DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION (CA 725) LAKE SUCCESS BUSINESS PARK

January 24, 2002

Project No.: D2LS7170

CORPORATE REMEDIATION GROUP
An Alliance between
DuPont and The W-C Diamond Group

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URS
URS Diamond

January 23, 2002

Ms. Stephanie Carr
US Environmental Protection Agency
Region I - Waste Management Division
One Congress Street
Suite 1100-HBT
Boston, MA 02114-2023

DOCUMETATION OF RCRA ENVIRONMENTAL INDICATOR DETERMINATION (CA725)
Lake Success Business Park
Bridgeport, Connecticut

Dear Ms. Carr:

Please find enclosed the documentation for Environmental Indicator (EI) Determination CA725 – Current Human Exposure under Control submitted by Sporting Goods Properties, Inc. for the Lake Success Business Park in Bridgeport, Connecticut. Included in this package is the completed EI 725 form and supporting documents consisting of data tables, figures and a private well study.

If you have any questions concerning this submittal please contact our office at 203-576-1829. We appreciate your attention in this matter.

Very truly yours,

S Northey FOR

Scott F. Martin, LEP, CHMM
Project Manager

cc: V. Ordija, SGPI
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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: **Sporting Goods Properties, Inc. (formerly Remington Arms)**
Facility Address: **615 Asylum Street, Bridgeport, CT 06610**
Facility EPA ID #: **CTD001453216**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, 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 "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "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 "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

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).

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			**TCE, PCE, and associated compounds exceed CT groundwater protection criteria in certain isolated areas on-site. Some PAHs arsenic, cadmium, and lead are also above the criteria in certain wells.**
Air (indoors) [2]		X		**Concentrations of VOCs in overburden GW in the vicinity of all occupied structures are below CT Volatilization Criteria and are not expected to be transported into indoor air. Off site impacts, therefore, are not an issue.**
Surface Soil (e.g., <2 ft)	X			**Lead, arsenic, antimony, and PAHs exceed CT Remedial Standards for Industrial/Commercial Direct Exposure. In addition to contaminated soil, some unexploded ordnance, which could be potentially characterized as a hazardous waste, have been found in an isolated area on site.**
Surface Water	X			**Several PAHs, arsenic, and mercury exceed the CT Water Quality Criteria for the protection of Human Health.**
Sediment	X			**Lead, beryllium, cadmium, and several PAH concentrations exceed CT Industrial/Commercial Direct Exposure Criteria in Roadway and Tracer Brooks**
Subsurf. Soil (e.g., >2 ft)	X			**Lead, arsenic, and PAHs exceed CT Direct Exposure Criteria. In addition to contaminated soil, some unexploded ordnance, which could potentially be characterized as a hazardous waste, have been found in an isolated area on-site.**
Air (outdoors)		X		**VOCs have not been detected the vadose zone at concentrations that would be expected to contribute to any air quality concerns on site.**

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

Yes___ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Risk Based Criteria used to evaluate site data:

Soil - Risk-based cleanup standards were specified in the Consent Order for the upland soils at the site (Remedy 1). These standards were developed based on the direct exposure criteria found in Connecticut's Remedial Standard Regulations (RSRs), section 22a-133K – 1 through 3 (Direct Exposure Criteria).

Groundwater - Groundwater quality in the area is classified as "GB", meaning that groundwater is within a historically highly urbanized area or an area of intense industrial activity and where public water supply service is available. Such water may not be suitable for human consumption without treatment. As a conservative evaluation, site-specific groundwater data were compared to risk-based groundwater criteria concentrations (RSRs, section 22a-133K – 1 through 3), which are protective of humans ingesting the groundwater (Groundwater Protection Standards - GWPS). In addition, volatilization criteria for indoor air was evaluated for on-site areas where on-site groundwater concentrations of volatiles are located below buildings.

Surface water - Surface water is not currently used as a drinking water source. Because of the stream characteristics (shallow, lack of substantial sport fish), it is highly unlikely that fish are caught and eaten on a regular basis. As a conservative evaluation, the Connecticut water quality criteria for human health were used to evaluate site-specific data.

Sediment – Promulgated standards and other applicable criteria/guidance levels for the protection of human health have not been established for sediment At the request of EPA Region 1, sediment concentrations were compared to Connecticut RSR direct exposure criteria for soils in industrial/commercial areas. These criteria provide an extremely conservative screening because the generic exposure assumptions (i.e., daily exposure, daily ingestion of sediments) used to develop soil criteria are not applicable or appropriate for sediment.

Analytical data from recent sampling events for surface water, groundwater, and sediment have been provided in the attached tables. For information on soils, please see section 6 for reference material locations.

Footnotes:

[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 appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	No	Yes	No	No	No	No	No
~~Air (indoors)~~	---	---	---	---	---	---	---
Soil (surface, e.g., <2 ft)	No	Yes	No	No	Yes	No	No
Surface Water	No	Yes	No	No	Yes	No	No
Sediment	No	Yes	No	No	Yes	No	No
Soil (subsurface e.g., >2 ft)	No	Yes	No	No	No	No	No
~~Air (outdoors)~~	---	----	---	---	---	---	----

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

Yes If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Definitions:

Worker – The term "worker" was used in this analysis to mean any SGP or DuPont employee working at the site and any consultant or contractor performing work-related cleanup activities. Such activities include, but are not limited to: daily site operations, sampling, drilling, excavation, soil processing, surveying, monitoring, and data collection.

Rational and Reference Continued:.

Construction – The term construction was used in this analysis to mean any employee of a firm who is actively engaged on-site in the construction of new buildings, support structures and roads that will be part of future re-development activities. It is not anticipated that construction work will occur until an area is remediated to appropriate standards such that no potential exposures exist.

Residents - Residential neighborhoods border the site. A retirement home and school are located south of the property. For potential exposure to occur, individuals from these locations would be trespassing on the site. Therefore, these individuals were considered in the trespasser category.

Rationale:

The Lake Success site is a former manufacturing facility that ceased operations in 1989. The site remains fenced and guarded. Access to the site is limited to site workers. As part of normal work procedures, the site's Health and Safety program, which requires the use of personal protective equipment (PPE), is strictly implemented. Mandatory use of PPE prevents exposures from occurring.

Groundwater impact is limited to very isolated areas on-site. Groundwater is not used on-site for any purpose; therefore, the exposure pathway is not complete. Impact from chlorinated hydrocarbons may extend off of the southern property near AEC 8-2 (surface impoundment); however, the concentrations are below applicable risk based levels. Groundwater analysis results demonstrate that contaminants are below CT groundwater volatilization criteria such that there is no indoor or outdoor air concern in the overburden aquifer downgradient of the site. Additionally, an extensive search of over 3000 residences and businesses within a quarter mile of the boundary of the site was performed for the possible existence of private wells. With the exception of 9 residences that were upgradient of the site in Stratford, all other residences and businesses are served by public water. The pathway for exposure is therefore incomplete. Sampling data also demonstrates that overburden groundwater concentrations near the surface impoundment are below CT surface water protection criteria and therefore would not likely adversely impact surface waters. Downgradient of the impoundment are several industrial use properties including the Bridgeport Municipal Transfer Station and GE.

During limited sampling events, workers are following H&S procedures, preventing any exposure from occurring. While continued worker exposure to site media on a regular basis is unlikely, incidental contact with readily accessible site media may potentially occur. Therefore, exposure to groundwater, surface soil, surface water, subsurface soils and sediments were considered remotely as being a complete exposure pathway.

Trespassers are a potential receptor as they have, on occasion, entered some of the outlying areas of the site. The occurrences are infrequent, and trespassers have usually been escorted off site within a short period of time. Trespassers would potentially only be exposed briefly to readily accessible site media such as surface soil, surface water, and sediments. Measures were instituted to minimize the potential for trespassers to enter the site. A third shift for security has recently been instituted such that in addition to the perimeter fencing, the site is guarded 24 hours a day, 7 days a week. Security performs rounds of the perimeter and several interior roads four to six times during a normal eight-hour shift. A Morse Detex system, with 17 stations set up throughout the property, is used to verify the security rounds. Guards key into each station to verify the time and location and report any issues should they arise. Reports are downloaded weekly and kept on file at the office. In addition, access to the site is limited to the main gate. All other potential access gates are double locked.

There are some limited, off-site impacts to sediments in Roadway Brook between the site and the GE property. The impacted area is fenced from the public. Trespassers may potentially access these properties (which consist of wetland/floodplain areas) and be exposed to sediments. However, this potential exposure is expected to be very limited. The GE site is fenced, and no public access is allowed.

Roadway Brook flows from LSBP onto the GE site where it enters Stillman's Pond. The pond is created by a dam located at the GE property boundary. Stillman's Pond has reportedly been dredged on a few occasions since the mid-1900s. Spoils were placed on the GE property. Surface water flows over the dam and continues to flow to the south. The brook runs through additional industrial properties and into three water bodies on the former Remington Arms Manufacturing site (upper, middle, and lower Pembroke Lakes). After the discharge from Lower Pembroke Lake, the brook runs underneath the railroad and into the Yellow Mill Channel, which is part of the northern reach of Bridgeport Harbor. The potential for exposure to surface waters or sediments is considered very limited due to the industrial nature of the area involved.

Unexploded or off-specification ordnance have been found within Success Lake and in a small isolated area of environmental concern (AEC). Some of these ordnance may potentially be characterized as hazardous waste. Munitions in the lake vary in size from small caliber off-spec bullets (.22 to 20 mm) to full 75 mm mortar rounds. The munitions in the Lake are contained within the sediments and not readily accessible. Fired projectiles ranging from 37mm to 75 mm have been found in an isolated AEC in near surface soils. The projectiles were removed from the AEC and placed in secured bunkers located on-site. The source of these UXO are unknown, as no records have been identified to indicate their origin. It is known that these UXO are of World War I vintage.

As noted, trespassers are a potential receptor; however, the likelihood is minimized with 24-hour security. Both the lake and the access point to the AEC are checked hourly. In addition, the AEC is posted with warning signs and the access route to this area is closed. Site workers may potentially be a receptor however, an extensive investigation program is performed prior to any intrusive work. SGP has performed site history reviews and some limited evaluations to determine the likelihood of munitions disposal areas or firing ranges on the site In all AECs, SGP is performing geophysical surveys to locate anomalies that may be buried in soil. If anomalies are detected, a verification program is undertaken using remote technology to locate the anomaly, excavate it, and confirm whether it is a UXO, buried ordnance or miscellaneous metal. To date, remote technology and protective blast equipment has been used to perform verification efforts. This method prevents exposures from occurring.

The US Army Corps of Engineers standard method of verification includes excavation of contacts manually (with trained ordnance workers) using small hand tools and shovels. SGP may conduct a pilot study at the Park to evaluate the effectiveness of such methods. Trained Explosive Ordinance Disposal (EOD) Technicians would be responsible for performing manual excavations and work would occur within portable blast shields to maintain the highest degree of safety to the public.

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

No If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Potential exposures of on-site workers are not significant. Potential exposures are mitigated through the implementation of the site's Work Permit program and the Site Health and Safety Plan. The work permit program requires that no work occur in any area on-site without having a daily permit authorized by the Site Manager. The permit system focuses on knowing what work is occurring on-site, where the work is occurring and who is responsible for a particular work event. The safety plan (which is discussed each workday as a safety briefing) requires personnel to recognize the potential hazards of the work they are to perform and the appropriate personnel protection equipment that needs to be worn. The H&S measures implemented at the site prevent exposures from occurring.

Additionally, workers are not permitted to handle unexploded or off-specification ordnance, nor enter the AEC where it has been identified. There are very stringent safety precautions to be followed when unexploded or off-specification ordnance are discovered. Written procedures are in place for any handling and on-site transportation of these materials. Handling of unexploded or off-specification ordnance is currently performed by experienced Explosive Ordnance Disposal (EOD) technicians, using remote technology. SGP has performed site history reviews and some limited evaluations to determine the likelihood of munitions disposal areas or firing ranges on the site. In all AECs, SGP is performing geophysical surveys to locate anomalies that may be buried in soil. If anomalies are detected, a verification program is undertaken using remote technology to locate the anomaly, excavate it, and confirm whether it is a UXO, buried ordnance or miscellaneous metal. Using remote technology and protective blast equipment during verification efforts, prevents exposures from occurring.

Potential exposure of trespassers is not significant. The potential for on-site trespassing is minimized by the existing site fence and 24-hour security. If any trespassing did occur, it would be infrequent and of short duration and, therefore, would not be a significant exposure. For off-site areas, there are two adjacent parcels of land located downstream of the SGP property where sediment in Roadway Brook has been impacted from on-site activities. Trespassers may potentially access this area. However, this

potential exposure is expected to be very limited. SGP has completed the installation of a fence to keep the public out of these areas.

Summary Table of Exposure Significance and Mitigation Control

Exposures/Controls (Under Current Conditions)

"Media	Workers	Trespassers
Groundwater	HASP	
Air (indoors)		
Soil (surface, e.g., <2 ft)	HASP	Fence/24-Hr.security
Surface Water	HASP	Fence/24-Hr. security
Sediment	HASP	Fence/24-Hr. security
Soil (subsurface e.g., >2 ft)	HASP	
Air (outdoors)		

HASP (Health and Safety Plan): Requirements and implementation of the HASP prevent potential exposure for on-site workers.

Fence/24-Hr. security: A fence and 24-hour security minimize trespassing and, therefore, potential exposures are greatly reduced.

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and
Reference(s):_____

Current Human Exposures Under Control
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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

Yes YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Sporting Goods Inc. facility, EPA ID #CTD001453216, located at 615 Asylum St. in Bridgeport, CT 06610 under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

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

Completed by (signature) Stephanie Cole Date 3/26/02
(print) Stephanie Cole (title) RCRA Facility Manager

Supervisor (signature) [illegible] Date 3/28/02
(print) Matthew R. Hoagland (title) _____
(EPA Region or State) Reg I
Section Chief, RCRA Corrective Action Section

Locations where References may be found:

References may be found at the EPA Records Center, the Stratford Town Library and the Bridgeport City Library. Soils data can be found in the original RFI on file and in subsequent reports describing Remedy I activities.

Contact telephone and e-mail numbers

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

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.