DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name:	General Motors North American Car Group (NACG) Lordstown Assembly Plant and Lordstown Metal Fabricating Division (MFD) Metal Fabricating Plant
Facility Address:	2300 Hallock Young Road, 2369 Ellsworth Bailey Road Lordstown, Ohio 44481
Facility EPA ID #:	OHD 020 632 998, OHD 083 321 091

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

X If yes - check here and continue with #2 below.

____ If no - re-evaluate existing data, or

____ if data are not available skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e.,

RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_X_ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Two aquifers exist at the facility; a) the shallow, or perched wholly within the slag fill and on top of the original glacial till surface; and b) the uppermost Berea sandstone aquifer beneath a weathered shale. The perched unconfined aquifer consists of glacial till overlying a weathered clay/shale bedrock ranging from 2 to 50 feet thick and is continuous throughout the site.

The perched zone is not a drinking water supply and is not currently or reasonably expected to be a future drinking water supply and solely exists due to fill required to allow construction at the site. The fill material consists of reworked silt, sandy silt, organic materials, industrial slag, foundry sand, and cinders. The fill is the principle source of ground-water Manganese in the perched zone and in the soil. Manganese values exceeding screening levels will be addressed with corrective measures.

The Berea aquifer is screened against MCL's and Drinking Water Equivalent Levels (DWEL) for constituents without MCL's.

Groundwater contamination detected at the site is presented in the following Table :

Date	AOI	Monitoring Wells #	Contaminant	Screening Criteria µg/L	Concentration µg/L

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

Perched Aquifer					**Non-Potable Residential** µg/L	
	1/02	AOI-35	MW-214	Benzene	550	2200
	12/02	-	-	Benzene	550	580
Berea Sandstone Aquifer					**MCL** µg/L	
	1/03	Deep Perimeter Wells	MW-314	bis(2-Ethylhexl) phthalate▲	6.0	5.2J/31
	6/02	-	-	MethyleneChloride	4.3 *	6.8
	1/03	-	-	MethyleneChloride	4.3*	ND(1)
	7/01	Deep Perimeter Wells	Test Well #4	Thallium	2	21
	12/01	-	-	Thallium	2	ND(1)
	12/01	-	-	Manganese(Total)	880*	22800
	1/02	-	-	Manganese(Total)	880*	4900
	7/01	-	-	Manganese (Dissolved)	880*	18700
	12/01	-	-	Manganese (Dissolved)	880*	22700
	1/02	-	-	Manganese (Dissolved)	880*	4700
	6/02	-	-	Manganese (Dissolved)	880*	3400
	12/02	-	-	Manganese (Dissolved)	880*	3100
	3/03	-	-	Manganese (Dissolved)	880*	860

* Region 9 Preliminary Remedial Goals for tap water were used for constituents that do not have MCL's.
▲ bis(2-Ethylhexl)phthalate is a lab contaminant.

(AOI-35, The Underground Storage Area #4, is located north of the Metal Fabricating Plant. The system consisted of a 1,000-gallon , gasoline , underground storage tank, associated piping , and dispensing equipment. The tank, piping, and dispensing equipment were removed on August 23, 1990. In November 1992, GM installed a treatment system to remove free product from the area and submitted a Corrective Action Plan to BUSTR. The treatment system was shut down in June 1994 and BUSTR approved the Corrective Action Plan from 1992 on July 3, 1996 and requested a Completion Report from GM.

A Completion Report was submitted by GM in February 1998 to BUSTR. GM abandoned the wells in September 1998. Activities included removal of submersible pumps, grouting of all wells, finishing the surface at each location with concrete, and proper disposal of abandoned well refuse. BUSTR issued a no further action letter to GM on March 16, 1998. Based on review of the previous investigation data, the

extent of contamination was not determined.)

The Berea aquifer is not contaminated.

(*GM-Lordstown Final RCRA RFI, August 22, 2003)

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined

at the time of this determination)?

X If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

AOI 35 is bounded by downgradient monitoring wells 314S, 401 and 313. Benzene levels have not been detected in any of these monitoring wells indicating benzene is not migrating off-site and is remaining within the existing area of contaminated groundwater.

Manganese levels are non-detect at shallow perimeter wells (screened in the perched aqifer zone) except for monitoring well 501, which is slightly above the Region 9 PRG for tap water (880 µg/L) at a concentration of 920 µg/L in the July 2002 sampling event, indicating Manganese is not migrating and is stabilized.

(*GM-Lordstown Final RCRA RFI, August 22, 2003)

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

X If yes - continue after identifying potentially affected surface water bodies.

____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an

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by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The surface water elevation is lower than the ground-water elevation from the central portion of the facility near the wastewater treatment plant, to the assembly plant detention basins, therefore, perched groundwater discharges to the GM ditch and assembly plant detention basins from both the north and south sides. North of the western portion of the facility, perched groundwater discharges to Duck Creek.

(*GM-Lordstown Final RCRA RFI, August 22, 2003)

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

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X If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

Surface water samples from the GM ditch and assembly detention basins indicate discharging of contaminated groundwater into these areas are insignificant. Surface water analytical results from the Assembly Plant Detention Basin show that none of the inorganic constituents listed in Table 1 were above drinking water screening criteria. Only manganese was detected above drinking water screen criteria. Manganese (dissolved) was detected in 4 of 6 samples collected in the GM Ditch wells from 06/01 through 01/02 at concentrations ranging from 510 to 2800 µg/L. Manganese (dissolved) was not detected above the drinking water criteria during the latest sampling round in 6/02. Manganese (total) was detected in 1of 3 samples collected in the GM Ditch Wells from 6/01 through 1/02. One sample had a concentration higher than the drinking water screening criteria, with 1200 µg/L in monitoring well 209S in 1/02. Manganese total has not been detected above drinking water screening levels in monitoring wells 207S or 208S. The analytical results from the 2001 and 2002 sampling events indicated limited detections of VOCs (two detections of benzene) below drinking water criteria. SVOCs were not detected. Other than manganese (dissolved and total) all detected inorganics were found below screening levels. None of these constituents have been detected at levels above the screening criteria in the Assembly Plant Basin, to which

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

the GM Ditch discharges.

(*GM-Lordstown Final RCRA RFI, August 22, 2003)

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed

to continue until a final remedy decision can be made and implemented[4])?

____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

X If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

____ If no - enter "NO" status code in #8.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

In order to confirm the existing area of groundwater at AOI-35 remains stable, monitoring wells MW-313, MW-401 and MW-402 will be sampled annually for benzene. These wells were selected based on their location relative to area of current groundwater contamination and groundwater flow direction at AOI-35.

Additionally, GM-Lordstown will be required to continue monitoring the Shallow and Deep perimeter wells on a quarterly basis , to ensure contaminants are not migrating off-site.

(The RCRA CA725 &CA750 E.I. Report.)

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

X YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the General Motors Lordstown facility , EPA ID # OHD 020 632 998, OHD 083 321 091, located in Lordstown, Ohio. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date _____

(print) Tammy Moore

(title) Environmental Scientist

Supervisor (signature) _____ Date _____

(print) _____

(title) _____

(EPA Region or State) _____

Locations where References may be found:
U.S. EPA Region 5
7th Floor Records Center
77 W. Jackson, Blvd.
Chicago, IL 60604

Contact telephone and e-mail numbers

(name) _____
(phone #) _____
(e-mail) _____