public health issue. An example of where a public health issue may be present is when an excavator breaks both a sewer and a water line in the same trench. In such cases, the local health department representatives should be contacted and the situation explained. If the health representative requests further action on the part of Nephi City, staff should try to comply. If, in the opinion of the responsible staff member, the health department request is unreasonable, The Public Works Director should be immediately notified. Care should always be taken to error on the side of protecting public health over financial considerations. When a basement backup occurs, the staff member responding should follow the Basement Backup Program procedures. Lateral

backups, while the responsibility of the property owner, should also be treated as serious problems. Care should be taken to provide advice to the property owner in such cases, but the property owner is ultimately the decision maker about what actions should be taken.

Response Activities

There are specific steps that should be followed once a notification is received that an overflow may be occurring. The following figure outlines actions that could be taken when Nephi City receives notice that a possible overflow has or is occurring.



General Notification Procedure

When a Class 1 SSO occurs specific notification requirements apply. In such cases the following notification procedure should be followed and documented. Failure to comply with notification requirements is a violation of R317-801.

Agency Notification Requirements

Both the State of Utah Division of Water Quality and the local health department should be immediately notified when an overflow is occurring. Others that may require

notification include local water suppliers, affected property owners and notification may be required to Utah Division of Emergency Response and Remediation if hazardous materials are involved. The initial notification must be given within 24 hours. However, attempts should be made to notify them as soon as possible so they can observe the problem and the extent of the issue while the problem is happening. A notification form is provided to document notification activities. After an SSO has taken place, and the cleanup has been done, a written report of the event should be submitted to the State DEQ within five days (**unless waived**). This report should be specific and should be inclusive of all work completed. If possible, the report should also include a description of follow-up actions, such as modeling, or problem corrections that have or will take place.

Public Notification

When an SSO occurs, the extent of the overflow is significant, and the damage cannot be contained, the public may be notified through proper communication channels. Normally the local health department will coordinate such notification. Should Nephi City need to provide notification it could include press releases to the local news agencies, publication in an area paper, and leaflets delivered to home owners or residents in the area of the SSO. Notification should be sufficient to insure that the public health is protected. When and if federal laws are passed concerning notification requirements, these legal requirements are incorporated by reference in this document. In general, notification requirements should increase as the extent of the overflow increases.

Overflow Cleanup

When an overflow happens, care should be taken to clean up the environment to the extent feasible based on technology, good science, and financial capabilities. Cleanup could include removal of contaminated water and soil saturated with wastewater and toilet paper, disinfection of standing water with environmentally adequate chemicals, or partitioning of the affected area from the public until natural soil microbes reduce the hazard. Cleanup is usually specific to the affected area and may differ from season to season. As such, this guide does not include specific details about cleanup. The responsible staff member, in conjunction with the State DEQ, the local health department, and the owner of real property, should direct activities in such a manner that they are all satisfied with the overall outcomes. If, during the cleaning process,

the responsible staff member believes the State or the County is requesting excessive actions, the Public Works Director should be contacted.

Corrective Action

All SSO's should be followed up with an analysis as to cause and possible corrective actions. An SSO which is the result of grease or root plug may be placed on the preventative maintenance list for more frequent cleaning. Serious or repetitive plugging problems may require the reconstruction of the sewer lines. An overflow that results from inadequate capacity should be followed by additional system modeling and either flow reduction or capacity increase. If a significant or unusual weather condition caused flooding which was introduced to the sanitary sewer system incorrectly, the corrective action may include working with other agencies to try and rectify the cross connection from the storm sewer to the sanitary sewer or from home drainage systems and sump pumps. Finally, should a problem be such that it is not anticipated to reoccur, no further action may be needed.

Nephi City

Grease, Oil and Sand Management Program

Purpose:

The purpose of this program is to provide for the control and management of grease, oil and sand discharges to the District collection system. This program will provide a means to reduce interference with the collection system operation.

Regulatory Authority:

Regulatory authority to implement this program is found in the Code of Federal Regulations in 40 CFR 403, General Pretreatment Regulations. State authority for the program is given in the Utah Administrative Code R317-8-8, Pretreatment. Local Authority is found in Nephi City Code 8-3-9.

Program Implementation:

This program shall be implemented in such a manner as to minimize the impact on businesses which may be affected by this program. In all cases Nephi City will maintain a uniform decision-making process. Nephi City shall allow for appeals of program requirements in accordance with the appeal process approved by Nephi City.

The following steps detail the procedure that Nephi City personnel will follow in implementing this program.

Evaluation:

Nephi City staff will evaluate an industrial user (IU) discharge to determine if grease, oil or sand management is required at the following events:

1. Issuance of a construction or remodeling building permit.
2. When the collection line in front of the business is CCTV inspected as part of the sanitary sewer system preventative maintenance program.
3. When a downstream sanitary sewer pipeline plugs due to oil, grease or sand.

No further action will be taken if it is determined that no potential exists for significant enrichment of the wastewater with grease, oil, or sand.

Enrichment is defined as a discharge with greater volume or concentration of grease, oil, or sand than that discharged from a typical residential connection. For oil and grease, the typical residential discharge has less than 100 mg/L of oil and grease for any sample taken. Greater concentrations would be enrichment. Also, a significant buildup of oil and grease in the lateral would indicate enrichment. Sand and dirt is not typically discharged from a residential connection. Any potential for sand or dirt discharge would be enrichment.

Implementation:

IU's which are determined to enrich or have the potential to enrich the wastewater with grease, oil, or sand will be required to develop a management plan in accordance with the following tracks.

TRACK 1

This track is available for IU's which exist at the time of program implementation. However, not all existing IU's may be permitted to use it. Determination will be made on a case by case basis. IU's on this track will be permitted to either pay a contractor or Nephi City to clean the main sewer line from their place of business to the nearest trunk line. A

trunk line is any sewer line which has an inside diameter of eighteen inches or larger or has been classified as a trunk line by Nephi City. Cleaning frequency will be determined by inspections performed by the Nephi City.

TRACK 2

This track requires the IU to install and maintain a grease, oil, and/or sand trap on their premises. Quarterly cleaning reports may be required at the discretion of Nephi City. Nephi City shall inspect and test the grease trap on a periodic basis. The following fees shall apply:

Inspection Fee	\$30.00
Testing Fee	\$30.00

Should the testing reveal grease and oil in excess of 100 mg/L, a fine of \$5.00 for each pound of oil and grease discharged for the past reporting period shall be assessed. The pounds of grease and oil shall be determined by using the following equation:

$$(\text{Total Reporting Period water use in MG})(\text{mg/L O\&G} - 100)(8.34)$$

The IU will also be ordered to return to compliance immediately. Retesting will be done within thirty days if the trap has not been cleaned and a cleaning report submitted. Another inspection and testing fee will be assessed. Should the test results still not comply with the 100 mg/L oil and grease limit, enforcement will be escalated in accordance with the Nephi City's Enforcement Response Plan. In

addition, an entity which is frequently violating the 100 mg/L limit may be issued a pretreatment permit in order to further regulate the IU.

Should the testing reveal TSS in excess of 250 mg/L, a fine of \$5.00 for each pound of TSS discharged for the past reporting period shall be assessed. The pounds of TSS shall be determined by using the following equation:

$$(\text{Total Reporting Period water use in MG})(\text{mg/L TSS} - 250)(8.34)$$

The IU will also be ordered to return to compliance immediately. Retesting will be done within thirty days if the trap has not been cleaned and a cleaning report submitted. Another inspection and testing fee will be assessed. Should the test results still not comply with the 250 mg/L TSS surcharge limit, the IU will be placed on a continuous inspection, testing, and the surcharge schedule for TSS.

By following the steps discussed above, Nephi City hopes to maintain a collection system free from excessive backups and a treatment system in compliance with UPDES discharge conditions.

List of Acceptable Entities That Recycle Oil and Grease

The following list of grease and oil recyclers should be given to all IU's who operate a grease trap. This list may not be all inclusive. Other recyclers may be used if it can be shown that they discharge of the waste appropriately.

Recycler	Phone Number	Address
Berts Auto	435-623-1913	96 W. Center St.
May Auto	435-623-2143	1273 N. Main St.
Painter Motor	435-623-1390	1100 N. Main St.

Nephi City

System Evaluation and Capacity Assurance Plan (SECAP)

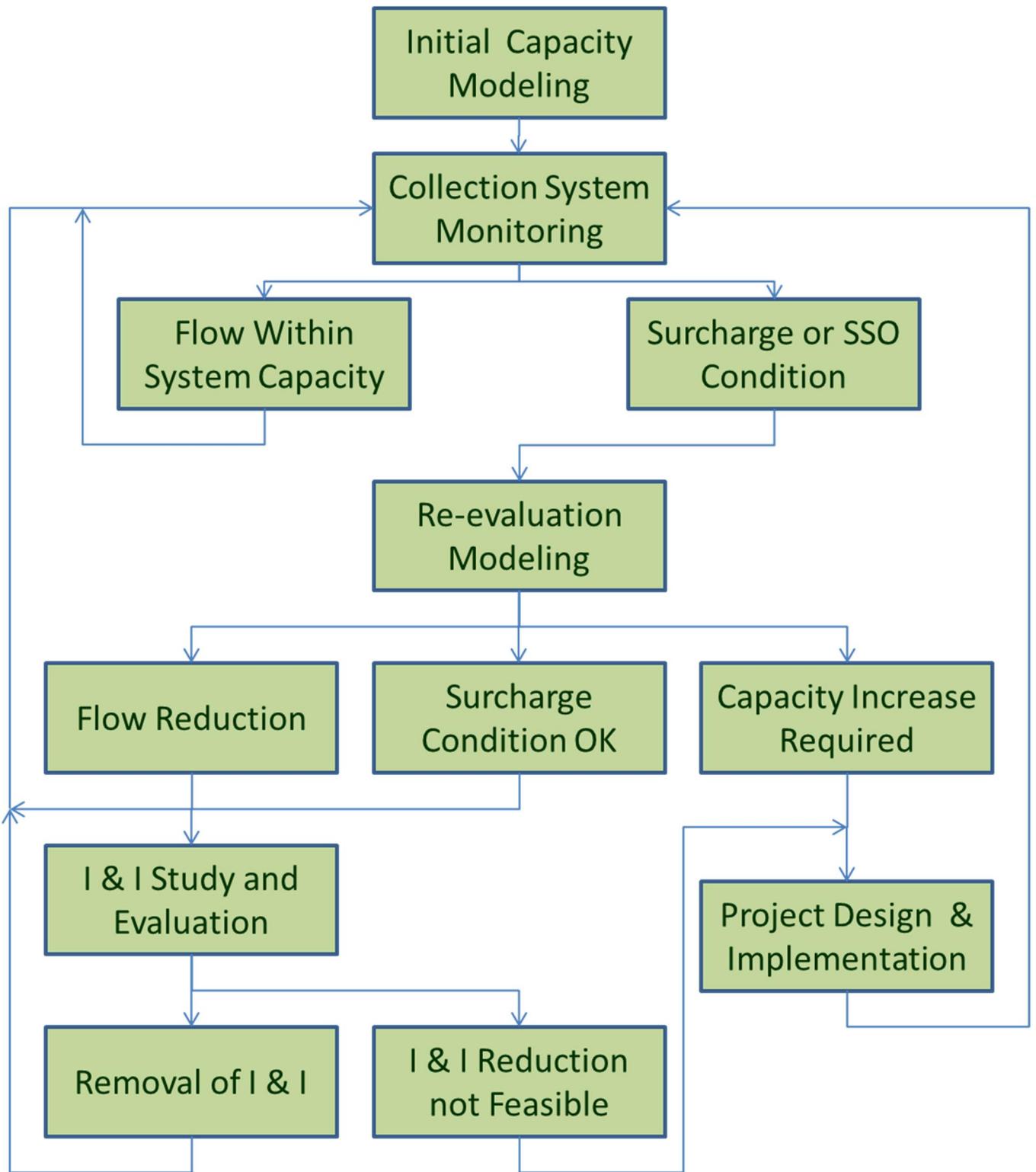
Nephi City believes that one of the keys to preventing sanitary sewer overflows is to evaluate system capacity and to monitor flows throughout the system in order to ensure that capacities are not exceeded. Should a collection sub-system exceed the capacity of the pipes, the system will be immediately re-evaluated and corrective action taken. The following elements are all part of Nephi City's SECAP program.

1. Initial Capacity Modeling and Master Planning
2. Flow Monitoring
3. Surcharge Flow Analysis
4. Re-evaluation Modeling and Analysis
5. Flow Reduction Evaluation and Implementation
6. Capacity Increase Evaluation and Implementation

The actual implementation process associated with each of the elements above is shown in figure on the next page. This flow chart process forms the backbone of the SECAP.

Initial Capacity Evaluation

Nephi City has performed an analysis and modeling of each critical subsystem contained within its collection system. Subsystems are segregated based on the branching of the collection system. Trunk lines and collector lines are evaluated until the system reaches a point where less than 400 residential dwelling unit equivalents (RE) are upstream of that point in the system. The 400 RE point was chosen based on the minimum slope requirements of the State of Utah. **An 8-inch pipe constructed on minimum slope will carry the flow from 400 RE based on 3.2 persons per dwelling unit, 75 gpcd, and a peaking factor of 4.** The RE equivalent is based on typical Utah information and assumes the peaking factor will account for a reasonable amount of inflow and infiltration. If an area is known to have, or flow metering identifies, a significant amount of inflow and infiltration, additional evaluation will be needed. In these areas the capacity of an 8-inch pipe system may be significantly reduced below 400 RE.



SECAP Flow Chart

In addition to developing an equivalent flow for a residential unit, consideration should also be given to time of concentration in the collection system. Based on typical diurnal flow patterns, if the transit time in the branch system is less than 2 hours, time of concentration can be ignored.

Flow Monitoring

The current system is not metered for flow. Nephi City Water and Sewer Division monitors the flow by visual inspections on a weekly basis. Flow monitoring has taken place in the past for a defined period of time to determine the current system capacity. This monitoring was completed by strategically placing flow meters in key points of the sewer system.

Surcharge Flow Analysis

If any collection subsystem is identified as having any of the following problems, the system will be evaluated to determine future action. These problems are:

1. Sanitary Sewer Overflow to the Environment
2. Sanitary Sewer Break Remaining in the Trench
3. Basement Backup
4. Observed Subsystem Surcharging.

The flow evaluation may result in multiple conclusions, some of which may require further action. Possible conclusions and their further action are listed below. This list is not inclusive nor does it require the specific action detailed. These are given as possible examples and will be used by the Public Works Director to determine correct future action.

Flow Reduction Evaluation

Should excessive flows be identified during the surcharge analysis, the solution may be to proceed with an inflow and infiltration study with the ultimate goal of reducing flows. These flow reductions may be achieved by reconstruction of specific areas, internal spot repairs, removing illegal storm water or sump pump connections from homes or storm water systems, and system grouting. Tools used in flow reduction may include extensive in-line camera inspection, smoke testing, dye testing, and increased inspection or flow monitoring.

Foreign Objects or Obstructions

There are multiple foreign objects which may be found in sewers. These may include objects knocked into sewers during construction, items illegally placed in sewer manholes, roots, grease and soaps, bellies in piping systems, etc. Each of these problems should be found during the backup investigation and a plan developed to insure the problem does not reoccur. Types of action may include increased cleaning frequency, spot repairs, greater pretreatment activity, lining of pipes, and other corrective actions which resolve the problem.

Allowable Surcharging

Some piping systems may be able to accept surcharges without creating problems. Such systems may be deep, and surcharging occurs below the level of basements or manhole rims, or they may be in areas where there are no connections. In such cases the resolution of the observed surcharge may just be additional monitoring.

Revised System Modeling

Where piping system problems cannot be resolved in a less expensive way, the system may be further modeled to determine upgrade needs. Modeling should include known flow information and future projections. Since the system has been shown to have problems, further modeling should be more conservative in flow projections. Revised modeling should follow the guides given next.

Re-evaluation Modeling and Analysis

When subsystem needs demonstrate unresolvable problems by less costly means, the subsystem should be re-modeled and required action determined. Revised modeling may show that flow reduction may still be viable, or it may show that the system can allow current surcharge conditions. Most likely, however, the modeling will normally form the basis for construction to enlarge the subsystem capacity. Modeling should be done either by

1. Nephi City staff using commercially available software
2. Nephi City staff using spreadsheet models
3. Engineering firms using available software or spreadsheets.

It is important to insure the modeling is comprehensive and includes all the potential

flow sources. While the current area zoning and land use planning should be used in the model development, care should be taken to discuss possible changes with appropriate officials. Where possible zoning changes appear likely, the model should be re-run with the revised zoning alternatives. Once a resolution has been selected, the resulting project should be placed on the capital improvement plan (CIP).

Capacity Increase Evaluation and Implementation

The capacity evaluation should be expedited based on the impact of the problem on the environment and the possible repetition of the overflow/backup/surcharging. Details on prioritization are given in the next section.

Systems requiring additional capacity should be engineered for expansion by qualified staff or engineering consultants. Project design should be based on acceptable engineering standards and should comply with State of Utah regulations found in R317-3. Easements should be obtained, where needed, and the design should include an analysis of other utilities in the vicinity. Design review should be done by the applicable regulatory agency, as appropriate. A design report should be prepared for each project. Where appropriate, the subsystem modeling may be substituted for the design report.

Finalized projects should be placed on the CIP.

System Improvement Prioritization

The priority for improvement should follow the following general guidelines:

High Priority Projects

When there is significant potential for sanitary sewer overflows, or frequent basement backups, the improvement should be considered a high priority, and any available budget should be allocated to the project.

Medium Priority Projects

Where the problem is infrequent, and the possibility exists that it may not repeat in the near future, the priority for correction is medium. Medium priority projects may be delayed until appropriate budget is available or the priority is adjusted to high priority. Should an SSO or basement backup repeat in the same area, the priority should be immediately revised.

Low Priority Projects

If the observed problem is infrequent, there is possibility that it may not repeat in the near future, and the possibility that increased flow in the subsystem is low, the correct priority is low. Low priority projects will be placed in the budget process and evaluated against other needs. These projects will eventually be completed, but the work is not prioritized above plant and equipment needs.

Capital Improvement Plan

The CIP is part of the Nephi City's budgeting process to insure sufficient revenue to address identified weaknesses in the sanitary sewer system. Items which have been identified as needing a structural fix are placed on the CIP list, and the cost for each is estimated. Sources of funding should be identified for all high priority projects so that SSO's or other failures do not re-occur. Forecasts of available funding for medium and low priority projects should be made to facilitate future revenue needs.

Nephi City

SSMP Monitoring and Measurement Plan

The purpose of this plan is to provide appropriate monitoring and measurement of the effectiveness of the SSMP in its entirety.

Records Maintenance

Nephi City intends to maintain appropriate records on operation and maintenance of the sanitary sewer system to validate compliance with this SSMP. However, failure to meet standards set by State DWQ or other regulatory agency during an inspection does not constitute a violation of the SSMP. Rather, deficiencies identified during inspections should be viewed as an opportunity for improvement.

Operations Records

Operations records that should be maintained include the following:

- Daily cleaning records
- CCTV inspections records
- Manhole inspection records
- Hot spot maintenance list
- Spot repairs
- Major repairs
- System capacity information
- SSO or basement backup records including notification documents to appropriate agencies (call logs, etc.)
- Capital Improvement Plan

Records will be maintained by the Water & Sewer Superintendent in a central location. Records may be maintained either on an electronic record or as a paper record. The extent of the record should be sufficient to demonstrate the activity recorded was completed appropriately.

Performance Measurement (Internal Audit)

Periodically, but not less than annually, Nephi City should assess and audit the effectiveness of the elements of this SSMP. All elements should be reviewed for effectiveness as well as all records should be reviewed for completeness. An internal audit report should be prepared preferably annually but no less than once every five years and should comment on the following:

- Success of the operations and maintenance program
- Success of other SSMP elements
- Adequacy of the SECAP evaluations
- Discussion of SSO's and the effectiveness of the response to the event including corrective action
- Review of Defect Reports and adequacy of response to eliminate such defects
- Opportunities for improvement in the SSMP or in SSO response and remediation

The annual audit report need not be extensive or long. It should, however be sufficient to document compliance with the standards set in the SSMP. The audit reports should be maintained in accordance with Nephi City's records retention schedule.

SSMP Updates

When a plan deficiency is identified through an audit, inspection, or plan review, and the deficiency requires an SSMP update, the plan may be updated at the discretion of the Public Works Director. SSMP updates should be recorded in a revision index maintained by Public Works Director.

SSO Evaluation and Analysis

At least annually in the internal audit and more frequently as needed, Nephi City will evaluate SSO trends based on frequency, location, and volume. Trend evaluation will be empirical unless a large number occur sufficient to make a statistical analysis viable. If a trend is identified, a corrective action may be appropriate.

Public Communication and Outreach

Nephi City will reach out to the public about the development, implementation, and performance of the SSMP. This communication may be accomplished by any of the following methods:

- Public hearings
- Public meetings
- Newsletters
- Direct mailing
- Leaflets
- Other effective methods

Nephi City will accept comments, either written or verbal, and will review such comments for applicability. Public interest may be difficult to generate, but should be sought, nonetheless.

Nephi City

Sanitary Sewer System Mapping

Mapping systems for Nephi City include:

- Computer based GIS system
- Paper-based mapping system
- Trunk line maps and subdivision maps

Nephi City

Basement Backup Program

Basement backups are a serious impact on a home or business owner. As such, all reasonable efforts should be taken to prevent such backups from occurring. Sewer system backups are the result of several system problems. Such problems include any one or a combination of the following:

1. Laterals serving real properties are owned by the property owner, and lateral maintenance is the property owner's responsibility. Roots, low points, structural failure, and grease are primary problems lateral owners face.
2. Backups caused by main line plugs are usually caused by roots, grease, low points, foreign objects, and contractor negligence.
3. Piping system structural damage may cause basement backups. Such structural problems include age or deterioration damage, installation damage, excavation damage, and trenchless technology damage.
4. Excess flow problems may surcharge a piping system and cause backups into homes. Excess flows usually occur when major storm waters inflow into sanitary sewers. Sanitary sewers are not designed for such flow. In addition, some homeowners may illegally connect foundation drains and sump pumps to the sanitary sewer system.

Basement Backup Response

When Nephi City is notified about a basement backup, staff will log the complaint in a complaint log. The person receiving the call may log the backup complaint or may ask administrative staff to document the complaint.

All backup complaints shall be investigated by staff. If the investigation determines that

the cause of the backup is only in the lateral, staff may offer technical information but should not take responsibility for cleanup or subsequent restoration.

When it is determined that the basement backup is the result of a mainline problem, Nephi City will follow the policy approved by its governing authority. A copy of this policy should be given to the home owner. It should be noted that all actions Nephi City takes are on a no-fault basis. Nephi City does not accept liability nor does it waive its governmental immunity.

Backup Prevention Design Standard

Nephi City promotes system designs which minimize backups and insure proper operations. To this end Nephi City has a design standard for all system construction. In addition, Nephi City complies with state design standards contained in R317-3. Finally, for laterals, the following policy applies:

Policy on the Installation of Backflow Valves

Reference Regulatory Documents:

The following regulations are referenced in the establishment of this policy:

- Utah Code Title 15A-2-103(c). This code section adopts the 2009 edition of the International Plumbing Code.
- The 2009 International Plumbing Code, section 715 Sewage Backflow.

Nephi City Policy:

- The State of Utah has adopted the International Plumbing Code(IPC) as its plumbing building standard;
- Nephi City use the IPC as its statute for plumbing construction and installation;
- The IPC requires the installation of a sewage backwater valve “where the overflow rim of the lowest plumbing fixtures are below the next upstream manhole in the public sewer.”

Therefore, for new construction, Nephi City requires the installation of backwater valves as stipulated by the IPC already propagated for all new construction.