System Specification

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II. Graphical Notations Used
The following diagram defines the graphical notation used to document the business rules for automation of the Inspection to Compliance Process.

- **START**: The starting point for the automated process.
- **END**: The ending point for the automated process.
- **MAIN MENU**: The automated process option selection.
- **Computer operation**: The results of work performed by the computer.
- **Human operation**: The work that a human must perform to interact with the computer.
- **from DB**: Data read from a computer database or storage file (DB = Database).
- **from SCR**: Data that has been entered on a computer screen (SCR = Screen).
- **Human decision**: A decision that a human must make to direct the computer to perform the proper function.
1.0 Introduction

This section gives a general overview of Waste Management Inspection Tracking System (WMITS).

1.1 Goals and Objectives

The main purpose of WMITS is to help automate the entire process that the Department of Environmental Quality (DEQ) Waste Management Division (WMD) staff members perform throughout an inspection. The goals of WMITS are:

- To minimize the time span of any inspection
- To minimize the amount of paper work required
- To provide a searchable database of all past inspections
- To provide an automated channel for the public to request information (under Freedom of Information Act)

Critique: It might be a good idea to provide a bit more detail with regard to what an "inspection" is and what it entails. We have to assume that the reader is not knowledgeable in this area.

1.2 System Statement of Scope

Critique: A general statement of the intent of the software (system) should be provided here. That is, what information is produced, what major functions are implemented, and what data are provided as input to WMITS.

1.2.1 General Requirements

The following general requirements were laid out for our project named WMITS:

- A way in which DEQ could add new facilities to the database.
- A way in which DEQ could generate electronic checklists.
- A search on all electronic checklists.
- A way in which they could generate letters to be sent out to facilities based on inspection results.
- A way in which all letters and checklists could be stored electronically.
- A way to search for existing facilities.
- A way to print blank checklists and staff reports.
• A way in which they could view data which was entered into the database prior to our software.
• DEQ wanted a product that would allow them to easily add new checklists and letters or change existing checklists and letters.

• **Interface Enhancements**
  Staff members of WMD have requested a lot of interface enhancements that will increase the usability of the product for the staff.

  *Critique:* Be careful of phrases such a "a lot of". It would be far better to quantify the number of enhancements. If that isn't possible, specifying bounding values (e.g., "between 20 and 30 interface enhancements") would be appropriate.

• **Database Administrative Interface**
  There is currently no documented interface for WMD staff members to maintain the checklist and letter templates. Since no such interface exists, Cyber Rovers will have to implement one from scratch.

• **Online Help**
  To develop an extensive help menu for the users and also to setup the online help for the need of the help in the future.

• **Training**
  The staff members have also requested throughout training for the entire staff for use with the software.

We will also implement a web-based help desk for WMD staff members to report bugs and request support. The helpdesk will be located at [http://www.cyberrovers.com](http://www.cyberrovers.com).

### 1.3 System Context

Eventually, multiple users will be using the product simultaneously. Therefore, concurrent connection will be an issue for implementation. In addition, this is a pilot product that hopefully, if successful, can be used in other locations as well. This leads to issues about future support for a larger user base.
1.4 Major Constraints

Time
We only have about two months to finish all documentation, software creation and enhancements. We have a lot of ideas but cannot implement them due to time constraint. One of the major ones is to move the application to be completely browser-based.

Funding
To develop and implement the Palm Pilot integration, we will need funding to buy at least one Palm Pilot. We will request the funding from University of Michigan – Dearborn should we decided to pursue this function.
2.0 Functional Data Description
This section describes overall system function and the information domain in which it operates.

2.1 System Architecture

2.2.1 Architecture Model
2.2.1 Subsystem Overview

Adding a new facility/Update existing facility information
A form in which user enters all administrative information about a facility will be created. It includes some drop down boxes (where appropriate) in order to avoid mistakes when typing in administrative information. There is a comment field for any additional information about a facility. Some of the fields from the Facility Information form have been linked with the checklists, letters, staff reports, and Facility History screen in order to provide automatic generation of information throughout the process.

Finding existing facilities
Users can search for facilities by name, city, address, EPA ID, or any combination of the four. If a facility is not found, our software will list close matches. This will help to reduce duplicate entries of facilities into the database. If no match is found, they will be able to click on a button and be taken to the Facility Information screen where they can add a new facility.

Printing a blank checklist
This function allows users to print out blank checklists from the electronic templates stored.

Printing a blank staff report
This allows users print out blank staff reports from predefined templates.

Automatic generation of letters and staff reports
This function will automatically generate letters to be sent to the inspected party according to the reports entered by the inspectors. The information entered for the checklists will be stored in the database for future revision and reference purpose.

Electronic checklists
Checklists filled in by inspectors on-site can be entered here. They can then generate letters using the automatic letter generation function. They can pick the regulations they inspected, enter the compliance status and any additional comments needed.

View/Edit Historical Data
Any past inspection information can be searched and browsed here.
2.2 Data Description

2.2.1 Major Data Objects

Administrative Information (Linked with Form)

1. F-ID:
   This Number is given to each facility that is inspected or is to be inspected.
2. EPA ID:
3. F-Name:
   Name of the facility that is inspected or is to be inspected.
4. F-Address:
   This field contains facility address.
5. F-City:
   This field contains the name of the city facility is located in.

Actions Completed on a Facility

1. Company ID
   This field contains number given to each facility.
2. ID
   This field contains number given to the specific inspection (Inspection Number)
3. Letter/Checklist Date
   This field contains the date on which inspection checklist letter was generated.
4. Letter/Checklist Location
   This field contains information on where the generated checklist letter is stored.
5. Inspector Initials
   Initials of the inspector that did the inspection.

Inspection Form

1. ID Number
   This field contains inspection ID Number.
2. Checklist Number
   This field contains number given to the checklist generated after all the inspections.
3. Description
   This field contains description of the inspection done at all facilities.
4. ID
   This field contains compliance status of the facility during inspection.
5. EPA ID
   This field contains acronym given to inspection process.

6. Abbreviated Flag
   Yes or no status for the inspection.

7. Checklist ID
   Description of the inspection.

**Inspection Results**

1. Actions ID
   This field contains inspection ID Number given to each inspection.

2. ID Number
   This field contains inspection ID Number

3. Item Results
   This field contains results of the inspection done.

4. Comments
   This field contains comments regarding inspections.

5. Add in comments too
   Contains information to specify comments for someone particular.

**Inspector Details**

1. Inspector Initials
   Initials of the inspector that did the inspection.

2. Inspector Name
   This field contains name of the inspector.

3. Title
   This field contains title given to inspector from DEQ.

4. Salutation
   Expressions given to the name to automatically generate letter.

5. Phone Number
   This field contains phone number of the inspector.

**Compliance Options**

1. ID
   This field contains compliance option ID Number

2. Compliance Description
   This field contains description of the compliance option.

**EPA Code**

1. EPA ID
   Internal EPA ID.

2. EPA Code
Actual EPA code.

**Letter Template and checklist**

1. **ID**
   This field contains letter/checklist ID Number
2. **Name**
   Name or a description of the letter.
3. **Location**
   Location information of the letter/checklist.
4. **IsALetter**
   Checklist to know if the letter is generated or not.

**Inspection Details (Linked with Form)**

1. **F-ID**
   ID Number given to each facility.
2. **I Type**
   Inspection type 1.
3. **I Type2**
   Inspection type 2.
4. **Staff**
   This field contains staff’s initials.
5. **I Date1**
   This field contains the date on which inspection was done.
6. **Priority**
   This field contains priority information of the inspection.
7. **C Action**
   This field contains description of the compliance action.
8. **C Date**
   This field contains compliance date.
9. **Co Resp1**
   Inspection flag.
10. **Inter LOW1**
    Inspection flag.
11. **Co RespI3**
    Inspection flag.
12. **Inter LOW2**
    Inspection flag.
13. **Co RespI3**
    Inspection flag.
14. **10-day**
    Inspection flag.
15. **Co Resp10**
    Inspection flag.
16. LOW2
   Inspection flag.
17. Co Resp2
   Inspection flag.
18. C Due
   Compliance due date.
19. RTC Date
   Inspection flag.
20. CA
   Inspection flag.
21. Ref Date
   Reference date.
22. Comment

Unmatched Records

1. FACILITY NAME:
   Name of the facility with unmatched records.
2. FACILITY NUMBER:
   Facility number of the facility with unmatched records.
3. FACILITY TYPE:
   Facility type of the unmatched record facility.
4. ADDRESS
   Address of the specific facility.
5. CITY
   Name of the city where the facility is located.
6. ZIP CODE
   Zip code of the city where the facility is located.
7. THIS FILE DATES
   Date of day the file was created.
8. COMMENTS:
   Comments on the reports.

Unmatched Records with Facility Number

1. F-NAME
   Name of the facility with unmatched record numbers
2. F-NUMBER
   Facility number of the facility with unmatched numbers.
3. F-TYPE
   Facility type of the unmatched record number facility.
4. ADDRESS
   Address of the specific facility.
5. CITY
   Name of the city where the facility is located.
6. ZIP CODE  
   Zip code of the city where the facility is located.
7. THIS FILE DATES  
   Date of day the file was created.
8. COMMENTS  
   Comments on the reports.
9. F-ID  
   Numeric number that is given to each facility.

2.2.2 Relationships

2.3 Human Interface Description

In the proposed environment without use of hand help PC, inspectors from the DEQ goes out to facilities with checklist in the paper format and records any violations in a checklist. When the inspector returns form the facility he or she has to insert the data into the database which uses visual basic as front end. The software uses ACCESS as the back end system.
Inspector logs into the database using his or her ID. The first screen that the inspector will come across is labeled Desktop Project Organizer. It contains seven buttons with several different options to choose from. User can choose a button to add a new facility into the database, can find an existing facility, print blank checklist for next inspection. User can also choose button to print a blank staff report, or to go to help menu, or to go to options page or exit out of the Visual Basic environment.

Depending on the selection made from the selection described in the paragraph above user will get several different windows.

**Facility History window** allows user to generate a new letter, checklist or staff report. It also allows users to view, modify or print existing checklist. User can also edit historic data, update family information or delete action using this window. The window also contains help and return to main menu buttons.

**Facility information window** allows user to fill in facility information with entries such as EPA ID, facility type, name, address, city, county, zip code, also information about owner or mailing addresses of the facility. It also allows users to fill in any comments regarding facility information.

If the user searches for an existing facility and facility cannot be found, the user will be shown **facility information – no match window** that will have search again, add new facility help or return to main menu options.

If the user selects historic data option from the window above he or she will be presented with the **historic data window** which will allow the user to fill in data such as inspection type, first inspection date, secondary inspection date, compliance action, company response, inspectors information and completed activities etc.

In **options window** the user will be allowed to change location of the database, letters, help file location and location to save generated letters. This window will also contain cancel, save changes, help buttons.

From **select a checklist window** the user can select a checklist to either fill out or print a blank one of. From this screen you can also access the help file and return to the Facility History screen.

From **select a letter window** the user can choose the letter that you would like to generate and generate a letter for the facility that you are currently working on. You can also access the help file and return to the Facility History screen.

**Search for an existing facility window** enables the user to search for a facility that you believe has already been entered into the database. You can search by name, city,
address, EPA ID, or any combination of the four. If one of your search criteria is facility address that will be all that is searched on regardless of the other search criteria you have entered. If at least one of your search criteria is facility name or facility city and the exact facility name is not found, a list of close matches will be displayed. If one of the close matches is the facility that you are searching for, you can simply double click on that close match and you will be taken to the Facility History screen where information about that facility will be displayed. If none of the close matches are the facility that you are looking for, you can either search again or add a new facility. If your facility is found through the search, you will be taken to the Facility History screen and information about that facility will be displayed.

From the Staff Report window the user can either generate a commented staff report for the facility which you are currently working on, print a blank staff report, access the help file, or return to the Facility History screen.
3.0 Subsystem Description

3.1 Subsystem Flow Diagrams
Here are some of the diagrams regarding subsystem dataflow.
3.1.2 Print Checklist
3.1.3 Generate Letter
4.0 Enhanced Interface Prototyping

4.1 Prototyping Requirements
Cyber Rovers would like to minimize the chance that an inspector needs to modify a generated letter in a word processor. Therefore, our primary goal is to make the interface much more flexible than its current state.

The following is the proposed new interface for entering the checklist and generating the letter. It has been modified from a one step process to a two step process. The second step is for previewing purpose so the inspector and look at the violation comments they have entered in a letter like layout.

The new interface allows the user to see which regulations they have picked so far at any time. They can also add multiple inspected items at once.

The move up and move down buttons next to the Inspected Items List is used to manually rearrange the order which items will appear in the letter.

When the user clicks on an item in the Inspected Items list, he or she can enter additional comments for that item. The user can also click that item again later in the same screen to review what have been entered for that item.